Feasibility Study on Introducing a Security Fund in the Fruit and Vegetables Sector

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Executive Summary

S.1. Background to the study

This study responds to a request of the European Commission DG-Agri, expressed through the issuing of a call for tender for a “Feasibility Study on Introducing a Security Fund in the Fruit and Vegetable sector” issued in the summer of 2007. The request originated from a strongly felt need of stakeholders and policy makers of exploring possible new means to provide producers with stronger ability to prevent and cope with the consequences of short term market crises, a common phenomenon in the European Fruits and Vegetable sector, and considering the changes that the sector would undergo in the near future, also because of the soon to be launched reform of the CMO.

The study has been carried on by the Centro per la Formazione in Economia e Politica dello Sviluppo Rurale of Portici, Italy, in association with Cogea Spa, of Rome, Italy according to the indications set forth in the call for tender.

As it shall be evident by reading through the report, the study is comprised of two main elements, which, although intimately connected to each other, have been better analyzed and presented in separate sections of the report, with suitable introduction and concluding parts making the connections between the two. The two elements are:

1. the analysis of the potential for the creation and use of a security fund by European Fruits and Vegetables producers and their associations, and

2. the analysis of the feasibility of setting up of a comprehensive Market Monitoring System under the main responsibility of the EC DG-Agri.

The report is comprised of three parts and a total of 9 original chapters. After an introductory chapter which, for completeness of the report, simply replicates the preamble of the call for tender, defining the objectives and the scope of the analysis to be conducted (and which therefore has been numbered as chapter 0), Part I of the study, made of three chapters, is a preliminary study intended to form a reasoned
inventory and a detailed analysis of the existing instruments and tools concerning both the elements that constitute the security fund and other income stabilizing mechanisms (chapter 2.) and the current market monitoring system in the Fruits and vegetable sector (chapter 3.) The two inventories are preceded by a chapter containing a brief summary of theoretical considerations on the problem of managing risk in agriculture (chapter 0) and followed by a chapter summarizing the main conclusions on the current status of market risk management in the Fruits and Vegetables sector of the EU (chapter 4.) The aim of Part I is to provide the background context and the analytical elements needed to define a set of suitable proposals for both a possible new market monitoring system and a security fund.

Part II, comprised of two chapters, contains a feasibility analysis of various possible initiatives for the set up of a market monitoring system (chapter 5) and of a security fund (chapter 6) chosen among the most promising elements identified with the analysis included in the previous part. The feasibility study had the main objective of analyzing pros and cons of the proposed tools and to explore possible elements that may favor or obstacle their implementation, to the aim of selecting those, among the several which had been identified as potentially useful, that would have the higher potential for successful implementation.

Part III of the study, also including three chapters, reports on the analysis of the possible implementation of the selected measures, consisting in a selection of two mechanisms to be included as part of a possible security fund, namely a conditional line of credit and a “crisis put-voucher” (chapter 7,) and of an innovative three-prone system for Market Monitoring in the Fruit and Vegetable sector (chapter 8.)

Chapter 9 contains a final summary and conclusions from the overall study.

This executive summary reports the main results and conclusions of the entire analysis carried out, presenting the elements related to the Security Fund and those related to the Market Monitoring System in sequence.

S.2. The Security Fund

The preliminary study, based on the survey of existing risk management and income stabilization tools in agriculture, which has been extended beyond the European F&V sector by analyzing initiatives existing both in other sectors and in other countries, has revealed a general limited diffusion of direct risk management tools among agricultural producers, and among F&V producers in particular.

When discussing of risk management in agriculture, until the very recent past most of the attention seems to have been focus on traditional insurance, that is, contractual arrangements where one party (the insurer) commits to pay to the other party
Feasibility Study on Introducing a Security Fund in the Fruit and Vegetables Sector

(the insured) an indemnity whose amount depends on the actual damage suffered by the insured and when such damage can be directly imputed to the occurrence of a pre-specified event, in exchange for a fixed premium, which can be taken as the price producers pay in order to transfer the risk. Unfortunately, traditional insurance has been repeatedly shown to present several drawbacks that make its use particularly difficult for events that cause correlated damages, that is, damages that occur simultaneously to a wide group of agents, and for damages which cannot be traced back to what analysts call “pure risk” or “acts-of-God”. The existence of these problems has been confirmed by the fact that, despite the non-negligible effort of some Member States Governments (most notably, Italy and Spain) in trying to promote the diffusion of insurance in agriculture, the bulk of the contracts remains focused on a limited number of events (hail, fire) and crucially dependent on public subsidies on the premium paid to insurance companies that, in most cases, exceed levels of 50% of the total rate.

Market and price risk (including short term market crises) are typically systemic within the group of producers of a certain product, and only to a limited extent attributable to pure risk. As such, they are particularly problematic with respect to traditional insurance. Although seasonal excess of production might be due to particularly favourable weather conditions, the fact that these events (which would be considered as a “blessing,” not a “curse,” by the layman person) become conducive to short term market crises of the kind F&V producers lament the existence, is the result of a series of concurrent causes, many of which are under direct control of producer themselves, traders, retailers and consumers (such as for example, production planning, strategic marketing decisions, etc.) In technical terms, this means that insurance intended to cover market risk might be plagued by excessive moral hazard to be viable. Moral hazard relates to the possibility that the insured might deliberately affect either the probability of occurrence of the insured event, the extent of damages and therefore of indemnity to be paid, or both. Under such circumstances, the insurance market notoriously fail, when the incidence of transaction costs needed to monitor insurer behaviour in order to prevent moral hazard causes to price of insurance coverage become too high to be convenient for the average producer. Notice that the release of public subsidies to the premium, intended to nevertheless promote the use of insurance will likely be ineffective, under such circumstances.

As opposed to what happens to other production sectors, such as that of grains and other storable commodities, with reference to fresh fruit and vegetable, much less attention has objectively been devoted to the possibility of alternative contractual agreements whose purpose is the transfer of market risk from one agent to the other.

Whereas active futures market exist for wheat, corn, oilseed, cotton, and a host of other products, the question of market risk in the F&V sector is mostly dealt with within the relationship established in the value chain that links producers to their di-
rect counterpart: traders or retailers. In the simplest possible case, in which a single producer would sell its product directly to a single buyer, it would be the price setting mechanism in itself that would play the role of a risk transfer mechanism. During the bargaining phase that leads to the setting of the price, the two agents, depending on their relative bargaining power, might be capable of including risk consideration in the contract, and – at least in principle – there would be no scope for either public intervention or third party mediation. Within such a simple arrangement, a high price would be, at once, beneficial to the producer and unfavourable to the buyer (and vice versa, for a low price.) When conditions occur for which the price might tend to be set either too high or too low, two parties with opposite stands with respect to the price, would automatically be in the conditions to bargain, and there would be no reason to imply that the result of the bargaining process be inefficient or socially unacceptable.

Of course, in the real world, many transactions occur in conditions that are far different from the ideal of a two-person direct bargain, and therefore the question of whether the price formation process would lead to a socially optimal outcome or not, and whether it embeds the best possible risk transfer mechanism or not, are legitimate questions. The most common departures from the ideal two-person bargain (under which unfettered transactions would likely be socially optimal) are those that imply the presence of some form of “market power”, that is, the possibility to enjoy higher bargaining power than the transaction counterpart, because of lack of competition. In the conditions of the European F&V sector, this has been long recognized as a problem for producers facing an increasingly concentrated distribution and retailing sector, with the rise of supermarkets’ share in the sales of fresh fruit and vegetables. For that reason, since the previous reform of the F&V CMO in 1996, special recognition has been given to Producer Organizations as the keystone on which to build a competitive sector, based on the consideration that, in this way, producers might reach a better bargaining position within the value chain.

This type of industrial organization evolution would obviously have consequences also on the aspects related to market risk management: ideally, if a Producer Organization manages to achieve sufficient capacity of coordinating production and marketing in an efficient way, it should also be able to minimize the probability of market crises or of their consequences, thus greatly limiting the scope for further public intervention specifically directed at market risk management. However, this is only true in theory and in an ideal situation. There are many factors that may compromise the achievement of such a result. As history teaches us, after twelve years of operation of the reformed CMO and despite great successes of a number of measures intended to promote the diffusion of POs, the depth and breadth of penetration is still varied across sectors and Member States, which means that we are far from an homogeneous situation in terms of the capacity of F&V to prevent, manage and cope with the consequences of market crises.
While agreeing with the continued promotion of the establishment and efficiency of Producer Organization as the major means to guarantee competitiveness and viability of the European F&V production sector, we have asked ourselves whether there could be other means and complementary activities that could assist F&V producers in their risk management tasks.

The conclusion that we have reached after the analysis of the existing situation regarding market risk management in the conditions of the European Fruits and Vegetables sector, is that there is indeed sufficient scope for, and large potential benefits from, the development of new mechanisms intended to allow the transfer of risk outside the value chain. Such transfer might be operated by single producers, where the level of sector organization around cooperatives and other forms of producer organizations is not yet sufficiently high, or by the POs on behalf of their members.

In turn, this has led to our proposal for the promotion of a comprehensive security fund, intended as a set of mainly private financial and contractual arrangements, through which producers might be able to ex-ante hedge great part of their market risk, as we have detailed in the core feasibility and implementation study.

The entry point for the definition of our proposal in terms of the build-up of a comprehensive security fund in the F&V sector has been the consideration that, given complete elimination of market crises by preventative measures is unlikely to be either possible or even desirable, attention should be given to the possibility of ex-ante hedging the exposure to relevant market risk by F&V producers. The challenge has been to find mechanisms which allow such a transfer of risk with low transaction costs and avoiding the creation of distorted incentives.

Also, as already said, we mainly focused on measures intended to promote the transfer of economic risk from producers to agents outside the value chain, namely to the investor community through operation of financial mechanisms and the banking system. This decision is justified by the belief that the engagement in marketing agreements within the value chain, where the risk is shared between producers, traders and retailers, remains the elective road to be taken to effectively increase the competitiveness of the sector. Nevertheless, even just the possibility for transferring part of their marketing risk outside the supply chain at a reasonable cost, might be of great value to producers who, for various reasons, are not yet in the position of bargaining from a vantage position within the chain, be it because the level of producers’ coordination is limited, or because they face a very highly concentrated retail sector.

Thanks to the recent rapid evolution that is occurring in the financial world, there exist a wide variety of instruments that could be used to transfer risk. The principles on which to build a security fund should be inspired by the concept that risks are not all alike, and that there exist a continuum of risks situated along a dimension that spans over the probability of the event occurring and the entity of the loss.
In other words, risks that entail small financial losses are likely to be more frequent, whereas big losses can be predicted to occur more rarely. The combination of probability of the event and of the potential entity of the loss is a crucial factor in determining which one is the most suited tool to manage a given risk. Small, highly frequent losses are probably best dealt with through so called self insurance activities, where the agent uses own financial resources to cope with the consequences of the negative event. As the entity of loss increase, use of borrowed money (credit) can be more efficient, given mobilization of own resources may become too costly.

Fig. S - 1 below lists a possible ordering of risk management tools along the dimension of increasing entity and diminishing probability of losses.

A comprehensive security fund might include many of the tools included in the list of Fig. S - 1. The actual list, and the relative relevance of each instrument in the fund would depend on the specifics of the production, marketing and demand conditions of the product involved. Such conditions include, for example, the time distribution of yields, the specific of the price formation mechanisms, the seasonality and other variability in the demand, etc., the analysis of which would require a specific detail study. For this reason, we have not been in the conditions of conducting a feasibility and implementation analysis of all possible instruments to be included in a security fund, something that, if the decision to launch a specific pilot program on a given product and a given region would be made, would certainly be needed.

Nevertheless, based on the exemplary cases of cauliflowers in France, for which sufficiently long series of data have been made available by the responsible of the French Services des Nouvelle des Marché, whom we deeply thank, we have been able to introduce a detailed discussion of the merits of two instruments in particular.

The discussion is intended to provide insights into the more general issue of the private mechanisms for market risk transfer, on the potential role that public authorities might play in this sense, and on the feasibility that such instruments might be adopted in the current and prospective conditions of the European Fruit and Vegetable sector.

Of the various possible instruments, we have elected to focus our attention on:
• **Conditional lines of credit**, which are particularly suitable for the management of short term, less serious crises (of the type, for example, that occur in the market for some fresh vegetables,) and

• **Crisis “Put-vouchers”**, an instrument more suitable for deeper, more intense crises (akin to those that have been experienced in the past in the markets for some tree-crop fruits such as peaches or apples.)

A **conditional line of credit** is an agreement between an agent who anticipates the possible need for liquid capital to face particular uncertain contingencies, and a banking or other lending institution. The difference with normal credit contracts, and where the meaning of the attribute “conditional” comes from, is that here the lender commits to release credit at pre-specified conditions, *in case a particular event (the “trigger”) materialize*. The advantages of such type of arrangement stem from the commonly observed problems that economic agents face when they search for short term financing during an emergency situation. In such situations, in facts, potential borrowers may find themselves in a weak bargaining position, facing problems of credit rationing, due to competition by other borrowers, in moments in which the timely availability of funds may be crucial.

With a conditional line of credit, the transaction costs associated with the search for lenders is reduced and, most importantly, known in advance, given that it becomes part of the agreed upon contractual clauses.

We suggest here that lines of credit could be conditioned to the occurrence of short term market crises in a given sector, as determined by the level of official price, as recorded on one or a set of representative markets, along the lines, for example, of what the French *Service des Nouvelles des Marches* currently does to declare the status of market crisis.

The use of credit to cope with the consequences of short term market crisis could be the most effective means for producers that would be in need to face relatively small additional marketing costs due, for example, to the search for alternative outlets, to the need of faster or longer transportation of the products to more distant markets, and other activities which, by their nature, are exceptional, and only limited to the duration of the crisis. In such circumstances, as we already recalled, the risk is best dealt with through self-insurance, and the possibility of conditional lines of credit becomes attractive to the extent that the effective cost to access this type of credit does not exceed the opportunity cost of mobilizing own resources which may be available only in illiquid forms.

The nature of the contingent credit contract remains fully private between a producer – or a producer organization – and a lending institution, although **various public measures might be imagined as ways to promote its use**. Among these, there are of course the “traditional” participation of public bodies as providers of back-up guarantee for credit repayment, or the co-financing of the interest
premium required to release the credit. Incidentally, some of the costs explicitly linked to these contracts may well be included among the expenses of operational programmes entitled to public subsidy, according to the current EC Regulations.

However, it is our opinion that the major role for the public to play in this field remains that of creating the conditions by which the information needed to define the trigger is made available and reliable.

The second tool on which our feasibility study has focussed is what we have named a crisis put-voucher, that is an option issued by a public agency and purchased by producers which entitles the holder to receive a compensation in case an index of market crisis reaches a pre-specified level.

Various technical aspects related to the actual design of the option will contribute in determining both the structure of incentives and the amount and distribution of costs and benefits created by the mechanism. As in the case of conditional lines of credit, here too all of these implementing features are highly case-specific, and their definition would require the exploration, in greater detail of data and information that go beyond the scope of the present general study.

Even at a general level of discussion, however, there are several aspects that points to the potential aptness of a mechanism based on a system of put vouchers to the conditions of the EU F&V sector.

- The lack of correlation, that is likely characteristics of the set of markets for various fresh fruits and vegetable products, suggests that there might be scope for integrating various individual market crisis options within a broader ‘compensation pool’, in which the risk of market crisis in some period of the year for certain producers might be spread over the entire season, among other producers and on the greater investor and speculators market.

- The “crisis voucher” is particularly attractive as a mechanism through which the public intervention even in the existing form after implementation of the recent CMO reform could be channelled in the sector. Without the ambition on being exhaustive, we can mention here:

  - The purchase of the option by insurers that have sold policies on risks that are correlated to the market crisis, a feature that might contribute to the effectiveness of revenue insurance in agriculture, where it already exists.

  - The possibility that the cost of the voucher be included in the operational fund of producer organizations, and therefore be entitled to the level of support currently provided for by the CMO.
The fact that purchasers of the option reveal some of their private information through an indirect indication of their willingness to pay for the type of coverage granted by the option. This may prove an effective mechanism to increase the quantity and quality of information available to the policy makers and the general public.

One other interesting aspect is how the envisaged tool compares to the traditional withdrawal system, given that, to a certain extent, the intent of the put voucher is similar: to provide producers with a means to reduce the cost they face due to the occurrence of low prices due to causes mainly beyond their individual control.

When compared with the withdrawal mechanism, however, the put voucher mechanisms presents a number of advantages linked to the following aspects:

- the release of compensation does not require the destruction of product, with resulting benefits to consumers in terms of low prices;
- there is no need for costly monitoring activities for the correct implementation of the mechanisms: the right to the compensation, as well as the amount of compensation is set in advance, the moment in which the voucher is sold;
- the mechanism require an ex-ante evaluation of the cost of the exposure to the risk of market crisis by the producers, which will need to elect to participate in the system by purchasing the option; this would strongly limit the potential for strategic behaviour once the crisis hits;
- even though at the beginning we envisage the put voucher as being issued by a public authority, the mechanism may well evolve to become a fully private market based instrument. It is easy to imagine other agents, with opposite stakes with respect to fruit and vegetable prices, which might have an interest in taking the opposite position on the market for this one or for similar derivatives;
- depending on the way in which the voucher is sold, the mechanism may allow for the revealing of information on the actual economic cost of market risk exposure for fruit and vegetable producers. Auctioning out a set of vouchers, different in terms of payoff structure, may self select buyers who, deciding to buy one type of voucher rather than the other, would reveal the degree of risk exposure they face.

As with the conditional line of credit – or any other type of contingent claim contract – one essential precondition for a mechanism such as the put voucher to function, is the possibility of observing an objective index which is highly correlated with the agents’ economic returns and which is not subject to possible manipulation by either of the two parties involved in the contract. In this sense, the potential for
diffusion of this, as of similar derivative-based mechanisms, is crucially dependent on the availability and transparency of market information. The advantage of the solution we propose, is that the only type of information needed is on the actual prices formed for products on the open markets, an information that can be certified to a reasonable degree of reliability.

S.3. The Market Monitoring System

As we have recalled, this study originates from the debate that preceded and accompanied the reform of the F&V CMO, regarding the need to support the sector’s operators in managing market crisis situations, and in particular short-term crises.

One of the causes of the limited ability of operators to prevent and manage crises has been recognized, during the aforementioned debate, in the lack of sharing and transparency of information on EU agricultural markets in general and on the F&V market in particular.

For these reason, the first element of our study on the feasibility of introducing a market monitoring system has been the surveying of the “status quo” of information production and sharing in the F&V sector. The inventory carried out in the first part of the study confirmed the common perception that the information panorama is in fact rather fragmented and in any case insufficient to ensure the systematic monitoring of production and the market. We confirmed the existence of extensive and varied information on the sector prepared by a large number of data gathering and/or processing centers operating nationally, regionally and locally. The most common are:

1. **Research and service centers** which, through both direct and secondary data collection, constantly observe F&V sector trends within a range that extends well beyond the State in which they reside and operate. A few examples of these type of centres may be the Zentrale Markt – und Preisberichtstelle (ZMP) in Germany, the Centro Servizi Ortofrutticoli (CSO) and the Consiglio Nazionale delle Ricerche – (CNR-IBMET) in Italy.

2. **Institutional agencies**, mostly coming under the supervision of Ministries, which gather and disseminate statistical data on the sector, with regard to single national levels, including: ISMEA and Consorzio Infomercati in Italy, Service des Nouvelles des Marchés (SNM) and CIRAD in France, Price Observatory M.A.P.A. (Ministerio de Agricultura, Pesca y Alimentación) and MERCASA in Spain (for prices only), Foreign Trade Ministry in Belgium (only for imports/exports), Brisbane Markets in Australia (only for wholesale prices), CMPE – Foreign Trade Institute of Morocco, ICEX – Foreign Trade Institute of Spain.
3. Producers’ Organisations (POs), their Associations (APOs) and Unions which, on the one hand, directly collect information from their members, and on the other acquire and re-process information from official sources for their members to support their activities.

The inventory of the existing information panorama in the F&V sector was carried out using the three indicators: availability – accessibility – functionality. In relation to some elements of the sector\(^1\), these indicators have made it possible to measure (i) the presence or absence of monitoring data, (ii) their degree of usability and (iii) their relevance in relation to the objective of contributing to the prevention of market crises in the F&V sector.

Our analysis showed the existence of a vast information panorama, very diversified in terms of typology, quantity and quality. Different degrees of accessibility also emerged, mainly dictated by the public or private nature of the data source and, finally, a disparate functionality of available information in relation to the need to raise, through a more extensive and shared knowledge of the sector, the ability of operators in the “chain” to programme their activities and anticipate crises or at least manage unforeseeable events to the best of their possibilities.

With respect to F&V data, the main conclusions of our analysis on the availability, accessibility and functionality of the available information can be synthesised as follows, respectively for production, meteorological, price, market, and international trade (import and export) data.

1. Production data
   a) Availability
   
   Both in terms of current and forecast information, data for production quantities and cultivated areas, as well as respective forecasts, are quite common among institution/association (INS/ASS) bodies, while less frequently found in study and research centres (RES) that are more focused on other elements, among which prices. Data are present almost in all States and are available mainly at competent authorities of central government bodies. Mainly in the EU, a major role in the provision of production quantity and cultivated areas by type of product data is carried out by POs which provide them for third party uses but also to carry out ad hoc processing activities. Coverage levels of information provided by POs increase when passing from single organisations to their aggregation bodies, i.e. respective associations and unions.

\(^1\) The elements utilised are: production and output estimates; prices (at three levels); the type of market (whether traditional wholesale and retail or new channels, such as large-scale retailing); imports and exports; meteorological phenomena.
b) **Accessibility**

When bodies possess so-called “institutional” sources (i.e. official sources) data are accessible freely and are broadly disseminated by surveying organisations. The same holds true for research centres depending from Ministries, but not for those centres that carry out research activities for economic purposes.

c) **Functionality**

Data surveyed by central government bodies in the various states are the most significant, especially for their territorial importance.

2. Meteorological data

a) **Availability**

Only 3 structures, 2 of them among the category Institutions / Associations and the other one a Research institute, possess meteorological data.

b) **Accessibility**

Data access is easy and almost always free.

c) **Functionality**

Weather data should be analysed over a significant period by product and a significant range (number of years). Today’s statistical strategies for forecast projections show clear weaknesses in what should instead be the strong points of this proposal. In any case, new database systems and control models are being developed.

3. Price data

a) **Availability**

i) **Production prices**

Within the group of surveyed bodies – at least in Italy and Germany – a single organisation collects, at both national and regional levels, weekly data on F&V production prices. In this case, time series are available since 1998.

ii) **Wholesale prices**

Bodies entrusted with wholesale price data collection are often linked together. As a matter of facts, there are agreements for wholesale price data collection regarding a basket of F&V products, comparable and agreed upon by the parties. Surveys in these cases have a variable frequency, from weekly to monthly.

Most of interviewed bodies that survey wholesale price data depend in some way from national ministries (e.g. in France and Italy), in some cases as internal ministry agencies (e.g. SNM).

Surveying is carried out directly at producer level, in wholesale mar-
kets and agrofood centres. At the level of single states, in most cases wholesale price monitoring is carried out on a daily basis.

iii) Retail prices
Within the chosen sample, nine bodies gather retail prices. A different situation can be found in Italy where there is a partial survey, currently only for six cities (Consorzio Infomercati) and for a few products, defined within an agreement with the Ministry. The survey is carried out on a weekly basis and was only started a year ago. Furthermore, the Price and Tariff Observatory (Osservatorio dei prezzi e delle tariffe) makes use of a survey network (ISMEA) on Italian household purchases (carried out in partnership with AC-Nielsen).

b) Accessibility
In general data accessibility depends on the body that owns the data. In the case of institutional sources, data can be used freely and gratuitously, while in the case of private entities access is on demand and subject to economic conditions.

c) Functionality
There is a significant number of surveying bodies. Prices are among the most observed elements at all levels of the commercial chain: production, wholesale and retail. With regard to territorial stratification, most bodies carry out nationwide surveys. This could be particularly interesting with a view to establish a monitoring network based on national observation sites (this could include all price levels). The observed sample does not present a wide geographical coverage.

4. Market and distribution sector

a) Availability
With regard to large-scale retail and storage, structures which possess data are mainly from the “institutions and associations” category. With regard to volumes of stored goods, it is mainly the associations of producers who have the data, as they obtain this from their members. Specifically, while associations/institutions gather a lot of data regarding volumes and prices at the LSD outlets, research centres concentrate exclusively on prices.

b) Accessibility
Although data is widely available, in most cases it is produced by entities whose business is data production, thus the data must be paid for and obtained directly from them. In the case of trade associations, surveys and data processing are usually carried out solely for internal purposes of that organization. However, ex-
cept for a few cases where data access has an additional cost, there is willingness to share it outside the organization, especially for purposes of research.

c) **Functionality**
With reference to the volumes of stored fruit and vegetable products (as shown in the following table), it is worth noting that data has been obtained for two “delicate” fruits (peaches and apples), and one “delicate” vegetables (tomatoes). Many different situations exist within the fruit and vegetables sector, because the products are of different types, and the number and types of intermediaries in various market phases also differ. The combination of factors such as the product, variety, zone of origin, destination area, suppliers and buyers at every phase contributes to making a long and complex distribution chain. Large-scale retail is the prevalent distribution method at present, and thanks to its specific organizational characteristics, it seems to contribute decisively to increasing the efficiency of the whole distribution sector.

However, the survey shows an insufficiently detailed level of information with regard to specific varieties of fruit and vegetables.

5. Import and export

a) **Availability**
The topic of import/export is of interest primarily to institutions, above all the various institutes for foreign trade – and associations, especially trade associations. Only two out of nine surveyed research institutions collect these kind of data. Import/export data collected by the five organizations on a worldwide level needs to be carefully evaluated as it applies to macro areas or certain specific products and not the whole range of fruits and vegetables.

b) **Accessibility**
There is no special difficulty in obtaining these data as most of them are provided by Foreign Trade Institutes.

c) **Functionality**
Foreign trade institutes which are active within countries because of their number and the data they provide are an important source for public and private sector marketing decisions both at national and international levels. The same holds true with regard to the ability of the main research centres surveyed, to carry out analysis and data processing on the subject.

To the objective of analysing the most relevant functioning elements of existing different monitoring centres, and to define their strengths in order to gather possible suggestions for the setting up of a Market monitoring system at national and/or at
EU level, two different operating models of monitoring centres have been chosen as a “case study:"

1. The Centro Servizi Ortofrutticoli - CSO (Italy): a private, market-oriented organization, providing monitoring services for a limited number of F&V products and mainly to the POs members of CSO.

2. The Services des Nouvelles des Marché - SNM (France): a 50 year old public institution, providing public monitoring services for the greater part of agricultural products marketed in France (and a greater part of F&V products).

From the analysis of this case studies, conducted through in depth interviews with the responsible of the two services, and with reference to the possibility of extending the operating models to other countries or even to the entire EU territory, we concluded that:

The operating models informing the two services could be homogenously implemented only for those MS in which: (i) production is characterized by a high level of organization (high percentage of marketed production by POs and APOs), and operators are available to contribute for the creation of monitoring centers, or (ii) there is already a national organization characterized by a strong and direct relationship with producers, or at least with a relevant part of them. It is to be stressed that both circumstances are at present mostly absent in a great number of EU-27 MS, and there are reason to doubt that they could possibly be achieved in a short-term.

1. Adopting the SNM operating model as a benchmark to set up a monitoring centre at national and EU level (resulting so in an organization with a functioning model similar to EUROSTAT) would require:
   - at the national level of each of the 27 Member State, the presence of a structured team of experts, by product and by each of the most relevant national F&V wholesale market, characterized by i) a strong and direct relationship with producers and ii) a specific knowledge on the marketing dynamics of each relevant product. Where lacking such a human resources availability, the set up of such a structured team of experts would require a rather wide time span and high investments as well as operating costs;
   - at the EU level, the need for managing, analyzing and homogenizing a very large quantity of daily data in a very short time (timely information is a primary objective of any market monitoring system), resulting so in the need for the creation of a structured wide team of experts. This again would sensibly rise the operating costs of the system;
a rather wide time span to set up and fine tuning the information system functioning. Adoption among the 27 MS of standardized nomenclatures, data gathering and computing methodologies, as well as efficient information flows functioning, would require a mid-term development project.

Furthermore it has to be stressed that such a monitoring system, based on a regional or national data gathering at each MS level and a subsequent analysis and aggregation at EU level, extended to a wide number of F&V products, will entail a quite long and complicate data flow thus failing the possible “timely information” objective.

This leads us to conclude that a proposal of monitoring system, at national level, based on a specific operating model (as the analysed ones): (i) would have few chances of concrete implementation at least in a short-time span, (ii) will fail on the relevant objective of timely information, and (iii) it would notably increase, respect to the status quo, the management and operational costs of the market monitoring system at both, national and EU level.

2. There is a concrete opportunity of benefiting from existing information, even though heterogeneous in type, quality and accessibility. To achieve this goal the proposed monitoring system should:

- guarantee the concrete availability of information,
- ensure an upgrading/evolving path, in quantitative and qualitative terms, for technical and content characteristics,
- facilitate the optimization of costly monitoring tasks (data gathering) by possible activity sharing between the organizations which at present have to repeat tasks each time raw data are needed.

In view of the priority aims of the present study, the widely felt needs of operators and the findings of the inventory, our proposal for a Market Monitoring System is based on an intervention logic diagram which outlines the following operational objectives:

a) To adopt a functional model for the generation and dissemination of information that has the flexibility needed to adapt constantly to changing operational, commercial and technological conditions in the F&V sector (and for specific productions) and to different existing national contexts in MSs (in terms of the incidence of the productive set-up and the national propensity to produce, market or consume specific F&V produce).

b) To foster the development of networking, at EU-27 level, among the operators of F&V information, trading and production.
c) To make the most out of the existing cognitive resources (structures, knowledge and databases) and encourage possible development in territories or F&V productions that are not currently covered.

As a logical result of the above mentioned analyses and conclusions we developed our proposal of a Market Monitoring System based on the following three, closely interconnected elements:

1. a web portal;
2. a structured set of meetings and opportunities for debates among the data publishers and the data users;
3. thematic forums.

The possible interactions of the three elements of the proposed system is represented in the following flowchart.

Fig. S - 2 Market Monitoring System flowchart

The portal, which in our view is going to be managed by the EC DG Agri, is the platform via which information on the F&V sector is conveyed and disseminated. It can be accessed by users, i.e. all actors involved to varying extents in the “F&V chain” as “stakeholders”. An essential characteristic of the portal is the possibility of consulting databases or parts of databases made available by different actors that monitor market trends. From the portal web-pages the origin of data is always evident, in terms of both the primary source and the subject re-processing and dis-
seminating the information. Info-producers, publishing on the portal all or a part of the information at their disposal, will join the portal because of the broad visibility deriving from being present on the portal, in both institutional and, indirectly, commercial terms.

The information that can be consulted through the portal leads to the activation of meetings/debates, which may be requested: (i) by users who, through the portal, follow output, market and consumption trends; (ii) following the results of meetings and debates among portal actors chiefly responsible for fine-tuning the information systems as a whole. The priority aims of meetings/debates are:

- to encourage the development of networking initiatives among existing monitoring centres;
- to develop/spread a knowledge of existing monitoring;
- to facilitate the matching of operators that produce information with users;
- to implement the portal.

The forums, on the other hand, have two basic aims. One is to get subjects that observe the sector and produce information to constantly seek new responses to information needs. More generally, the very nature of forums will make it possible to highlight and analyse the most topical issues, with one eye on the long-term situation and on possible developments. In this way, representatives of the various phases of the F&V chain (i.e. portal users) may share their views and modify their respective positions. Forums may allow the diffused organisation of information, so as to facilitate through their results the inclusion in the original set-up of the portal of: (i) products or varieties not originally envisaged; (ii) more select, but significant, areas; (iii) additional relevant markets; (iv) F&V chain details not yet included in the range of information already disseminated with the portal.

The value added of these three combined instruments, compared with the current availability of information in the F&V sector, is thus the concentration of available information at the EU 27 level and the increase of the level of accessibility to such information to all potentially involved operators. The proposed system is not a theoretical model but a system founded on the findings of observations on the current state of information in the sector. Furthermore the proposed system seeks not to ignore but to make use of the various experiences acquired for the F&V market monitoring at various levels, including the experiences surveyed in the inventory and the two experiences analysed in detail in the case study. In this way if one starts by acknowledging the existence of many different market observation centres, their different ways of functioning and their different levels of effectiveness, the result is the proposal of a system that re-presents the results of activities performed by each one of them, leaving users free to choose the information.
most of use to them, i.e. most useful for programming production and/or the sale of their products. Furthermore, in the proposed system, every centre may remain independent with regard to the data gathering and/or processing system, the categories of information monitored, the reference area and the products of interest.

The competitive effect of the portal will produce, on the one hand, a rise in quality of published data, in terms of accuracy, pertinence and promptness of information produced, and on the other a process of specialisation of Info-producers. This is made possible by the concepts of reciprocity and exchange, underpinning the operation of the system. In greater detail, the portal forms the base for the construction of bidirectional relations between info producers and the reference public: the portal is indispensable for consumers seeking information and useful for firms wanting to become known. Thus, interacting with others through the portal, each info-producer has the possibility of gaining easier access to information that it would otherwise have to produce on its own or acquire from other sources.

In light of the above, it is clear that the other fundamental and qualifying element of the proposed system is the fact that for its implementation it needs dialogue among info-producers and between these and the users of information. This overcomes the other shortcoming detected during the inventory, i.e. the absence of relations among F&V information, trading and production operators.

At the same time, the system, through meetings and debates, will offer subjects monitoring the F&V sector and joining the portal the possibility of discussing relevant aspects of their activity, both formal aspects and specific contents. Over time, indirectly, these debates will also help to rationalise produced and disseminated information.

The proposed information dissemination system thus has the capacity to have a bearing on the generation of information while preserving the flexibility needed to constantly adapt to changing conditions in the F&V sector and to different national contexts in different MSs (this does not imply a single data gathering system). Likewise, it has the merit of favouring the development of networking, at the EU-27 level, among actors engaged in the F&V chain and of valorising existing cognitive resources (structures, knowledge and databases), stimulating possible developments in territorial areas or for F&V production not currently covered.

Achievable objectives of the proposed system are given in greater detail, in the following figures, with reference to each of the system’s operational elements (portal and networking).
Finally, two aspects need to be stressed among the advantages of the proposed system:

- the role of the EU Commission and of DG–Agri in coordinating the whole system;
- the role of Info-producers in implementing the portal.

**DG-Agri has an absolutely central role in the Market Monitoring System:** it will be entrusted with the task of managing the whole proposed system. This management will entail modest costs (in terms of finance and the deployment of professional resources) and, above all, will not involve any evaluation of the information disseminated or the subjects supplying the information. The role of DG-Agri is that of being an impartial subject: it will provide a service to operators in the F&V chain, allowing dialogue between them and info-producers, as well as among the latter actors, in order to improve the general ability to govern the F&V sector, and contributing to possible actions to prevent crises. Moreover, all institutions who will contribute with their data (Member States administrations, Producer Organizations, etc.,) will likely find it easier to share the information they have with the EU Commission, under predetermined conditions, than they would do with other institutions.
On the other hand, the participation of info-producers in the system is completely voluntary. The basic logic behind the whole system is that over time it will become “the observatory of choice of the F&V sector” at an EU-27 level. As they cannot run the risk of being left out of this privileged “gallery”, actors that produce and/or process data pertaining to Market Monitoring will voluntarily join the portal, which constitutes a doorway to the whole information system proposed here. Also with regard to the potential implementing subjects of the portal, their participation in the initiative will not entail a great rise in costs, whereas there will be clear advantages, such as greater visibility in relations with the sector’s operators, which are their specific target, leading to possible commercial openings.

Having defined the essential elements of the proposal for a market monitoring system and carefully assessed potential benefits the next step in the analysis has concerned the analysis of the feasibility and of possible implementation of the web based application in terms of design and operation.

The application design process should be focused on guaranteeing reliability, availability and serviceability of the platform. The application design is therefore based on Web paradigms, where interaction between information supplier and consumers is via the global Internet network accessed through standard Web browsers. In suggesting technical and information technology aspects the utmost care has been taken to elements that facilitate access to the portal (a) for the professionals which will be involved in implementing it, (b) for those who will be responsible for publishing the information in their possession, and (c) for the potential users.

For the former, standard and widely used portal communication protocols are widely available:

1. **Really Simple Syndication (RSS 2.0)**: is a family of web information standards where a content provider can publish its own information using a standardized XML file.

2. **Web Services (W3C standards)**: used as a service oriented interface where well known application services are provided. From info-producers’ point of view, software client components to interact with provided services on event change are required.

3. **HTTP / POST (standard web interface for data publishing)**: the most complex interface from info-producers’ point of view because it requires administration activities for information publishing. Suitable for organizations providing a small amount of daily information which would have direct control on content publishing.

The application features, as well as technology platform of the web portal, have to be related to the multifaceted IT system at present functioning by EC services, and
to the ongoing IT development projects (e.g., ISAMM project could lead to possible specific architectural or technological implementation choices), thus we have refrained in the present study from developing a specific proposal on the IT features of the system.

The users of the proposed DG-Agri web portal may access information by means of a **structured and facilitated navigation path**. The user will select the “type of information” of interest and from there, through a guided process, choosing among the various options presented, will be able to view all the information made available by the portal, corresponding to the data pertinent to the choices made. This path is of course taken only inside the DG-Agri web portal, and the end result is the availability of that specific information offered by possible Info-producers. Basically, the system will consist of a supply of **information made available by specific and well identified Info-producers**, which may be consulted in a **structured manner inside the DG-Agri web portal**.

The portal manager (DG-Agri), should ensure the relevance of information disseminated through a control mechanism founded on minimum criteria and requirements: subjective (i.e., of info-producer) and objective (referring to each data category), but will not ensure uniform, or standardised, information, in terms of both methodology used by the data gatherer and classification of data.

The aim of the system is indeed to make the published information as **accessible and transparent** as possible, not much to standardise data. Both accessibility and transparency will be guaranteed by the links that can be established (both numerically and in terms of content). Transparency will be helped by the **clarity** of disseminated information, which while not being uniform, will have to be read in an unambiguous manner.

The entity managing the web portal (DG-Agri) will be called upon to perform a **relatively limited strategic set of tasks**, referring chiefly to the operational coordination of the system as the following: (i) Project management; (ii) Functional and Technical management of the web portal; (iii) Networking activities management.

Estimates of investments and labour needs for both development tasks, the setting-up of the system and ordinary functioning entails relatively **modest initial investments and yearly operating costs**, in terms of human and economic resources.

It must also be stressed that complete setting-up of the system could be carried out in a **5 to 8 months time span**.
S.4. Conclusions

The conclusion that we derive from the analysis of the proposed solutions for market monitoring systems and for elements of a comprehensive security fund within the Fruits and Vegetable sector is that we can confidently hold an optimistic view on the prospect that, with limited but carefully targeted initiatives, the capacity of F&V producers to manage the consequences of short term market crises.

If nothing else, the content of this report should contribute to feed the discussion among stakeholders and policy makers with new elements, that hopefully will be conducive to a broader view of the problem of risk management in agriculture than the one that narrowly focuses the attention on subsidized insurance and on various forms of ex-post public compensation mechanisms, both extremely costly and rather ineffective in facing the challenging of a rapidly evolving sector embedded in an equally rapidly changing global economic environment.

The consideration derived from modern information science, finance theory and economic analysis, that have been presented in the report should suffice in demonstrating that there is a still largely unexploited potential that could contribute to the modernization and the increased competitiveness of one of the most important sectors of the European agriculture.

Let us conclude now by stressing once more the importance in this respect of market information. After all, we can safely say that risk management is nothing more than the efficient and rational processing of all available information, in order to balance the uncertainty that surrounds any economic activity with the expectation of making a profit.

In a sector such as the F&V production sector, the role of the public authorities in this respect is particularly precious. In the markets for other agricultural products, the possibility of unbalances as well as the information on the prevailing conditions of demand and supply is indirectly revealed by the possibility of arbitraging through storage, which, in turn, allows for the spontaneous development of hedging mechanisms such as futures contracts. For fruit and vegetables, the development and diffusion of standardized futures contracts is impeded by the highly perishable nature of the products and the corresponding prohibitive cost of storage, which enormously reduces the scope for arbitrage. For this reason, we are left in this sector without a powerful information revealing mechanism.

The public effort in improving the production, sharing and certification of market information, perhaps also along the lines of what has been put forth in this report, is therefore of paramount importance for the evolution and strengthening of a vital component of the European agriculture in the near future.
Research initiatives such the one that has lead to the production of the present report are therefore potentially very valuable, and for this the farsightedness of the DG-Agri needs to be duly recognized and appreciated.
Main report
0. Preamble

0.1. Background of the feasibility study


The emanation of Council Regulation (EC) No 1182/2007 followed a long debate on the needed reform of the EU F&V CMO, intended to simplify and to improve on the situation as it had been in place since 1996, when Council Regulations (EC) n° 2200/96, 2201/96 and 2202/96 were approved.

In 2004, the debate started on the need for a reform of the F&V CMO. One of the main problems that needed to be solved in the F&V sector was how to assist the sector in dealing with crisis situations. It is widely acknowledged that short-term crisis situations in the F&V markets occur regularly due to a combination of factors. First, the perishable nature of the products prevents, in most cases, effective storage which could be used to smooth-up prices. Second, both production and consumption are highly sensitive to short term climate and temperature variations, which in turns make it more difficult than in other sectors to effectively plan the production. Third, given the typical inelastic demand for fresh fruit and vegetables, the presence of even a small surplus on the market can have dramatic consequences for prices during the whole marketing campaign. Fourth, the F&V production sector in most parts of the EU is still very fragmented, which means that there are enormous difficulties in coordinating the supply, and therefore there is limited bargaining power in the face of both the strengthening retail and discount chains, and the increased competition from third country products that are offering a combination of improved quality at relatively low prices and are taking up a rapidly increasing market share.

0.1.1. Old crises prevention and risk management tools

In the CMO, as it was designed in the past, the management of short-term crisis was intended to be achieved mainly through the so called “withdrawal system”, which was introduced with the first CMO, Regulation (EEC) No. 1035/72 of the Council. According to that system, whenever the price would fall below a pre-determined critical level, producers were entitled to withdraw their production from the market and receive a compensation.
After many years of operation, the system was significantly revised in 1996 with the Council Regulation EC N° 2200/96, through which the responsibility for managing market crisis was attributed to POs, and the conditions for using authorized withdrawals were made stricter. Since then, two types of withdrawals have been possible:

- Withdrawals fully financed by the EU through the Community Withdrawal Compensation (CWC) for the sixteen products included in annex II of the aforementioned regulation.\(^2\)
- Withdrawals co-financed by Producer Organisations (50% EU/50% PO), for products not listed in annex II or to complement the CWC for products included in annex II.

Non members of producer organisations could benefit from EU withdrawal compensation at a reduced rate of 10% and within the same quantitative limits as for the members, by selling their product to POs which were obliged to purchase them.

The reform of 1996 caused a dramatic decrease of use of withdrawals, due to a sharp reduction of the CWC level, and to the introduction of a maximum withdrawn ceiling as a percentage of the quantity marketed (5% for citrus fruits, 8.5% for apples and pears and 10% for other products). In 1997, the EU budget expenditure for withdrawals was of about € 293 million whereas in 2005 the EU budget expenditure was only of € 28 million, involving 325.500 tonnes, of which only 6.000 tonnes was processed products, the rest being fresh produce.

The reducing trend in withdrawals use is likely to continue after the recently approved reform of the F&V CMO.\(^3\) Although the possibility of using withdrawals has been maintained, the co-financing from Community budget is limited to 50%, the maximum level of total allowed support has been further reduced, the quantity ceiling has been set to 5% of marketed production for all products, and stricter rules have been set in terms of allowed destinations and rules to which producers have to comply if they want to access to withdrawal support. Only withdrawals for free distribution to schools and other deserving destinations will be 100 percent reimbursed by the Community.

Many of the participants to the debate that preceded the latest reform had voiced their concern that the ability of F&V producers to face temporary market crisis could be reduced due to the limited attractiveness of withdrawals. These concerns

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\(^2\) Cauliflowers, tomatoes, aubergines, apricots, peaches, nectarines, lemons, pears (other than perry pears), table grapes, apples (other than cider apples), satsumas, mandarins, clementines, oranges, melons and watermelons.

have been recognized and that has led to the introduction of further measures for the prevention and management of crises in the new CMO.

Fig. 1. EU expenditure for withdrawals over the period 1997-2005

0.1.2. New crisis prevention and management measures

The recently approved reform has introduced a new set of measures for crises prevention and management. As described by the Commission itself, the new system will be organised through Producer Organisations. Tools will include green harvesting/non-harvesting, promotion and communication tools in times of crisis, training, harvest insurance, help in securing bank loans and financing of the administrative costs of setting up mutual funds, and will be fifty percent financed by the Community budget.

Although community aid to POs will, in general, remain limited to 4.1 percent of the total value of marketed produce, this ceiling may rise to 4.6 percent provided that the excess is used only for these new crisis prevention and management measures. For three years, state aid may be granted to extend crisis management measures to non members who enter into a contract with a PO. Compensation for non members will be no more than 75 percent of the Community support received by PO members.

With this new set of measures, the ability of producers to prevent crises should improve, and in many parts of this study the discussion will focus on an ex-ante evaluation of the foreseeable impact of these new measures on the overall ability of producers in preventing and coping with market crisis.
Nevertheless, there are two other specific issues that have strongly emerged during the long debate preceding the reform that have been considered as deserving special attention. In the context of the discussion on crisis management for the F&V sector, the possibility of setting up of price and market observatories and of a "fund" managed by producer organizations has been proposed by the European Parliament, in its resolution on fruit and vegetables (points 21 and 23)\(^4\).

These points are also explicitly included in the Public Consultation document released by the Impact Assessment group\(^5\) and have received significant attention by many participants in the consultation. For these reasons, the Commission has requested the present study which focuses on the feasibility of introducing a security fund and improving on the market monitoring system in the EU F&V sector.

### 0.1.3. Security Fund

The option of creating a “fund” was explicitly considered during the consultation period that preceded the reform, following precise indications in that sense by the European Parliament. In particular, the option envisaged that:

“Member States that wish to could create a Fund, co-financed from CMO resources, which would take charge of managing preventive or crisis measures, within a framework to be established at a European level. Access to the Fund could be limited to members of POs, or extended to all producers in a region or in a Member State, under conditions that would be defined. The Fund would finance a range of actions that could respond rapidly to crises. The extent of Community co-financing and the range of actions would be subject to certain defined variants”\(^6\).

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\(^4\) 2004/2193(INI):

“The European Parliament
[omissis]
21. Calls on the Commission to conduct an in-depth study into the various crisis management systems that could be applied in the fruit and vegetable sector and calls for the introduction of a fruit and vegetable production forecasting system by means of market observatories, at both Community and national level, to track potential market crises and thereby enable a swifter response;
23. Calls for the current withdrawals system to supplement a ‘safety fund’, managed by the producer organisations and financed by the European Union, Member States and farmers; this fund should be used to compensate producers for the withdrawals made in the event of crises, make payments for the reduction of production and the establishment — on a voluntary basis for farmers — of an income and adverse weather insurance scheme, subject to a feasibility study; proposes that producers not belonging to a producer organisation should be able to contribute to this safety fund, but should receive lower levels of payment in times of crisis provided that the individual producer participates in the measures and rules adopted by the producer organisation for crisis management; considers that this fund should be financed separately from the operational fund and that collective insurance should be eligible for funding under this scheme.”

\(^5\) SEC(2007)74:

SEC(2007)74:
The rationale for this option can be traced to the consideration that there might be economies of scope and economies of scale in setting up a centralized tool for crisis prevention and management, exploiting the possibility that such a tool might provide better conditions for coordinating the various actions needed in case of a crisis, in addition to provide scope for market risk pooling among various stakeholders in the sector.

0.1.4. Market monitoring

One other commonly perceived fact that emerged during the period preceding the CMO reform, is that there is a real need for improved information sharing and transparency in the European agricultural markets and, more specifically, in the F&V sector. Many stakeholder have voiced their concern over the difficulties in gathering timely and reliable information on the evolution of prices and on the ability of monitoring the “market” in the sense of being able to anticipate possible evolutions and to react accordingly in order to prevent disruptions of the market equilibriums.

There exist already a number of activities conducted both at the EU and at the various Member States level, intended to contribute to the information system apt at monitoring fresh fruits and vegetables markets in Europe. However, the common perceptions is that these measures are considered still insufficient to provide a comprehensive and effective flow of information on the evolution of the markets.

0.2. Objective of the study

The overall aim of this feasibility study is to analyse the possible introduction of a new security system in the fruit and vegetables sector for PREVENTING and to solve crisis situations. It also shall propose proper measures for implementing the system.

By recognizing that the CMO reform has just been approved, and that significant changes can only be expected after 2013 when an evaluation is scheduled, the proposals that will emerge from this study shall be carefully classified as taken by two different perspectives: those changes to the existing framework that could be adopted by simple integrations to the current Regulations without major budgetary costs before 2013, and those that could be included in proposals for new Regulations, after 2013.

Based on the general theoretical background that is detailed in the next chapter, the study will:

- provide well founded judgments on the theoretical efficiency and effectiveness of the two tools;
suggest various possible implementation mechanisms;

explore the extent to which the intended impacts or the objectives of the scheme might be met, for each of the selected implementation schemes;

analyse the efficiency of implementation, i.e. the way in which resources (financial, administrative, etc) will be used in relation to the expected and or produced effects, both in absolute terms and relative to that of possible alternative tools capable of achieving similar objectives.

The specific objectives of the potential new market monitoring system to be studied are the following:

• to improve knowledge of the fruit and vegetables EU market (production, trends, prices);
• to improve knowledge of third countries’ production, exports to the EU and imports from the EU;
• to achieve a better overall market balance, by allowing adaptation of the production to the demand conditions, by providing information on:
• the evolution of EU fruit and vegetable consumption and of the overall demand, both domestic and from exports;
• sanitary and phytosanitary (SPS) barriers in third countries (obstacles to EU exports);
• to permit higher stability of prices;
• to support other existing instruments, such as national or regional market monitoring centres.

The specific objectives of the possible new security fund to be studied are the following:

• to provide risk management capacity to fruit and vegetable producers, especially for systemic and sizeable risks, which, if not properly managed, could be conducive to a crisis;
• to do so by guaranteeing control of distortive phenomena due to moral hazard of free riding behaviour by F&V producers;
• to avoid creating incentives towards activities that may slow down reaction to market evolution or to prevent needed structural adjustment;
• to ensure an efficient use of public resources eventually devoted to supporting the fund.

Among the criteria for assessing the merits of the analysed tools, the following factors will be considered:

• their contribution to product quality improvement and sound environmental landscape management;
• their contribution to the market orientation of the producers;
• their compatibility with WTO constraints;
• their financial sustainability, management cost, balance between control and corresponding administrative costs;
• their contribution to the competitiveness of the EU F&V sector.

The study will also analyse all the existing measures and tools related to prevention and crisis management, both in the European Union and in third countries, similar and apart from market monitoring centres and security fund.

0.3. Organisation of the study

As requested in the Terms of Reference (TOR), the study has been carried out in three main stages, consisting on:

• a preliminary study – an inventory and analysis of existing tools and proposals for measures intended to increase the ability of the F&V sector to prevent crises and manage risks. The results are presented in this report as Part I;
• a feasibility study – the proposal and ex ante analysis of a possible new security system, comprised of a market monitoring system and of security funds, whose result are reported as Part II of the study, and
• an implementation study - analysis of the implementation measures needed for the new system, which will be included as Part III of the report.
Part I
Preliminary Study
1. Introduction: a few theoretical considerations on crisis and risk management in the F&V sector

This study is concerned with the introduction, at the EU level, of a comprehensive system for crises prevention and risk management in the F&V sector.

One of the motivations for the launching of this study is the commonly shared perception that crises situation occur more frequently in the F&V market than in other sectors of EU agriculture. The reasons for this peculiarity are found, typically, in the perishable nature of the products and in the high susceptibility of both production and demand to weather conditions.

Also, the potential for an effective, fully private, market risk management by F&V producers is, at least in part of the European Union, strongly limited by the low degree of production coordination, which puts producers in a weaker contractual position along the value chain against the increasing concentration and aggressive marketing and procurement strategies of the Organized Large Retail sector, a phenomenon that is not unique to the EU (Sexton et al., 2005).

For a long time, the withdrawal system included in the F&V CMO has been intended as the way to assist producers in managing temporary crises due to excess of supply. It is, in fact, well recognized in the traditional economics literature that, given the typical characteristics of the F&V demand in developed countries, the presence on the market of even a small surplus could cause such a drop in the market price that the total revenue would fall.

Of course, if supply could be perfectly controlled by a monopolistic seller, this would not be seen as a problem; the seller might decide to market only up to the point that additional sales would not cause excessive price drops. The production of fruits and vegetables in Europe, however, is generated by a large number of largely uncoordinated producers, which therefore lacked the ability to manage excess surpluses in an effective way. Lacking effective coordination, surplus crises would be exacerbated by the individual incentives to market all of its production when others would decide to withdraw some, incurring in a typical “tragedy of commons” type of coordination failure: too much product gets sold in the market when it would be in the best interests of the producers themselves to sell less.

It is for this reason that the Common Agricultural Policy has attempted at creating incentives for individual producers to withdraw some of their production through the release of compensation in periods of low market price. The mechanism was intended to provide the missing private incentives needed to sustain a sufficient market price level. After almost twenty years of operation, however, the F&V withdrawal system has been strongly questioned for several reasons. First, the in-
crease in coordination among producers, due to the creation and diffusion of market-
ing cooperatives and producers associations (POs), had already eliminated part of the rationale that justified the presence of a publicly provided compensation for the withdrawn product; second, and most importantly, side effects of the system (which induced – in some cases – the creation of structural surpluses) become evident, thus strongly undermining the political acceptance of the system, which was negatively affected by considerations related to the interests of F&V consumers and EU taxpayers.

In 1996, the fruit and vegetables CMO was deeply reformed and the mechanisms on which the withdrawal system was organized strongly reconsidered. This determined a sharp reduction both of the quantities withdrawn and of the related budget expenditures, as we have already detailed in the previous chapter. The spirit of the 1996 reform was consistent with the recognition of the role of POs in potentially conditioning market equilibriums towards their associates’ interests. Several provisions were adopted to increase the incentives for producers to join POs, which become the only entities authorized to directly intervene in the market, deciding not to trade certain quantities of the products supplied by their members.

With the newly approved reform of 2007, the spirit of the 1996 reform is reinforced, and significant steps are taken in the direction of trying to push toward establishment of stronger and more effective POs in the sector. At the same time, however, the possibility of receiving support through the withdrawal system is further reduced, in response to legitimate concerns regarding the political, social and environmental drawbacks of the system. This has increased the concerns of producers regarding their ability to effectively respond to market instability, concerns which have in part been received by the new CMO which now includes new tools for crisis management and prevention, alternative to withdrawals, the effectiveness of which will be revealed in the near future.

The debate on the issue has been intense and many stakeholders have participated in it. One important element of the current debate, is that the landscape in terms of market risk and possibility of crises in the F&V sector seems to have substantially changed compared to the past. While the possibility of market surpluses and their destabilizing effect is still recognized, it is clear today that the term ‘crisis’ refers to a wider spectrum of events and conditions than simply the occasional production surpluses considered in the past.

This broader view on market crises justifies, at the same time, the request from the EC of further studies (such as the present one) and many of the research options that we have adopted and on which we shall elaborate next.

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By referring to the study on “Risk and Crisis Management in Agriculture”\(^8\) for further details, we will briefly turn now to a few fundamental theoretical considerations that we deem necessary to correctly frame the whole analysis.

First, we will examine the possible meanings that have been given to the terms ‘risk’ and ‘crisis’, recognizing that in order to discuss of instruments, it is necessary to understand what is it that is at stake. We shall discover that the term crises have often been used inappropriately to describe normal enterprise risks, such as short term price fluctuations.

Then we shall review the main sources of risk in the fruits and vegetable sector, to the aim of identifying the characters that should guide in the choice of the most appropriate risk management tools. Next, we will draw a summary of the various private risk management tools that can be used in the European F&V context, by devoting a section to the role that marketing cooperatives and producer associations may play in the evolving marketing environment, dominated by Large retailers.

After having discussed of private tools, we shall briefly review the major types of public policies intended to manage risk and to prevent crises, which may prove useful in framing the discussion in the remainder of the report.

### 1.1. What is a market crisis?

The first reflection we deem important is related to the definition of crisis. In recent years, within the policy debate that have been formed in the context of the Common Agricultural Policy, the notions of risk and crises have been often considered together.\(^9\) The reason for bringing the two notions together is probably that new events have occurred recently, conducive of real crises in the food industry and with heavy negative consequences on farmers and breeders, which have called for a broadening of the scope of traditional agricultural risk management.

In this framework, a role for public policies can be identified, both for risk management and for crises prevention or coping. The public may intervene either in supporting private strategies or in ensuring that the needed solidarity from other parts of the society is mobilized. However the two notions of “risk” and “crisis” differ to such an extent that it is difficult to imagine the same policy tool to be equally suited to tackle both, and this needs to be acknowledged when attempting to study possible forms that the public intervention might take. In the economics literature, a tra-

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\(^8\) Cafiero C et al., 2005 “Risk and Crisis Management in Agriculture”. A study requested by the European Parliament’s committee on Agriculture and Rural Development. IP/B/AGRI/ST/2005-30. See:  

ditional distinction (Knight, 1921) used to be made between the two terms ‘risk’ and
‘uncertainty’. The term ‘risk’ was used to indicate situations in which the outcome of
choices is not known at the moment in which the decision is taken, but where it is
possible to associate reliable probability distributions to the uncertain event, while
‘uncertainty’ was used for situations when it were not possible to assess the prob-
ability distribution of the uncertain event. Unfortunately, later the distinction has
been somehow lost in the applied economics literature, on the presumption that
any action taken when facing an uncertain situation could be rationalized as if the
agent would have devised a subjective probability distribution of the uncertain fu-
ture outcomes anyhow, and acted accordingly. Losing the distinction between
risk and uncertainty, however, even if it has facilitated the diffusion of the Ex-
pected Utility framework of analysis among economists, have certainly contrib-
uted to spread a false impression that all uncertain situations are fundamen-
tally alike, and that, for example, everything can be insured against (a com-
mon myth of the insurance industry).

More careful consideration should instead lead to realize that the lack of knowl-
edge of reliable estimate of the probability of a negative event occurring, is one of
the characters that sets a ‘crisis’ apart from other risks. This has been recognized,
for example, by the European Commission (SEC(2005)320), when it is stated that
a crisis arises when “an unforeseen situation occurs that endangers the viability of
agricultural holdings, either at a localised level, across a whole sector of production
or at a wider geographical level.” (emphasis added). As it can be seen, according
to this definition, a crisis is characterized by specific elements, which are not com-
mon to all other relevant economic risks. Crises should be considered those that
share the following properties (Cafiero et al., 2005):

- Are unforeseeable;
- Impose prohibitive recovery costs for the individual agents involved;
- Affect many agents at once.

When all these conditions occur, the public intervention is especially justified and
the importance of prevention is particularly high.

The definition of crisis given by the EC Commission is very close to the other no-
tion of ‘disaster’, which has also permeate the agricultural policy debate, especially
following the Uruguay Round Agreement on Agriculture, when disaster assistance
was included among the legitimate fields for public intervention that are deemed
not to distort trade. Disasters, however do not refer to market conditions, but rather
to external phenomena that are outside the possibility of direct control by the in-
volved agents.

In the debate that has accompanied the reform of the F&V CMO, instead, the term
crisis has been often (albeit not exclusively) related to market conditions, and a
market crisis differs in important ways from disasters. For example, after a market crisis, farm physical assets are not damaged (as it might happen, for example, after a natural disaster such as flood or an earthquake). The farm may, in principle, resume its activity as soon as the causes that brought the crises are ceased, and there is no need to compensate for damaged infrastructures or investments.

This consideration should raise some concern, for example, on the possibility that the rationale which has led to consider disaster assistance a legitimate objective within the WTO rules, might be extended to policy for market crisis risk management.

1.1.1. Structural crises vs. short term market unbalances

The characterization of a market crisis as fundamentally different from a disaster leads also to consider the potential economic impact of market unbalances leading to low producers’ prices. First, in order to qualify as a crisis situation, a low price should be such that not even variable costs of production could be recovered, but also, it should last so long as to compromise the financial viability of the farm holding, something that may occur only if, at the same time, the costs related to structural adjustment (for example linked to the presence of irreversible investment costs that needs to be made) are prohibitive for the individual holding.

In the debate preceding the F&V CMO reform, a distinction has clearly been made between structural (or long term), and occasional (or short-term) crises\(^\text{10}\), and it is rather evident that only the former would qualify as crises in the sense clarified above. It is difficult to think of conditions such that short term or “conjuncture” crises may be such to “endanger the viability of agricultural holdings”.

On the other hand, the possibility of structural crises exist. These might be produced by lasting unbalances between supply and demand, which might be due to a combination of: excessive internal production, low domestic and/or international demand, and an increase of the quantity of competitive imports. However, as it has pointed out several times during the debate that has brought to the reform of the F&V CMO, and as it is summarized by the EC Commission document SEC(2007)75, it is clear that long term market crises should be dealt with through policy measures intended to help farms’ ability to structurally adjust to the changes in demand. Other measures, intended to compensate for the temporary falls in revenues, might cause delays in the adjustment process and therefore should be avoided.

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\(^{10}\text{See for example the EC Commission paper on the impact analysis of the proposed reform [SEC(2007)75]}\)
These considerations serve the purpose of highlighting the need to make a fundamental distinction regarding the objective of public policies. These should be classified in two broad sets:

- those intended to assist farmers to develop instruments for the prevention of long term, structural crises, and
- those intended to favour the management of short term income fluctuations due to occasional market unbalances, which is, to a great extent, misleading to characterize as ‘crises’, and that should be better described within the realm of market risk management.

The fruit industry is particularly sensitive to structural crises, since the relevant share of sunk costs on the total production costs, due to the high investment in the perennial crops, reduces the ability of farms to adapt promptly to such crises. On the other side, the vegetable industry is more sensitive to short term crises both for the highly perishable nature of the products and for the larger incidence of transportation cost on the consumer price.

### 1.1.2. Sources of short-term income variability in the fruit and vegetable sector

Short term market unbalances, implying either temporary increases in the supply, temporary falls in the demand or a combination both, might be due to various causes. Recognizing which is the cause is important, to the extent that it would make a difference in terms of which is the most suited tool for managing the associated risk.

The most common source of shocks in the fruits and vegetables sector is probably weather variability. It is not uncommon that a few days of unexpected cold or unexpected warm weather conditions might determine a delay or an anticipation of ripening and harvest. Also, the same short term variations in the weather may strongly condition the demand for seasonal productions, such are most fresh vegetables and fruits. Despite the efforts that producers might devote to planning their production in time to exploit the best market opportunities, such shocks may determine market unbalances that could be very onerous to producers, given the typical high responsiveness of the price to the quantity being sold, and the perishable nature of most products, which must be sold very soon once harvested, with very limited possibility of storage or of geographic arbitrage by shifting the products to different markets.

Even for those fruit products that can be stored, such as apples and pears, storage usually implies high storage costs and detectable quality deterioration. This means that at the end of the season, the release of stocks on the market, needed to make room for the incoming product of the new season, determine sharper sea-
sonal prices declines than for other storable products such as grains,\textsuperscript{11} and this is one other source of short term market disturbance.

**Imports** can also be cause of market disturbances. Apart from the just mentioned phenomenon linked to the release on the market of stored product, problems may arise locally on the markets where imports are released, when imports are not effectively coordinated with domestic production.\textsuperscript{12}

All these shocks, however, should be considered, in principle, a typical and unavoidable feature of the sector, to which fruit and vegetable producers ought to be long adapted. And in facts, several strategies for dealing with the typical fluctuations of prices have been devised (see below). Also, in an ideal market where producers and consumers would trade under reasonably competitive conditions, this would not be a concern: seen from the perspective of the producers, the shocks could be either on the positive (low production but high price) or on the negative side (excess production, low prices), and on average they might balance over the year.

What makes the situation less favourable to producers, however, is that the marketing of fresh fruits and vegetables occurs under conditions which are often very far from the abstract ideal of a textbook competitive market model. First, the distribution of fresh fruits and vegetables is traditionally subject to concentration through intermediaries, which might have some scope for adjusting their margins to changing market conditions. One commonly raised concern by producers is that the presence of the intermediaries drives a wedge between retail price and farm gate price that causes an asymmetric transmission of the demand variations to the producers, in the sense that producer prices follow closely occasional drops in the retail prices, while do not do so at the same speed in case of occasional retail price spikes.

The argument has some merit for the conditions of long supply chains, where the destination markets are far from the production sites. In these cases, also, other shocks that are not directly related to either demand or production conditions might have serious consequences for the net price received by producers (the case of the recent transport strikes in France and in Italy in 2007 is one neat example).

One other potentially very relevant source of market unbalance might be represented by **safety concerns of consumers**. Episodes such as the Chernobyl dis-

\textsuperscript{11} The problem is exacerbated by the fact that some of the products that are imported from Southern Hemisphere Countries are kept in stock and released on the market at the beginning of the domestic production season.

\textsuperscript{12} An exemplary case is that of tomatoes imported from Morocco, which used to be mostly traded on one market in France, which therefore was much more unstable than other markets. Steps taken by the EU Commission in involving Moroccan exporters in the discussion conducted by the tomato forecast working groups appears to have been very effective in reducing the incidence of the problem.
aster of 1986, or the more recent concern on the possible presence of dioxin residue due to illegal burning of waste in Campania have, to different extents, made clear how susceptible is the demand for fruits and vegetables to this kind of problems. The economic damages of such crises are often amplified by the ban of imports issued by trading partner that further reduces the market outlet for the product.

1.2. Available private tools for risk management

Although their effects can be particularly burdensome, as we pointed out, price fluctuations are one of the risks that F&V producing farmers must consider when planning their activity, and there are good reason to believe that they have been doing so for long time, given the fact that, as opposed to other sectors, they have been excluded from the benefits of CAP minimum guaranteed prices in the past. The result is that they have developed several private risk management tools, whose presence must be carefully considered when discussing of possible public intervention, to avoid that public intervention might end up crowding out possible private tools, usually at a cost of large efficiency losses.

The actions taken by a farmer to face market crises, as any other risk management activity, can be classified in one of two broad categories: **ex-ante actions**, that is, taken before the risky event manifests, and **ex-post, or coping actions**, taken once the damaging event has occurred. Since the two kind of actions are not mutually exclusive, a risk management strategy may be based on a mix of the two kind of actions. The combination of ex-ante and ex-post actions depends on the nature of the risky event, with ex-ante actions preferred when the event is potentially very dangerous and relatively highly probable and if ex-post strategies are less practicable or too costly. Traditionally, the ex-ante actions can be further classified in three broad categories: risk-avoidance, risk-reduction and risk-transferring, all of which imply a cost in terms of the expected returns, that is, an either implicit or explicit “risk premium” that must be paid in order to avoid, reduce or transfer the risk.

**Risk avoidance**

Avoidance is based on actions that eliminate, or at least strongly reduce the exposure to the particular risky event. The discussion we made related to structural crises, for example, suggests that, in case the probability of a lower price becomes very high, as it is the case in a market with a declining demand or with a structural surplus, the best strategy would be that of **diversifying the production away**

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13 The outbreaks of Bovine Spongiform Encephalitis (BSE) and of Avian Influenza, and the consequences that these episodes have had in the sectors of beef and poultry, are other episodes which have certainly contributed to alert agricultural policy makers towards the risk of demand driven market crises.
from that particular product. This can be done either by changing species (i.e., shifting from peaches to kiwi production) or by varietal innovation, by introducing new cultivars with different characteristics.

More interesting to the purpose of the present discussion and of the content of the study are actions intended to reduce or transfer risk, to which we focus next, keeping the focus on market risk and on the conditions prevailing in the F&V sector.

Risk reduction activities

There exist a wide spectrum of risk reduction actions which are common among F&V producers. The incidence of one particular market risk can be reduced through diversification of the income generating activities. The strategy may involve farm production only (that is, undertaking more than one production activities whose returns are not correlated), or – more generally – be extended to the whole set of income generating activities in which the farm family is engaged (a common feature of small farms in the South of Europe. See Cioffi and Sorrentino, 1997).

In many cases, production diversification is the rule rather than the exception for fruits and vegetables producers, which often opt for cultivating several varieties of the same product that can be harvested and marketed in different periods, or decide to produce several vegetables crops during the year. Furthermore, the recent inclusion of the land devoted to fruit and vegetables into the basis eligible for the single payment scheme has removed one possible obstacle to production diversification, so that F&V producers might be expected to engage in further diversification. The implicit risk premium associated with diversification of the activities within the portfolio of products of a farm is given by the foregone benefits from specialization, which may be quite high for production where there are relevant fixed cost due, for example, to specialized mechanization.

Nowadays it is also rather common that members of fruit and vegetable farm households are involved in off-farm activities, which can also be seen as a form of income risk management. Even when the choice of engaging on off farm activities is not mandated by risk management objectives, it has nevertheless relevant consequences on the overall incidence that market risk has on the viability of the farm, a point which is often overlooked in the discussions on the cost of market risk exposure.

Another kind of diversification is the product diversification. The attempts at creating customer loyalty through branding, geographical indication, social and environmental labelling and so on, are all actions that often lead to the reduction of market risk. Of course, the possibility of exploiting these actions, which are principally aimed at avoiding competition, depends crucially on the characters of the particular supply chain, something we shall return at some length below.
Finally, also marketing channel diversification, that is exploitation of more than one market outlet, can contribute to reduce the overall market risk.

1.2.1. Risk transferring activities

Among the ex-ante actions for the management of price crisis risk, risk transferring is probably the first one which would come to one’s mind, and most would identify it with the term “insurance”. Unfortunately, the terminology maybe somehow confusing, given that the literature on risk transfer has developed quite independently in different fields. In fact, there are instead three somehow different mechanisms through which a producer can transfer price risk, to which we shall refer to as: insurance, hedging and contracting.

By insurance we mean the traditional risk transfer mechanisms that occurs through a contract where one party (the insured) accepts to pay a price (the “premium”) in exchange for the promise of receiving a compensation (the “indemnity”) if a predetermined event (the “risk” or “peril”) occurs. The contract then will specify clauses that indicate the conditions that determine the payment of the indemnity (the “trigger”) and its quantification (the procedures for “loss adjustment”).

Insurance have a long tradition in agriculture, where it has been used to protect crop yields against a limited number of perils (traditionally, hail, fire and few others), which have the characteristics of being: a) easily identifiable; b) idiosyncratic\(^{14}\); c) relatively rare, and d) when they occur the damage they cause is significant. Under these conditions, an insurance “pool” may form and effectively share the risk among the participants, either through a mutual agreement or through the arbitrage of an insurance company.

When even only one of these conditions is not satisfied, traditional insurance may become problematic, and the premium to pay needed to transfer the risk may become higher than the benefits associated with the risk transfer. With reference to market risk, the main problem with insurance is that these risks would be typically systemic, which makes it clear that a market risk insurance pool cannot effectively form only within a group of producers of the same product, something we will return at length during this study.

Despite several recent attempts at developing forms of revenue insurance (where the contract guarantees the combination of yield and price) in agriculture, their sustainability is still highly dependent on strong public support. On the other hand, when possible, price risk is best managed through hedging (see below).

\(^{14}\) Idiosyncratic here refers to the property according to which the probability of the event hitting one of the insured is independent from that of hitting any other. In other words, the insured events must be statistically independent. When the insured against events are correlated, the risk is termed systemic.
Hedging is based on the use of financial derivative products such as futures contracts and options, whose underlying asset is either the product’s price itself, or something highly correlated with the price. Hedging is a long practiced and common feature of commodity markets, where futures contracts and other derivatives can be easily written and traded on commodity exchanges, thanks to the possibility of writing contracts based on standardized products.

There exists an extensive literature on the use of derivatives to hedge agricultural price risk, which is not the case to review here. The main point that is worth to emphasize here is that the possibility of hedging, and therefore of the development of the relative instruments, depends on the existence of two opposite stands on the same risky position. For example, the “risk” for a producer that the price of a certain commodity would drop is often the “hope” of the future buyer of that commodity. There is thus a natural space for bargaining over the transfer of at least part of the risk from one party to the other. What characterizes hedging operations from other form of contracting (see below) is that, through hedging operations, the producers who is interested in transferring its risk does not directly interact with the party who accept to bear it. The transaction is mediated by the arbitraging function of a third party (traditionally the Clearing House of an organized exchange) which takes on the responsibility for contract enforcement.

In the context of agricultural productions, there are some characteristics that need to be respected in order to imagine an effective use of hedging through standardized derivatives contracts to transfer price risk, and most fruits and vegetables do not have such characteristics. Most relevant among the elements that limit the potential for hedging through futures trade for fruits and vegetables are the perishability and the difficulties in defining quality standards for the marketed products. The impossibility to store and transfer the product at low costs makes the development of an active futures trade for these products very unlikely, other than a few exceptions such as potato. For some products, such as oranges, some scope for price risk hedging might exists through trade of futures on related processed products, such as orange juice, to the extent that prices of fresh and processed product are highly correlated.

For all other fruits and vegetables products, the possibility of price risk transferring is given by other forms of marketing contracts (see below).

Contracting refers to any bilateral agreement among two interested parties who are directly involved in a transaction. There are myriads of contractual forms, yet it may be fair to say that virtually all of them exist because of the need to control for some risk, mostly due to the presence of private, asymmetric information that pre-

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15 Although, in 2006, the news spread that the Indian Multi Commodity Exchange (MCX) would offer futures contracts on pineapple and tomato, to our knowledge such contracts have never been actually traded. The only horticultural crop for which an active futures trade exists are potatoes.
vents the development of efficient and liquid markets for contingent contracts such as futures or insurance.

The transfer of risk by means of contractual arrangements between firms operating in different stages of the value chain has become an important risk management tool in many agricultural industries, included fruits and vegetables.

Traditional contracts of this kind includes forward contracts, where the producers agree to deliver the production at a future date at a specified price, independent of what the spot price will be at the harvest time. Sometimes the contract is used to transfer also part of the yield risk, when the contract fixes the total revenue to be paid to the farmer by the buyer (usually a trader) well ahead of harvest time. In this way, the buyers bears both the price risk and the residual yield risk from the moment the contract is signed.

In recent years, the EU F&V industry has witnessed deep changes in the organization of the marketing chains. Large retailers have increased considerably their market share in the sales of F&V. The procurement strategies of these companies are often driven by the need to assure a large and continuous flow of product to supply the stores at the lowest possible cost. Such strategies have determined the concentration of F&V procurement in few centres, fed by few suppliers linked to the retailers by mean of contractual relationships.

These contracts may vary in their specific content, which may be very difficult to know given that they are usually strictly private agreements, but it is easily imaginable that the specific contractual clauses might strongly condition the kind of market risk that a producer who elects to enter in such contracts would be exposed to.

1.2.2. Risk coping activities and the rationale for income stabilisation funds

Even if a producer does nothing to prevent or reduce risk exposure, there still is the possibility of coping with the consequences of the damaging event after its occurrence.

One immediate possibility is that of making up for the lost income by using own savings or by accessing credit in order to maintain a stable consumption patterns. The use of own savings to smooth consumption in face of variable incomes is sometime referred to as “self-insurance”, given that the principle of accumulating precautionary reserves to be used in case of emergency by savings smaller amounts in good years is akin to paying an insurance premium to buy the security of being able to face the unexpected bad year.

The possibility of self insuring through credit or savings is another point that too often gets overlooked when discussing of the merits of possible risk management
and income stabilization policies. The importance of the existence of such an option is that it sets an upper bound to the possible cost of risk exposure. In facts, the maximum yearly amount that a producer might ever be willing to pay to avoid an occasional drop in his income, is given by the average annual quota of the financial cost needed to repay a debt incurred by borrowing an amount equivalent to the damage suffered, over a period equivalent to the expected interval between two consecutive negative events.\(^{16}\) Unless the expected damage is very serious, or there exist high transaction costs in accessing the credit market, this may well be the least cost option for income risk management, the more so the lower the interest rates.

The principle of self insurance is what inspires also the idea of income stabilization funds, something to which we shall return at length in the study.

### 1.2.3. Supply chains, the role of producer associations and risk management

The evolution of the organization of F&V supply chains in the recent years has witnessed the concentration of supply on the production side, which has progressed considerably, despite large differences that still exists across Member States and products.

The way in which this has affected the distribution of price risk among the various agents (retailers, processors, trader, producers) is still largely unclear. On one side, the market power of large retailers and their aggressive procurement strategies might, in principle, give them the possibility to transfer a larger share of risk to their supplier. On the other hand, institutions such as marketing cooperatives and producer associations are created precisely to balance the distribution of market power between producers and buyers, and therefore the resulting outcome in terms of contractual norms could be more beneficial to associate producers.

Producer associations and marketing cooperatives have also another advantage, which is independent of the fact that the product is sold through contracts or not. They might provide a price risk management service to their associates, to the extent that they would perform some form of price averaging. Cooperatives normally sell the product of their associates in different times and on different markets, paying the farmer the average price of the product sold. Pooling larger supply, the cooperative may conduct a more profitable marketing activity than any individual member alone, possibly selling on a wider set of outlets and thus obtaining also a diversification of the price risk.

\(^{16}\) For example, if a producer expects to suffer a loss once every ten years, and the prevailing interest rate, comprehensive of all costs is 5%, the maximum insurance premium he might be willing to pay is 12.95% of the expected loss.
One other advantage of a producer association or a marketing cooperative in terms of risk management, relates to the cost associated to risk coping activities (see above). In these cases, temporary revenue losses are absorbed by the financial assets of the farm, or through borrowing, which in turn may require the provision of collateral. Therefore, the potential for risk coping is constrained to a large extent by the assets possessed by the farms. In case of farmers selling through cooperatives, it could be the cooperative itself to provide the risk coping potential for all of its members.  

1.3. Risk related public policy

Apart from private instruments, risk management in agriculture occurs typically in an institutional environment characterized by heavy Government intervention. Many policies end up having relevance for farmers risk management, either because they directly affect farmers’ risk exposure (for example by guaranteeing minimum prices) or because they indirectly influence the ability of farmers to bear their risk (for example by facilitating access to credit, or by complementing their incomes through de-coupled payments).

One first result of this consideration is that it is impossible to correctly assess the merits of various risk management tools without a detailed characterization of the policy environment that surrounds the economic activity.

Most importantly, however, it has been common throughout the World that policy makers have considered income risk management an explicit objective of public policy in agriculture, when it was not already indirectly achieved by various forms of price support and other income subsidization.

Among the risk-related agricultural policies, subsidized crop insurance programs and support to various forms of income stabilization measures are perhaps the most common models, and we shall briefly analyse them, to highlight the relative merits in possibly addressing price risk management.

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17 Two provisions of the new CMO will, in this respect, likely increase the risk management capacity of POs. First, art 8.1 (a) of the Reg (EC) 1182/2007 mandates that Producer Organizations can now contribute with their own funds to the financing of the Operational Programmes, and second, producers are no longer obliged to contribute to the Operational Fund each and every year (as it was mandated by art. 15 or Reg (EC) 2200/96). This means that PO’s own financial reserves, created for example through profits obtained from other activities, might be used to compensate for temporary reductions of specific members contributions, which might be needed to cope with idiosyncratic risks.
1.3.1. Subsidized crop insurance

As already mentioned, insurance has a long tradition in agriculture, longer than, for example, the tradition of government intervention in agriculture. In the late 1930’s, with the creation of the Federal Crop Insurance Corporation, however, the US Government started to see crop insurance as one possible field for intervention, and since then, the possibility has attracted agricultural policy makers in many countries throughout the World.

The fundamental rationale for public intervention stemmed from the recognition that private insurance markets in agriculture are plagued by various problems linked to the presence of asymmetric information (leading to adverse selection), hidden actions (that generate moral hazard) and by the systemic nature of the most important risks. Moreover, the claim has been sometimes made that farmers might have an imperfect perception of the actual riskiness of their activity, and that therefore they buy less than optimal amount of insurance.

All these reasons have led many Governments to intervene in order to promote use of insurance in agriculture. Unfortunately, the main form of public intervention – that of providing a subsidy to the insurance premium paid by farmers – does not address any of the fundamental problems affecting agricultural insurance, and therefore it should come as no surprise that a fair assessment of the various publicly subsidized crop insurance programs that have existed in the World would reveal a result which, from an efficiency point of view, is close to a failure.18

A legitimate question arises then on why some Governments (most notably in the United States, Spain and Italy) not only continue to administer costly programs to subsidize crop insurance, but are actively engaged in attempts at expanding them from the traditional fields of single-peril insurance contracts (where insurance is proven to be feasible even without any public support) to alternative “multi-risk”, “all-risk” and “revenue” insurance?19

What is of relevance for the content of this study, is the need to understand to what extent traditional or new insurance programs might be of interest for public intervention in the F&V sector, and, in particular, if they might be apt to the management of market risk, which is the main focus here, especially in consideration of the fact that “harvest insurance” has been explicitly included among the measures for crises prevention and management entitled to EU financing within the context of POs Operational Programmes.

18 See for example Hazell, Pomareda and Valdes 1990; Hueth and Furtan 1994. Glauber (2004) estimates that for each dollar that is paid to farmers in terms of insurance indemnities, the cost for the US budget is of 3 dollars.

19 As we shall see below, many crop insurance programs that attempt to go beyond the limited cases of hail and fire insurance exist only because of the presence of sizeable public support to the premium which often exceed 50% of the premium (see for example Tab. 2 for Spain and Tab. 5 for Italy).
In the Study, we shall therefore devote particular attention to the topic, attempting at clarifying under what conditions and for which type of risks insurance is a valuable option, deserving of public support.

### 1.3.2. Income stabilization funds

A completely different perspective is taken by the Governments of several Countries in addressing the problem of agricultural risk policy.

Moving from the consideration that what really matters from a welfare point of view is the overall stability of disposable income (from which consumption levels depend), and that many factors contribute to determine the variability of disposable income for farm households, the idea has emerged that, as opposed to product specific programs such as price stabilization or crop insurance, a whole-farm program – based on income-stabilization funds – could have the potential to overcome the disadvantages of many other farm safety-net programs. Prominent among the proponents of such accounts have typically been the Government of Canada, Australia and, to a lesser extent, Japan.

Among the advantages of income stabilization funds, is the fact that they could be applied to a wide variety of farming situations and would not be linked to the production of particular farm commodities, that is, they might be “de-coupled”, a feature that is attractive considering the WTO rules.

Income-stabilization accounts should encourage farmers to manage risk by making deposits to special savings accounts in high-income years and making withdrawals, when needed, in low-income years. The government might provide incentives, such as tax deferrals, matching contributions, interest premiums on the immobilized reserves, information, reliable and spot data, and possibly bearing the risk of default during the implementation years.

Of course, the potential for risk protection from income-stabilization accounts would depend on the reserves accumulated in the individual accounts, which should be kept in a liquid enough form to be easily mobilized in case of necessity.

One problem with individual funds is that many farmers would not have the cash-flow capacity to fully fund their accounts after considering living expenses, taxes, and debt service requirements. This problem could be tackled by considering the possibility that these funds might be managed by cooperatives or associations, thus exploiting the increased risk coping ability of a group of producers that we have discussed above.

Despite the interests that income stabilization accounts based on tax deferrals might have in terms of risk management potential, they remain to a large extent out of the scope of the present study, given that the EU has no competence over fiscal matters.
1.4. Crisis prevention and the need for effective market monitoring

The discussion so far has mainly focused on risk management activities and policy, which, as we have made clear at the very outset, includes tools and policy needed to cope with what have often been termed short term or “conjuncture” crises.

The other objective of this study is to explore possible tools and policy to increase the ability of producers to prevent crises, including those of longer span and of a structural nature.

Prevention requires the development, by the interested party, of forecasting capacity in order to be able to anticipate possible evolution of the market equilibriums and thus to better direct production. Speaking in general terms, the two fundamental inputs in any forecasting device are: knowledge and information. The ability of producers to anticipate market conditions, and thus to prevent possible crisis situations, is therefore directly proportional to the amount of research that is performed and whose results are made available to the interested parties and to the quality and quantity of information on crucial parameters.

As it has been made very clear by the participants to the debate that accompanied the process of F&V CMO reform, one of the most strongly felt limit of the current situation in the sector is the lack of an adequate information flow, and it might be fair to say that one of the more pressing expectation towards the EU services is precisely that of assisting agents by the provision of timely, reliable and rich information.

It is our impression, instead, that less focus has been directed towards the other element of a forecasting system, that of research and knowledge. It is not clear whether this is the result of the opinion that current institutions operating in the sector, at various level, are already capable of providing an adequate level of research and generate sufficient knowledge, or it is in itself the manifestation of the fact that many stakeholder, so to say, lack “the knowledge of how much knowledge is important!”, and this is an issue we shall try and resolve across the lines of this study.

The main theoretical point that can be raised at this stage, is the recognition that both knowledge and information share a strong “public good” character. For their nature, although for subtly different reasons, both knowledge and information generation and diffusion elude the possibility that private agents alone might ever generate a socially optimal amount of them. In the remainder of this study, we shall always keep clear in mind the importance of the role of public policies in this respect.
1.5. Research methods used for the preliminary study

Before entering into the details of the results obtained in the preliminary study, a few words are due on the research methods that we have elected to use.

The preliminary study revolves around an inventory of existing tools and proposals concerning the two broad topics of:

- market information gathering and diffusion, and
- mechanisms for income stabilization,

with a focus on the conditions of the European F&V sector and on the crucial elements that have been highlighted during the long debate that preceded the CMO reform of last November.

Despite the limited focus, the potential area to survey was still very broad. On one hand, analysis needed to be conducted of the existing literature review, including academic research, technical bulletins of public administration, reports from private industries, and so on. On the other, direct information gathering from the many governmental offices and private agents involved in the sector was needed for those data and expert opinions which would have been difficult to extrapolate from published materials.

Considering the available time span, we have been forced to choose research methods that could be usefully applied in this limited amount of time. Probably the major consequence of this, has been the renounce, from the outset, of attempting at surveying all of the involved universes (be it literature, institutions, or private agents), or at using sampling techniques to ensure statistical significance.

Rather, the selection of the sources of information has been guided by the past experience of the involved researchers, who have been repeatedly engaged in research and analysis on the topics of economic analysis of risk management and of the fruit and vegetable sector, and by ad hoc procedures considered particularly useful.

For example, participation of one of our researchers to the 2008 Fruitlogistica fair in Berlin was the occasion for the collection of a extended list of firms and other institutions from which to select the most relevant ones to be contacted for information gathering (see below).

Among the possible information sources for example, given the scope of the analysis, special attention has been given to officers of the European Commission, and a number of missions to various Units of DG-AGRI involved in the economic market analysis have served the purpose of collecting first hand information needed to identify, for example, the most relevant productions and market monitoring tools adopted in the different MS, in addition to acquiring documents needed for
the inventory of proposals and of available data on production, marketing and trade available through the Commission.\(^{20}\)

Also, on February 20\(^{th}\) 2008, we introduced the study to the members of the Management Committee for the Fruits and Vegetables, composed of representatives of the Member States. That was the occasion to gather their willingness to participate in a dedicated survey, administered through the Internet and intended to collect their opinions on a number of issues related to risk and crisis management in the EU F&V sector. Many of the members of the Management committee have kindly agreed to participate and their opinions had been included, where relevant, in the analysis presented here.

More detailed description of the methods used in the survey and analysis of tools and proposals are included in the respective chapters.

In general, we believe the results obtained in the preliminary study to be very informative and useful for the setting up of the following parts of the overall feasibility study.

2. Inventory and analysis of existing tools and proposals: Security funds and other income stabilisation tools

In this section of the report we present and analyse the major existing income stabilization tools that are either adopted in the Fruit and Vegetable sectors of Countries throughout the World, or that show interesting features that could be reasonably included in income stabilization programs for fruits and vegetables producers.

For ease of exposition, the presentation of the tools is organized by Geographic area, considering in order the EU and the United States (to which an extended treatment is devoted), and other countries (Canada, Australia, India). Then, we will present and discuss the proposals for market risk management in the F&V sector that have been presented in the context of the debate preceding the CMO reform.

2.1. European Union

Farm income stabilization has traditionally been a great concern for European agricultural policy makers. Since the setting up of the Common Agricultural Policy (CAP), income stabilization was achieved mostly indirectly, through various price support mechanisms included in almost all CMOs. With the gradual abandoning of price support that has followed the CAP reform process from Agenda 2000 on, the

\(^{20}\) In this respect, the generous and timely assistance of Mr. Marcin Kwasowski of DG-AGRI, Unit C2, is very gratefully acknowledged.
responsibility for smoothing up income fluctuations is being transferred more and more to farmers or to national policy.\textsuperscript{21}

Traditional fruits and vegetables producers in Europe have been excluded from price support measures that were typical of other CMOs, and therefore they could not benefit from the resulting income stabilization effect. Also, they have been initially excluded by the SPS (something that has changed with the latest reform). For this reason, the only income stabilization effect provided by the CAP for F&V producers was that guaranteed by withdrawals. Especially after the 1996 reform, however, the effectiveness of the system in providing reasonable income security to producers was deemed insufficient, which has led MS Governments to recur to alternative measure to try and compensate F&V farmers for temporary income losses.

Especially in Southern European countries, the income safety net provided by national policies has been traditionally strong, revolving around the functioning of \textbf{Solidarity Funds} and the release of \textbf{subsidies to crop insurance}. Mainly designed to compensate for income fluctuations due to the natural shocks which affect yields, these systems in general, cannot be expected to provide effective protections against income fluctuations due to price instability. Nevertheless, especially for fruit and vegetable producers, they have likely been providing significant income stabilization over the years.

We shall devote special attention to the set of measures available in France, Spain and Italy, with a focus on the properties of the systems that are of interest for fruits and vegetable producers.

\subsection*{2.1.1. France}

In France, farm income protection against fluctuations due to natural causes has been long provided by a combination of insurance and publicly provided direct ex-post compensation by the Government. Recognizing that private insurance alone might not suffice to guarantee adequate protection, in 1964 the \textit{Fonds National de Garantie des Calamités Agricoles} (FNGCA) was created to provide protection against non insurable natural disasters.

Contrary to what is common in other countries (most notably Spain and Italy) insurance in agriculture has never been heavily subsidized in France. Despite this, insurance against such perils as hail and fire is rather common. A public aid mechanism to hail insurance has been applied since 1994, and \textit{only for producers of fruit and leaf vegetables}. The aids consist of partial subsidies to the premiums charged by the insurers (the aid is directly paid to the insurance companies

\footnote{The introduction of the Single Payment Scheme (SPS), however, by providing farmers with a fixed amount, contributes to stabilize total farm income.}
on presentation of prove that the tariffs they have applied to their clients have been reduced). The subsidy is paid partly by the FNGCA and part by local authorities. In total, the subsidy rate can vary from a minimum of 7.5% (in the event of the local authority not taking part) to some 30% (in case of a young farmer, with the local authority participating with more than 10%).

From 1994 through 2001, the budget cost of the aid borne by the Government has evolved as reported in the chart of Fig. 2.

**Fig. 2.** Public expenditure in France for subsidies to the hail insurance for fruit and vegetable (excluding local authorities) (Million euro, current values)

Crop insurance in France seems to have been efficiently managed, as it can be appreciated from the data included in Tab. 1.

**Tab. 1.** Economic performance of France crop insurance (monetary data in million euro)

<table>
<thead>
<tr>
<th>Year</th>
<th>Insured Value</th>
<th>Premiums Paid</th>
<th>indemnities</th>
<th>Loss Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>8.581</td>
<td>178</td>
<td>169</td>
<td>0.82</td>
</tr>
<tr>
<td>1999</td>
<td>8.136</td>
<td>169</td>
<td>91</td>
<td>0.54</td>
</tr>
<tr>
<td>2000</td>
<td>7.248</td>
<td>143</td>
<td>123</td>
<td>0.86</td>
</tr>
<tr>
<td>2001</td>
<td>7.320</td>
<td>146</td>
<td>81</td>
<td>0.55</td>
</tr>
</tbody>
</table>

**Source: Boyer, 2002 page 9**

From 2002, the subsidies have been increased to a range of 25%-50% only for new combined policies against hail and frost in the vineyards, and to 10%-50% for multi risk coverage of field crops. In any event, the total subsidy is capped at 50% as per the guidance of the EU Commission. In 2003, it was estimated that the public expenditure in France to subsidize crop insurance was of about 10 million euro (Boyer 2003).
More relevant seems to have been the role played by the ex-post compensations paid by the FNGCA, although these compensations have covered mostly the damages due to two events: drought and frost (these two calamities absorbed 75% of the total compensations paid.)

In the early 2000s, the French system of farm income protection went through an intense process of reflections and debate, which ended up with the release in 2003 of the Rappórt Babusiaux (http://www.sante.gouv.fr/htm/actu/babusiaux/sommaire.htm), which directed the reform of the system towards a three-pronged system based on:

1. Individual precautionary savings by farmers, which may also allow the cover of other short term hazards of limited scope, possibly encouraged through a specific tax regime.

2. Insurance, limited to certain damages to crops and to certain health hazards to livestock. Subsidy to these products should be directed to the aim of speed up their development and to allow access to a level of risk mutualisation sufficient to produce an actuarial break-even.

3. Public indemnity for all other risks that may not be guaranteed by the insurance policies other than through a high (more than 15%) and long term subsidy regime.

The principle inspiring the idea of precautionary savings is rather simple: part of the income earned in good years should be saved to be used in bad years. According to Boyer (2002), it have had a limited impact on the risk management ability of farmers because of the financial and fiscal conditions under which French farmers operate. The attractiveness of alternative financial products, less liquid and non related to the agricultural activity has diverted the financial reserves that could have been invested in the farm-income protection precautionary accounts.

To promote a wider use of precautionary savings as an income risk management tool, the Finance Law of 2002 set up a fiscal regime which affects the portion of farming income which is dedicated to this type of savings and equates it to an older regime which was applied to the portion of income affected to investments. The law established that the farmers may deduct each year a portion of their taxable profit on condition that it will be affected to a professional savings account destined to be used in the event of natural, economic or family hazards.

**2.1.2. Spain**

Spain is, among the Members of the European Union, the one where agricultural insurance is more developed. Starting from 1978, when Law n. 87 defined the conditions that set up a system of private-public partnership to deliver agricultural insurance, there has been a continued effort in trying to making insurance the
only instrument for the protection of farm incomes against fluctuations due to adverse conditions. To achieve that, the law established that the government would no longer pay compensations for damages that were deemed “insurable”. At the same time, the inspiring principle adopted by the Spanish government was that every damage from natural causes can be insured, unless otherwise proven.

According to this principle, insurance against any possibly damaging event can be designed and started to be delivered on an experimental basis, until sufficient financial data accumulates that allows the extension to the policy to a wider market.

The private-public partnership is based on the existence of a consortium formed by about sixty private insurance companies, which delegates a single company, Agroseguro S.A. (www.agroseguro.es), the responsibility to deliver all agricultural risk policies, and of a public entity, ENESA (enesa.mapa.es), that contributes to provide assistance to the crop insurance sector by means of:

- Financial support in terms of subsidies which amount at about 60% of the premiums cost (see below);
- Technical and administrative assistance, through the activity of the Ministry of Agriculture, which annually sets reference parameters for prices and yields to be used to write the policies, and, more generally, acts as intermediary to settle possible disputes between insurers and farmers;
- Direct participation in the sharing of risk, through the CCS (Consorcio de Compensación de Seguros - www.consorseguros.es) which acts as public reinsurer.

At the beginning, policies would cover single perils for a limited number of the major crops (hail and fire for cereals and frost for citruses). Over time, the system has developed (see Tab. 2 and Fig. 3) and now the range of productions and perils covered has increased considerably (see Fig. 4) to cover virtually all possible crops, although many of the policies are still classified as "experimental".
Correspondingly, also the coverage in terms of the value of insured production of the total potentially insured has increased, although the diffusion vary considerably depending on the production sector (Tab. 3). The coverage is especially low for potato, dried fruits, industrial crops and olives. Also, if we consider that insurance is intended to be the only mechanism for damage compensation, the coverage must be considered relatively low also for tomato (31.51% of insurable production) and other vegetables (21.77%) among the sector on which we are more concerned in this study.
Based on the data reported by Agroseguro S.A., the actuarial performance of the insurance system could be considered sound, as witnessed by the average loss ratio\textsuperscript{22} very close to unity (98.56\%) over the period 1980-2006.\textsuperscript{23} However, the aggregate value hides significant differences in performance across sectors, with loss ratios ranging from 37.67\% for cattle insurance, to 208.05\% for drought insurance on pastures. This implies a redistribution of financial resources across sectors, with the citrus fruits and wine grape sectors (which show loss ratios over the 27 year period of about 77\% each) implicitly financing the “all-risk and yield insurance” on herbaceous crops, which accounted for the highest amount of claims and a very negative performance (loss ratio of almost 157\% over the 27 years).

\textsuperscript{22} The loss ratio expresses total indemnities paid as a percentage of total premiums collected. A ratio close to one hundred percent indicates viability of the insurance pool, in the sense that the premiums collected are sufficient to provide for the required indemnities. A value lower than 100\% indicates that the insurer has made a profit, whereas a value larger than 100\% represents a loss for the insurer.

\textsuperscript{23} Notice that this values of loss ratio are calculated by considering the total premium received by Agroseguro (which includes the subsidy of about 60\% paid by ENESA and the autonomous administrations), net of the payment of reinsurance premiums by Agroseguro to the Consorcio de Compensacion, which amounted to 12.05\% in 2006 of the total receipts. The figures shows that, without public subsidy, the system would have not been viable.
Fig. 4. Insurable products in the Spanish system
(from Agroseguro: Spain, the multiperil crop insurance in figures, 2006)

### 10. Insurable Production in 2006

<table>
<thead>
<tr>
<th>Damages insurance</th>
<th>Integral insurance</th>
<th>Cattle insurance</th>
<th>Yield insurance</th>
<th>Forestry insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Rice</td>
<td>- Lanzarote island onion</td>
<td>- Drought on pasture land</td>
<td>- Almond</td>
<td>- Forest fires on</td>
</tr>
<tr>
<td>- Winter cereals</td>
<td>- Non-irrigated winter cereals</td>
<td>- Bovine spongiform encephalopathy</td>
<td>- Extensive herbaceous crops</td>
<td>farming land</td>
</tr>
<tr>
<td>- Spring cereals</td>
<td>- Non-irrigated pulses</td>
<td>- Expenses arising from the incineration of dead</td>
<td>- Olive</td>
<td></td>
</tr>
<tr>
<td>- Pulses</td>
<td>- Wine grape</td>
<td>animals (bovine)</td>
<td>- Non-irrigated sugar beet</td>
<td></td>
</tr>
<tr>
<td>- Extensive multiperil herbaceous</td>
<td>- Eating grape</td>
<td>- Sheep and goats</td>
<td>- Wine grape</td>
<td></td>
</tr>
<tr>
<td>- Straw</td>
<td></td>
<td>- Horses and select race horses</td>
<td>- Vineyard</td>
<td></td>
</tr>
<tr>
<td>- Cotton</td>
<td></td>
<td>- Poultry fattening</td>
<td>- Gilthead bream</td>
<td></td>
</tr>
<tr>
<td>- Rapeseed</td>
<td></td>
<td>- Poultry layer farms</td>
<td>- Sea bass</td>
<td></td>
</tr>
<tr>
<td>- Sugar beet</td>
<td></td>
<td>- Drought and fire in apiculture</td>
<td>- Turbot</td>
<td></td>
</tr>
<tr>
<td>- Sunflower</td>
<td></td>
<td>- Cattle:</td>
<td>- Musel</td>
<td></td>
</tr>
<tr>
<td>- Hops</td>
<td></td>
<td>- Factory farming (young animals)</td>
<td>- Trout farms</td>
<td></td>
</tr>
<tr>
<td>- Tobacco</td>
<td></td>
<td>- High value study</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Chord</td>
<td></td>
<td>- Breeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Artichoke</td>
<td></td>
<td>- Fighting bulls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Garlic</td>
<td></td>
<td>- Bovine meat factory farms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Aubergine</td>
<td></td>
<td>- Marine cultures:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Onion</td>
<td></td>
<td>- Gilthead bream</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cauliflower</td>
<td></td>
<td>- Sea bass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Broccoli</td>
<td></td>
<td>- Turbot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Spinach</td>
<td></td>
<td>- Musel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Asturian faba beans</td>
<td></td>
<td>- Trout farms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Strawberry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Strawberry in Cadiz, Huelva and Sevilla</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Green pea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Green bean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Lettuce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Melon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Multiperil vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Potatoes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Potatoes in Canary Islands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Pepper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Watermelon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Winter tomato</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Tomato</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Tomato in Canary Islands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Carrot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Protected crops</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Combined general tariff and exceptional damages (for</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- more than 70 remaining, products not included in this</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>list)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Avocado</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Hazelnut</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Apricot, plum, apple, peach and pear (combined and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>farms)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Khaki</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cherry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cherry in Cáceres (combined and farms)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Citrus fruits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Kiwi</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Agroseguro S.A., 2006
<table>
<thead>
<tr>
<th>Category</th>
<th>Insurable production (tonnes)</th>
<th>Insured production (tonnes)</th>
<th>2006 (%)</th>
<th>2005 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>winter cereals (1)</td>
<td>15 089 800.00</td>
<td>12 012 501.00</td>
<td>79.61%</td>
<td>81.14%</td>
</tr>
<tr>
<td>citrus fruits</td>
<td>6 446 100.00</td>
<td>3 004 148.00</td>
<td>46.60%</td>
<td>41.26%</td>
</tr>
<tr>
<td>crops for industry (2)</td>
<td>6 125 811.00</td>
<td>467 540.00</td>
<td>7.63%</td>
<td>10.49%</td>
</tr>
<tr>
<td>fruits (3)</td>
<td>2 808 000.00</td>
<td>2 143 020.00</td>
<td>76.32%</td>
<td>76.77%</td>
</tr>
<tr>
<td>dried fruits (4)</td>
<td>251 279.00</td>
<td>11 780.00</td>
<td>4.69%</td>
<td>5.58%</td>
</tr>
<tr>
<td>olive</td>
<td>5 530 500.00</td>
<td>518 295.00</td>
<td>9.37%</td>
<td>12.52%</td>
</tr>
<tr>
<td>other fruits (5)</td>
<td>249 927.00</td>
<td>105 441.00</td>
<td>42.19%</td>
<td>37.34%</td>
</tr>
<tr>
<td>potato</td>
<td>2 664 955.00</td>
<td>121 710.00</td>
<td>4.57%</td>
<td>3.80%</td>
</tr>
<tr>
<td>banana</td>
<td>362 200.00</td>
<td>362 200.00</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>rest herbaceous (6)</td>
<td>5 232 700.00</td>
<td>1 487 324.00</td>
<td>28.42%</td>
<td>35.88%</td>
</tr>
<tr>
<td>rest vegetable (7)</td>
<td>7 167 130.00</td>
<td>1 560 540.00</td>
<td>21.77%</td>
<td>19.96%</td>
</tr>
</tbody>
</table>
In 2006, the latest year for which data are available, the performance of the coverage sold to F&V POs has been particularly negative, claiming € 4.9 million for indemnities, in face of € 1.9 million of net premium.

Despite this negative performance of the system, if considered from an actuarial point of view, the program is expanding, implying an increased drainage of public resources devoted to the assistance of farmers against the damages from natural causes. Although there have been attempts at experimenting on revenue insurance policies, which would include a price coverage component, the system is still oriented mainly to cover yield insurance, and therefore it leaves farmers still fully exposed to price and market risk that do not depend on natural causes.

### 2.1.3. Italy

Public intervention in agricultural risk management in Italy has a long tradition. The *Fondo di Solidarietà Nazionale in Agricoltura* (FSN) was instituted in 1974 with the aim of providing farmers with the means to effectively manage their production risk. The system has evolved over the years with numerous reforms until recently, when Italy has received the Community guidelines for state aid in the agricultural sector concerning compensation for damages and insurance premium subsidy, with the issue in 2004 of the Legislative Decree n° 102 on the 29th of March. The Decree defines new operational rules for the FSN and disciplines on financial tools for risk management and capitalisation incentives in favour of agricultural firms.

The Italian FSN is composed of two different supply services: financing of insurance policy and ex-post payments, although this general principle is subject to many exceptions that will be described in the following paragraphs.
Ex-post compensation

The Law instituting the FSN states that, in case an exceptional events occur, farmers are entitled to a compensation for the damages suffered. The discipline of the compensation aid has not changed much over time. In order to activate the compensation, the status of exceptional event needs to be official recognized by the Central Government. To this aim, when an adverse event occurs (most commonly drought, flood and late frost) the involved regional Governments file a request to the Ministry of Agriculture who, after assessment of the actual extent of damages, issues the decree which entitled farmers to ask for compensation.

Compensations are then paid based on various criteria that are determined by the Ministry of Agriculture, mostly depending on the availability of funds, rather than on the actual extent of damages. As a matter of fact, over the years there has been a rather weak correlation between actual losses and compensation paid (Tab. 4). Moreover compensations are usually paid several years after the occurrence of the damaging events. These drawbacks, coupled with the unpredictability of the budget cost due to ex-post compensation, have led to several attempts at shifting the bulk of the interventions of the FSN toward subsidy to crop insurance.

Tab. 4. Comparison between damage evaluation by Regions and actual public expenditure for compensation aid in Italy (2002-2006)

<table>
<thead>
<tr>
<th>Year</th>
<th>Assessment of damages according to the Regional Administrations (A) (Mio €)</th>
<th>Compensation aid paid (B) (Mio €)</th>
<th>Ratio (B/A) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1208</td>
<td>204</td>
<td>16.89</td>
</tr>
<tr>
<td>2003</td>
<td>1380</td>
<td>127</td>
<td>9.20</td>
</tr>
<tr>
<td>2004</td>
<td>-</td>
<td>100</td>
<td>n.a.</td>
</tr>
<tr>
<td>2005</td>
<td>947</td>
<td>100</td>
<td>10.56</td>
</tr>
<tr>
<td>2006</td>
<td>659</td>
<td>50</td>
<td>7.59</td>
</tr>
<tr>
<td>Total</td>
<td>4194</td>
<td>581</td>
<td>13.85</td>
</tr>
</tbody>
</table>

Source: own elaboration on data of the Italian Ministry of Agriculture

Subsidised crop insurance

The current status of public involvement in the crop insurance industry in Italy is regulated by the Legislative Decree n° 102 of 2004, with implementation rules set forth by several Ministerial decrees.

The main features of the system are:

- Every year, an Annual Insurance Plan is issued by the Ministry of Agriculture, determining which crops/damages are deemed insurable. For insurable combination of crop/damage, producers are no longer entitled to ex-post compensation financed by the FSN;
• Insurance policy written for the crop/damage included in the Annual Insurance Plan are entitled to a subsidy of the premiums, according to parameters fixed by the Ministry, and that have accounted, on average, at around 40% of paid premiums in the latest years;

• Starting from 2006, subsidised insurance is allowed also for losses deriving from cattle disease.

• According to Legislative Decree n° 102-2004 the insurance schemes entitled to state subsidy are: single-peril, combined/named perils, and multi-peril policies, depending on whether the insurance contracts covers one or more predetermined perils.

• From last year, State contribution is granted up to a maximum of 80% of the premium only to those policies that cover which pay an indemnity when at least 30% of the average production is damaged.

The actual incidence of State intervention is defined in the annual insurance plan and depends on public budget and on the number of farmers who have subscribed policies. The terms through which public subsidy is granted are subordinated to the actual availability of public resources (Ministerial Decree of 15th of July 2004).

Starting from the 1st of January 2005, farmers are obliged to subscribe crop insurance for the whole area devoted to the crop they want to insure that falls within the borders of the township they belong to. Subscription of policies can be both on an individual and on a collective basis, through Consorzi di Difesa, cooperatives and their operating consortiums.

The current legislation also allows farmers to create mutual funds. They operate in favour of insured crops and structures and for those crops and structures which have been damaged and are not included in the annual insurance plan. The condition for acceding to payments is that loss regards at least 30% of crop production. Aids can consist in different kind of intervention, such as: investment grant, five year graduated payment loans, national insurance contribution, credit operations deferment.

**Diffusion of crop insurance in Italy**

2005 represented the first year of full implementation of reform of the Italian crop insurance system. Available data do not seem to show a significant change in comparison with the situation prevailing in the past: the number of signed contracts has not increased radically. In terms of insured hectares, there has been an increase mainly due to the obligation of insuring the entire cropped area of a given product, rather than to a real expansion of insurance coverage to new producers.
State contribution is constantly increasing in nominal terms, although this is mostly due to the increased share of combined perils policies that benefit from higher public subsidy to premiums (80%). Tariffs show a significant reduction between 2003 and 2004, but in 2005, compared with the previous year, there has not been a reduction maybe because of the increasing subscription of combined/named perils policies. (Tab. 5).

Tab. 5. Evolution of subsidized crop insurance market in Italy (various parameters)

<table>
<thead>
<tr>
<th>Item</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>Var. %</th>
<th>Var. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies n°</td>
<td>213 29</td>
<td>212 23</td>
<td>212 38</td>
<td>211 44</td>
<td>-0.44%</td>
<td>-0.87%</td>
</tr>
<tr>
<td>Insured production .000 t</td>
<td>14 359</td>
<td>14 894</td>
<td>14 833</td>
<td>14 805</td>
<td>-0.19%</td>
<td>3.11%</td>
</tr>
<tr>
<td>Insured trees (*) n°</td>
<td>172 76</td>
<td>184 21</td>
<td>260 58</td>
<td>308 15</td>
<td>18.25%</td>
<td>78.37%</td>
</tr>
<tr>
<td>Insured hectares .000 ha</td>
<td>950</td>
<td>982</td>
<td>1 074</td>
<td>1 125</td>
<td>4.75%</td>
<td>18.42%</td>
</tr>
<tr>
<td>Insured value *</td>
<td>3 334</td>
<td>3 582</td>
<td>3 637</td>
<td>3 521</td>
<td>-3.19%</td>
<td>5.61%</td>
</tr>
<tr>
<td>Premiums (P) .000 €</td>
<td>277 05</td>
<td>267 86</td>
<td>268 16</td>
<td>262 47</td>
<td>-2.12%</td>
<td>-5.26%</td>
</tr>
<tr>
<td>Indemnities (I) .000 €</td>
<td>116 64</td>
<td>177 43</td>
<td>159 77</td>
<td>145 29</td>
<td>-9.06%</td>
<td>24.56%</td>
</tr>
<tr>
<td>Subsidy (S) .000 €</td>
<td>112 00</td>
<td>152 16</td>
<td>176 75</td>
<td>174 87</td>
<td>-1.06%</td>
<td>56.14%</td>
</tr>
<tr>
<td>Ratio S/P %</td>
<td>40.42</td>
<td>56.80</td>
<td>65.90</td>
<td>66.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average tariff (**) %</td>
<td>8.3</td>
<td>7.5</td>
<td>7.4</td>
<td>7.5</td>
<td>1.35%</td>
<td>-9.64%</td>
</tr>
<tr>
<td>I/P</td>
<td>42.1</td>
<td>66.2</td>
<td>59.6</td>
<td>55.4</td>
<td>-7.05%</td>
<td>31.59%</td>
</tr>
</tbody>
</table>

(*) for tree crops
(**) premium/value of insured production
Source: Own calculations on Ismea/Sicuragro data.

What is somehow striking is that, in the latest four years for which data are available, the loss ratio has been well below unity. This means that the amount of premiums paid (inclusive of public subsidy) has been almost double than indemnities received by farmers, which questions the need for such high level of subsidy.

In 2006, insured value has diminished compared to 2005, partly due to the decrease in agricultural prices, but also to the stagnation in the number of subscribed policies. The major change is in the distribution of policies among the different insurance schemes. Namely, hail policies have diminished in favour of an increased number of named perils policies, most of all “wind and hail” policy.

The ratio between insured value of production and crop gross production value is a good indicator of the level of diffusion of crop insurance. This ratio has reached its highest value, during the last five years, in 2005 (14%). According to estimates, during year 2006, insured value was 16% of gross crop production. This percentage does not differ significantly from the previous, most of all if we think that insurance is the only available tool for production risk management in case of adverse weather conditions (Tab. 6).
Tab. 6. Rate of insurance coverage in Italy (2001-2005)

<table>
<thead>
<tr>
<th>Gross crop production value (A)</th>
<th>Mio €</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insured value (B)</td>
<td>Mio €</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratio (B/A)</td>
<td>%</td>
<td>12.0</td>
<td>11.8</td>
<td>12.5</td>
<td>12.6</td>
<td>14.1</td>
</tr>
</tbody>
</table>

Source: Own calculations on Ismea and Istat data.

2.1.4. A few examples of price risk management funds

Although the legislation allows the creation of mutual funds and other income stabilization instruments, the dominating interests of policy makers toward solidarity funds and crop insurance, as we saw, have relegated the experience to very few examples, on which it is even difficult to find and verify data.

Nevertheless, three experiences that have emerged in Spain and in Italy seems to deserve closer scrutiny. These are:

- The Potato compensation fund of the Emilia Romagna Region (Italy)
- The Alava Potato Market Stabilisation Fund, and
- The Tomato Mutual Fund set up in Piedmont (Italy)

Unfortunately, we have not been able to locate any official data on the financial performance and on participation rate of these three experiences in order to provide a solid assessment of their merits.

Informal information collected especially on the Emilia Romagna potato price compensation fund seems to point to the effectiveness of this mechanism for insuring potato producers against possible market crises. However, the system has been in effect for very few years and we do not have official data on the capital flows of the fund to backup that evaluation on its effectiveness.

The tomato mutual fund was an initiative of the Consorzio di Difesa of the Alessandria Province in Italy, who obtained the approval from the Piedmont Regional Government the approval of a mutual insurance fund for damage on tomato productions. The fund was intended to collect contribution from the Region’s tomato producers and to release indemnities to those who would suffer damages from a wide set of causes. (Castelli, 2006).

The proponents of the system, by invoking the current Italian legislation regulating operation of the Fondo di Solidarietà Nazionale in Agricultura (see above), did apply for public subsidy to the member contribution. The Italian law, in fact, states that...

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24 Trentini, L. (2008), personal communication.
mutual funds would be entitled to the same level of contribution of crop insurance. However, the Ministry of Agriculture never accepted the request, arguing that subsidy to the mutual fund would violate the then ruling European guidelines on State aids in agriculture. Although, to our knowledge, the question has never been officially settled, the result of this is that the fund has never become fully operational.

2.1.5. Experiences from other sectors

The CMO of the wine sector (Council Regulation (CE) No 1493/1999 of 17 May 1999), that has been reformed on 19/12/2007 by an agreement of the EU agriculture ministers, provides some examples of intervention for market stabilisation based essentially on two measures: subsidy for private storage and crisis distillation. The first one was aimed at the preservation of market balance, while the latter was aimed at exceptional cases of market disturbance and serious quality problems.

The Communication from the Commission to the Council and the European Parliament - Towards a sustainable European wine sector, that started the CMO reform process highlighted the evaluation of the market stabilisation measures. According the Communication, the market support measures in the form of distillation are not very effective in terms of securing vine growers' income and serve as a permanent outlet sustaining a structural surplus. Crisis distillation, designed to tackle occasional surpluses, is used as a structural measure and now also covers “quality wines”. The private storage aid scheme has become a structural measure... while the wine storage costs should be borne by the industry.

The Communication considered a profound reform of the CMO necessary. It required the “abolishing of market management measures and introducing more forward-looking measures. Market management tools would be abolished from day one, namely:

- support for by-product distillation,
- potable alcohol and dual-purpose grape distillation,
- private storage support,
- must aid in relation with enrichment and for making grape juice.

The crisis distillation measure would be abolished, or replaced by an alternative safety net mechanism using the national envelope.”

The national envelope is a budget assigned to MS to finance measures including certain crisis management measures such as for insurance against natural disasters, for providing basic coverage against income crises, for the administrative costs of setting up a sector-specific mutual fund, and for measures such as green
harvest. Moreover, according the paper, many measures could be transferred within the rural development plans proposed by MS.

The European Parliament resolution on the reform of the common organisation of the market in wine criticizes on several grounds the profound reform scenario put forward by the Commission. It criticizes particularly the shift of financial resources to the second pillar of the CAP. However, the resolution didn’t express opinions on the management of market crises.

Later, under the consultation procedure, on the Commission’s plans to overhaul the rules governing the wine sector the EP formulated an opinion regarding crisis prevention. MEPs propose that, To replace the current distillation crisis aid, which the Commission wishes to abolish, to compensate for measures designed to prevent overproduction, aid may be established in the form of a payment proportionate to the reduction in the quantities of grapes or wine produced.

The position of the EESC does not regard an immediate abolition of intervention measures as feasible. It therefore recommends that within the national envelope in the 2008-2010 phasing-out period, two measures can be offered:

- distillation to produce potable alcohol (formerly Art. 29), and
- private storage support (formerly Art. 24 ff.)

The Committee would argue that crisis distillation as a component of crisis management can be offered permanently within the national envelope. The Committee believes that the national financial envelopes should include crisis prevention measures based on shared responsibility among wine-producers.

The Committee thinks it necessary to introduce new forward-looking instruments in order to achieve the objectives listed. These also include extensive market observation.

The Committee of the Regions, among others, rejected the “abolition "... from day one ...” of market management tools which, although clearly leaving room for improvement in the way they are both designed and applied, should not be abolished without a transitional period, so that the good points of some of them can be harnessed. During this transitional period, the amounts allocated to market measures should be gradually reduced, with measures geared to improving quality, promotion and marketing being increased in parallel". Accepting the introduction of the "national envelope" welcomes the plan for certain crisis management measures to be implemented by the Member States.

The Commission Proposal for a reform of the CMO of the wine sector set forth the abolition of the two measures together with the subsidy to must enrichment on the ground that “This is a fundamental measure to achieve equilibrium in the wine market, after a period of structural adjustment, since it removes all the economic
incentives for producers that led to the current situation of overproduction.” (EC, 2007).

The basic idea of the proposal was the abolishment of the two stabilisation measures, together with other market support measures that were proven to be ineffective or distorting, while the savings from their funding went to the financing national envelopes to be used for support programmes.

National support programmes shall contain measures of promotion on third-country markets. They shall also contain at least one of the following measures:25

- a) restructuring and conversion of vineyards;
- b) green harvesting;
- c) mutual funds;
- d) harvest insurance.

According the proposal, green harvesting means the total destruction or removal of grape bunches while still in their immature stage, thereby reducing the yield of the relevant parcel to zero. It is aimed at restoring the balance of supply and demand in the market in wine in the Community in order to prevent market crises.

Support for green harvesting may be granted as compensation in the form of a flat rate payment per hectare to be determined by the Member State concerned. The payment shall not exceed 50% of the sum of the direct costs of the destruction or removal of grape bunches and the loss of revenue related to the destruction or removal of grape bunches.

The support for the setting-up of mutual funds shall provide assistance to producers seeking to insure themselves against market fluctuations. It may be granted in the form of temporary and degressive aid to cover the administrative costs of the funds.

Member States cannot contribute to the cost of measures co-financed by the Community through the support programmes. In derogation to this rule they may grant national aid in accordance with the relevant Community rules on State aid for harvest insurance. 1. This measure shall contribute to safeguarding producers’ incomes where these are affected by natural disasters, climatic events, diseases or pest infestations. Support for harvest insurance may be granted in the form of a financial Community contribution which must not exceed:

- a) 80% of the cost of the insurance premiums paid for by producers for insurance against losses as a result of climatic events which can be assimilated to natural disasters;

25 Almost all of them have also been included in the new F&V CMO.
b) 50% of the cost of the insurance premiums paid for by producers for insurance against:

c) losses referred to in point (a) and against other losses caused by climatic events;

d) losses caused by animal or plant diseases or pest infestations.

The support may only be granted if the insurance payments do not compensate producers for more than 100% of the income loss suffered, taking into account any compensation the producers obtain from other support schemes related to the insured risk.

The agreed reform introduces the national financial envelopes, shift part of the resources to RD measures and the phasing-out of old market intervention measures.

National financial envelopes: these will allow Member States to adapt measures to their particular situation. Possible measures include: promotion in third countries, vineyard restructuring/conversion, modernisation of the production chain, innovation, support for green harvest, and new crisis management measures.

Rural Development measures: some money will be transferred into RD measures, ring-fenced for wine regions. Measures could include setting-up young farmers, improving marketing, vocational training, support for producers' organisations, support to cover additional costs and income foregone in maintaining cultural landscapes, early retirement.

Planting rights: these are to be phased out by 2015, with the possibility to continue them at a national level until 2018.

Phasing-out of distillation schemes: crisis distillation will be limited to four years at Member States' discretion until the end of 2012/13, with maximum expenditure limited to 20 percent of the national financial envelope in year one, 15 percent year two, 10 percent in year three and 5 percent in year four. Potable alcohol distillation will be phased out over four years, with a coupled payment for the transitional period, being superseded by the decoupled Single Farm Payment. Member States will have the option to require by-product distillation, paid for out of the national envelope and at a significantly lower level than at present, covering collection and transformation costs of the by-products.

2.1.6. The relevance of market crisis in the EU F&V sector

As we have seen, most of the intervention that exist are concerned with production risk management. Very limited attention has been given by policy makers to develop tools for the management of market risk. Yet, the debate that has accompanied the CMO reform has repeatedly stressed the possibility of market crises.
In order to gather information on the relevance of crises in the F&V sector in various MS and on possible tools that have been adopted, we have conducted a survey among selected expert witnesses. An invitation was sent to representatives of Countries and Regions who are members of the Management Committee on Fruits and Vegetable CMO, to participate in a survey which included, among other things, questions on the most relevant episode of market crises in the F&V sector and on the provisions (if any) that were adopted by the relevant authorities.

We sent out 86 invitation to participate in the survey, to representatives from all EU 27 countries, and received 21 completed surveys in time for elaboration to be included in the present report from 16 different countries (Tab. 7), noticing a relatively higher participation to the survey by representatives of MS joining the EU after 2004.

We asked the respondent whether they recalled episodes of market crisis in the F&V sector of their country, and, in case, to indicate the product involved, the year, the time span of the crisis and to express a judgment on the severity of the crisis.

Out of 21 respondents, seven of them, from six different Countries recalled one or more episodes of market crisis in the fruit and vegetable sectors in their Country over the past 15 years, for a total of 15 identified crises. (Tab. 8)

Six of the crises (four of which occurred in year 2000 or before and were signalled as occurring in the Netherland and in Belgium), were ranked as severe (severity High or Very High) and four of them (in the Czech Republic and in Cyprus) as “moderate” crisis.

Tab. 7. Countries represented in the collected survey

<table>
<thead>
<tr>
<th>EU 15</th>
<th>New Member States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Poland</td>
</tr>
<tr>
<td>Belgium</td>
<td>Romania</td>
</tr>
<tr>
<td>Finland</td>
<td>Slovakia</td>
</tr>
<tr>
<td>France</td>
<td>Cyprus</td>
</tr>
<tr>
<td>Germany</td>
<td>Czech Republic</td>
</tr>
<tr>
<td>Ireland</td>
<td>Estonia</td>
</tr>
<tr>
<td>Italy</td>
<td>Hungary</td>
</tr>
<tr>
<td>Luxembourg</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
</tr>
<tr>
<td>Total EU 15</td>
<td>Total New MS</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: our elaboration on survey data
Tab. 8. Crises identified in the last 15 years by the survey respondents

<table>
<thead>
<tr>
<th>Country</th>
<th>Product</th>
<th>Year</th>
<th>Span of the crisis</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherland</td>
<td>Tomatoes</td>
<td>1995</td>
<td>more than 1 month</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High(*)</td>
</tr>
<tr>
<td>Belgium</td>
<td>Apples</td>
<td>1996</td>
<td>more than 1 month</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Tomatoes</td>
<td>1995</td>
<td>more than 1 month</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Other fresh vegetables</td>
<td>2000</td>
<td>more than 1 month</td>
<td>High</td>
</tr>
<tr>
<td>France</td>
<td>Cauliflowers</td>
<td>2004</td>
<td>n.r.</td>
<td>n.r.</td>
</tr>
<tr>
<td></td>
<td>Apples</td>
<td>2006</td>
<td>n.r.</td>
<td>n.r.</td>
</tr>
<tr>
<td></td>
<td>Tomatoes</td>
<td>n.r.</td>
<td>n.r.</td>
<td>n.r.</td>
</tr>
<tr>
<td></td>
<td>Peaches</td>
<td>n.r.</td>
<td>n.r.</td>
<td>n.r.</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>Other fresh vegetables</td>
<td>2004</td>
<td>more than 1 month</td>
<td>Moderate</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Other fresh fruits</td>
<td>2005</td>
<td>more than 1 month</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Other fresh fruits</td>
<td>2006</td>
<td>more than 1 month</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Other fresh fruits</td>
<td>2007</td>
<td>more than 1 month</td>
<td>Moderate</td>
</tr>
<tr>
<td>Hungary</td>
<td>Other fresh fruits</td>
<td>2007</td>
<td>3 week</td>
<td>Very high</td>
</tr>
<tr>
<td></td>
<td>Apples</td>
<td>2007</td>
<td>1 month</td>
<td>High</td>
</tr>
</tbody>
</table>

(*) signalled by two respondent who rated it differently.
Source: our elaboration on survey data

The products involved in crises were apples (3 times), tomatoes (3), cauliflowers (1), “other fresh vegetables” (2), peaches (1) and “other fresh fruits” (4 times, indicated by a representative from Cyprus in all years from 2005 through 2007, and by the representative from Hungary in 2007).

Regarding the length of the period in which the crisis spanned, all signalled crises spanned for three weeks or more, with the vast majority of them lasting for more than one month.

We also asked the respondent how, in their opinion, the status of a crises is identified, obtaining the response reported in Tab. 9.

Tab. 9. Indicators of market crises

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Persistent low prices”</td>
<td>11</td>
</tr>
<tr>
<td>“Protests by producers”</td>
<td>6</td>
</tr>
<tr>
<td>“Communication of product withdrawal by POs”</td>
<td>2</td>
</tr>
<tr>
<td>“Local production cost level is high and imported production quality low”</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20</td>
</tr>
</tbody>
</table>

Source: our elaboration on survey data

“Persistent low prices” were mentioned as the indicator more often used to detect market crises (11 respondents), followed by “Protests by producers” (6 respondents). Only two respondent identified the “Communication of withdrawals by POs” as a possible indicator of the status of crisis.
We also asked whether or not in their Country there are public provisions that are enacted, both automatically and on an ad hoc basis, following the detection of a crisis status.

All persons participating to the poll stressed that in the case of a crisis there aren’t provisions that are available automatically. Only in case of Slovakia there would be a state aid to cope with the crisis. Only two interviewed, from France and Belgium, reported ad hoc provisions made available from national or regional bodies to farmers. These provisions were based on a mix of measures including tax reduction or waiver, direct compensation, credits by agricultural investment fund and also public campaigns aiming at the promotion of consumption. In one case a respondent who had signalled a crisis, for which no public provisions to farmers were enacted, highlighted that “because of the crisis producers learned very quickly to react on market/consumers demand and changed their way of production and presentation of the produce”.

In many cases, according to the survey’s respondents, crises do not produce any relevant change in the organisation of the F&V sector. It may be worth reporting the opinions of about the changes brought about by crises of four respondents who did signal occurrences of crises in the past few years. In three cases (Netherlands and Belgium) changes went in the direction of a wider adjustment to market conditions, while in one case (France) the crises caused to the exit of many producers from the sector.

The kind of adjustments identified by the respondents included: “diversification of the produce, improvement of the quality, improvement of the market conformity production, change in market structures” or “more attention on planning of production. More attention to positive crisis prevention (better product quality, promotion,...) and less intervention of products” or generically “quality improvement”, indicating a good degree of market orientation.

Opinions on whether or not the recently approved reform will improve the ability of the EU F&V sector to prevent and cope with crises are mixed. Ten respondent expressed a positive opinion, while eight were sceptical.

Only two of the respondent with positive expectations motivated their answer, underlying that the reform will help in coping with crises because it gives more strength to PO’s, or because it introduces new instruments for crises management. One of them argues that “The best way to prevent or to manage crises is to create PO’s. Moreover, ...the CMO has become more flexible and it will be easier to create a PO. The reformed CMO gives also more and better possibilities to create APO’s. PO or APO is the best guarantee to improve market power and thus to improve market position that leads to better prices!” The argument of the other respondent is based on the considerations that “Extra funds that become available specifically for crisis prevention and management; Possibility for harvest insurance
within the operational programmes may give incentive to PO’s and farmers to get insured.”

The opinion of respondents believing that the CMO reform will not improve the capability to manage market crises are based on several reasons that emphasize the lack of monitoring tools or the difficulties to protect producer who are not associated to POs in Countries were the diffusion of POs are still weak. According to one of the respondent, “If low organisations rate, no reliable information from the market, there is no market surveillance system in the CMO” or “No obligatory market monitoring at EU level” or “the withdrawals aid is too low”.

Other respondents point out that “These tools are not useful in a country that has no POs. The possible effects, which must come from other member states, are not likely to have a strong effect on the market, since not all producers can be reached. One can expect that after the occurrence of a serious crisis, which will hurt the producers, they will be more prudent and anticipate crisis better. it will be learning the hard way.” Or “40% producers are in a PO (2004 figs)(very high percentage of mushroom growers are PO members) Our economy is an open economy with a lot of imports of fruit & vegetables.” Finally, an answer underline that “the CMO reform didn’t introduce real change while the existing instruments are burdensome”.

Regarding the possible roles of the EC and MS, in addition to the current provisions, to assist producers to prevent and to cope with the consequences of market crises in the F&V sector, the opinion of respondents reflect the positions of their government in the debate on the CMO reform. There are opinions believing that nothing more should be done after the reform, only asking the support to the strengthening of the POs, while other think that more transparency in the market would greatly help in the management of crises.

According to the majority of participants to the survey, in their Country there are no examples of security funds to which producers have access, intended to cope with the consequences of market crises. Only in Belgium and Netherlands it is reminded that producer can access private harvest insurance contracts that do not receive support from governments.

The opinion of interviewed persons regarding the possibility of mutual fund to be an effective instrument to cope with market crises are rather sceptical: only one interviewed thinks that the tool might be effective; the most part believe that mutual funds could be moderately effective. There are also a couple of answers considering mutual fund ineffective or completely ineffective in coping with crises.
2.2. United States of America

2.2.1. Overview of US Fruit and Vegetables Sector

The United States fruit and vegetables sector (US F&V hereafter) account for roughly 29 percent of 2002-04 U.S. farm crop cash receipts, about 17 percent of consumer food expenditures, and 18 percent of U.S. agricultural export value. Although the fruit and vegetable share of crop receipts is relatively large, in 2002 these high-value crops were produced on only 13 million acres, or 3 percent of U.S. harvested cropland.

Tab. 10. Selected US F&V production

<table>
<thead>
<tr>
<th>Item</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 short tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All vegetables</td>
<td>62,511</td>
<td>66,202</td>
<td>64,779</td>
<td>67,797</td>
<td>64,109</td>
</tr>
<tr>
<td>Fresh market(1)</td>
<td>23,010</td>
<td>23,149</td>
<td>23,433</td>
<td>24,227</td>
<td>23,635</td>
</tr>
<tr>
<td>Head lettuce</td>
<td>3,446</td>
<td>3,407</td>
<td>3,412</td>
<td>3,311</td>
<td>3,180</td>
</tr>
<tr>
<td>Onions, dry bulb</td>
<td>3,498</td>
<td>3,492</td>
<td>3,668</td>
<td>4,150</td>
<td>3,688</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>1,885</td>
<td>1,979</td>
<td>1,779</td>
<td>1,917</td>
<td>1,973</td>
</tr>
<tr>
<td>Processing</td>
<td>15,110</td>
<td>17,162</td>
<td>15,688</td>
<td>17,807</td>
<td>15,843</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>9,242</td>
<td>11,671</td>
<td>9,820</td>
<td>12,266</td>
<td>10,200</td>
</tr>
<tr>
<td>Potatoes, all uses</td>
<td>21,884</td>
<td>22,909</td>
<td>22,891</td>
<td>22,802</td>
<td>21,044</td>
</tr>
<tr>
<td>Dry beans, all</td>
<td>981</td>
<td>1,516</td>
<td>1,125</td>
<td>889</td>
<td>1,361</td>
</tr>
<tr>
<td>Sweet potatoes</td>
<td>726</td>
<td>640</td>
<td>795</td>
<td>806</td>
<td>787</td>
</tr>
<tr>
<td>Dry peas/lentils</td>
<td>370</td>
<td>404</td>
<td>425</td>
<td>840</td>
<td>1,011</td>
</tr>
<tr>
<td>Mushrooms, all</td>
<td>430</td>
<td>422</td>
<td>424</td>
<td>427</td>
<td>427</td>
</tr>
<tr>
<td>All fruits and nuts</td>
<td>34,260</td>
<td>34,764</td>
<td>33,491</td>
<td>34,720</td>
<td>29,986</td>
</tr>
<tr>
<td>Citrus</td>
<td>16,216</td>
<td>16,194</td>
<td>15,180</td>
<td>16,360</td>
<td>11,363</td>
</tr>
<tr>
<td>Fresh</td>
<td>4,167</td>
<td>4,128</td>
<td>4,222</td>
<td>4,079</td>
<td>3,683</td>
</tr>
<tr>
<td>Processed</td>
<td>12,049</td>
<td>12,066</td>
<td>10,958</td>
<td>12,281</td>
<td>7,680</td>
</tr>
<tr>
<td>Noncitrus</td>
<td>16,740</td>
<td>17,122</td>
<td>16,853</td>
<td>16,837</td>
<td>17,163</td>
</tr>
<tr>
<td>Fresh</td>
<td>6,488</td>
<td>6,549</td>
<td>6,676</td>
<td>7,179</td>
<td>n.a.</td>
</tr>
<tr>
<td>Processed</td>
<td>10,252</td>
<td>10,573</td>
<td>10,177</td>
<td>9,658</td>
<td>n.a.</td>
</tr>
<tr>
<td>Tree nuts</td>
<td>1,304</td>
<td>1,448</td>
<td>1,458</td>
<td>1,524</td>
<td>1,460</td>
</tr>
<tr>
<td>Total</td>
<td>96,771</td>
<td>100,966</td>
<td>98,270</td>
<td>102,517</td>
<td>94,095</td>
</tr>
</tbody>
</table>

(1) Includes only the 24 vegetables and melons in the current USDA NASS estimates program.

n.a. = not available


The US Census of Agriculture reports area and production for over 100 separate fruit and vegetable commodities or groups of commodities. According to the Census, more than 132,000 farms specialized in the production of fruit, tree nuts, berries, vegetables, and pulse crops in 2002. Between 1987 and 2002, the number of all farms harvesting vegetables and melons dropped by 11 percent to 54,391 and the number of orchards dropped 6 percent to 113,649. Despite the drop in number of farms, harvested area increased 17 percent for orchards and was largely un-
changed for vegetables. Overall, the composition of total U.S. farm cash receipts by crops, for the period 2002-04, were as follows: Food grains 7%, Fruit & vegetables 29%, Oil crops 16%, Cotton & tobacco 6%, Feed crops 24%, and Other crop 18%. The composition of U.S. fruit and vegetable production is summarized in Tab. 10.

**Production Centres**

While fruit and vegetables are produced throughout the United States, the largest acreage is in California and Florida. After these states, Michigan, Minnesota, Texas, Wisconsin, Washington and Oregon also report the significant fruit and vegetable production.

The US F&V production is destined for two distinct markets. These are the fresh and processed (canning, freezing, juicing, and dried/dehydrating) segments of the market. In the US, the economic forces affecting the two sectors are very different and growing for processing is distinct from growing for the fresh markets. In general, substitution between the two markets is uncommon. In this report, we focus our attention on the fresh market.

Most U.S. fresh produce is sold in the spot market. However, sales via contractual arrangements have increased in recent years, especially with pre-packaged salads, baby carrots, and fresh-cut fruit, as retailers and other major marketing outlets seek assurances of steady supplies while catering to increasing demand consumer for fresh produce. To meet this consumer demand for year-round fresh produce, large produce shippers are also relying on contracts with grower. This growth in demand for year-round fresh produce has also affected the risk management practices of farmers.

Most US fruit and vegetable production is seasonal, with the largest output during the summer and fall. As cooler temperatures arrive, production is limited to Southern and Southwestern States, such as Florida, California, Arizona, and Texas. For example, the majority of the domestic fresh tomatoes in the winter is grown in Florida, while California and other States produce the bulk of U.S. output during the summer and fall.

**Import and export**

Imports enable the U.S. retailers to market most fruit and vegetables year round. Imported grapes, peaches, plums, nectarines, and asparagus originate from the Southern Hemisphere. Fresh tomato is imported primarily from Mexico (57 percent of winter shipments during 2002-04). Tab. 11 below provides a snapshot or US F&V imports and exports. As the data for 2002-04 period shows, fruit, vegetables, and tree nuts now account for 17 percent of the value of U.S. agricultural exports. In 2005, the US exported $10.7 billion in fruit, tree nut, and vegetable products and
imported $14.1 billion. While most domestically grown fruit and vegetables are sold within the U.S. market, some products (most of the tree nut) are exported to Europe, North and South America, and Asia.

Tab. 11. Calendar Year Value of US Imports and Exports of Fruit and Vegetables\(^1\)

<table>
<thead>
<tr>
<th>Year</th>
<th>Imports</th>
<th>Exports</th>
<th>Imports</th>
<th>Exports</th>
<th>Imports</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Million dollars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>1,989.5</td>
<td>1,924.1</td>
<td>3,553.5</td>
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</table>

\(^1\) Excludes wine, essential oils, malt beverages, cut flowers, and nursery stock.

\(^2\) Also includes melons, dry beans, dry peas, and lentils, but excludes olives.

\(^3\) Includes olives and tree nuts, but excludes melons.


The data also shows a significant rise in demand for imported fruit and vegetables over the past decade, to the point where imports account for a high share of domestic consumption. During 2002-04, imports accounted for 21 percent of consumption of all fresh and processed products, compared with 16 percent during 1992-94. Imports accounted for 23 percent of domestic consumption of fresh market fruits and vegetables in 2002-04, up from 18 percent a decade earlier. Imports as a share of consumption of all fruit (fresh and processed) and tree nuts increased from 29 percent in 1992-94 to 31 percent in 2002-04. It is noteworthy that the import share of U.S. consumption of all vegetables, pulse crops, and melons (fresh and processed) doubled from 7 percent in 1992-94 to 14 percent in 2002-04.

It is important to note that the U.S. has negotiated trade agreements with several countries or regions (e.g., NAFTA with Canada and Mexico; CAFTA with Central America, and separate agreements with Chile and Australia) in recent years. These agreements reduce or eliminate tariffs, lowering the costs of fruit and vegetable products shipped from partner countries. Lower cost imports have enhanced the supply of fresh and processed fruit and vegetables in the U.S. While U.S. imports of produce have increased significantly, U.S. exports have not increased accordingly. High tariffs and non-tariff barriers in Europe and Asia are believed to limit
access to these markets. Foreign exchange fluctuations have also adversely impacted U.S. Exports.

It is important also to note that in recent years U.S. fruit and vegetable growers have become increasingly concerned about the rapidly growing fruit and vegetable industry in China. These concerns arise from China’s growing competition in the U.S. domestic market, as well as increased competition in major U.S. export markets. As part of its accession to the WTO, China had to lower tariff rates and open its markets to imports. As a result, U.S. fruit and vegetables exports to China significantly increased across the board. The processed sector accounted for much of the gain in exports over 75 percent of exports going to China. China is also a major market for U.S. fresh F&V (particularly grape, orange, and lemon). Overall, China and Hong Kong account for a significant percent of U.S. fruit and vegetable exports.

While China has become a major market for U.S. fruit and vegetable exports, it has also developed into a competitor for U.S. fruit and vegetable producers in the domestic market. It is important to note that part of the increase in U.S. imports from China displaced volume imported from other countries. For example, while the value of U.S. apple juice imports from China increased several folds in recent years, shipments from other suppliers, such as Argentina and Germany, has declined significantly. In other cases, rapid growth in U.S. imports from China has resulted in loss of market share by domestic producers (China has come to dominate the fresh garlic market in the U.S.).

China has also had a profound impact on major U.S. export markets, particularly in Southeast Asia, where proximity (lower shipping costs) and lower production costs favour China. Southeast Asian countries have also invested in China’s agricultural production, raising the quality of China’s exported products. As a result, both the variety and volume of China’s exports have grown significantly. It is anticipate that as the quality of Chinese products improve, China will also become a competitor for U.S. fruit and vegetable exports to Canada and Europe.

**Market Channels**

In the U.S., fruit and vegetables move from the producer to the consumer through different market channels, depending if it is fresh or processed product. Quality retention is the key factor for fresh market, which often pass through terminal wholesale markets before it is sold to foodservice operators or retail stores (some fresh volume is moved by packinghouses directly to retailers).

A large volume of fresh fruit and vegetables (e.g., grapes, lettuce, and celery) are field packed, thus reducing costs. Other produce types, for example onion, orange, apple, and tomato, may be washed, sized, sorted, graded, packed, and cooled in a packing shed off the field before being shipped to retailers, wholesalers/terminal markets, farm markets, or export markets. Brokers, who bring together buyers and
sellers for a fee, may operate at the port of entry, at the shipping point, and/or at the terminal market.

Over half the volume of all U.S. fruit and vegetables (fresh and processed) reach consumers via supermarkets. The U.S. foodservice industry, primarily fast food establishments, restaurants, institutional food services, and various Federal programs (e.g., school lunch and military purchases) constitute the next important distribution channels. An estimated one percent of total fruit and vegetable production is marketed directly to the consumers through farmers’ markets and similar operations. Nearly 10 percent of U.S. fruit and vegetable supplies destined for export markets.

U.S. Fruit and vegetables are transported by trucks (majority), rail, ship, and air (high-value products). Major shipping areas for fruit and vegetables are located in California, Florida, Texas, and the East Coast. Transportation is costly and risky (frequent truck shortages and rising labour and fuel costs). In fact, occasionally the transportation costs may exceed the grower price plus various marketing services. Volatility of input and transportation costs, and timely shipment of produce can represent significant risks and may generate crisis for U.S. F&V producers.

The Evolution of Food Markets

Consolidation in grocery wholesaling and retailing over the past two decades has changed the relationship between fruit and vegetable producers, marketers, and wholesale and retail buyers. According to the USDA, the largest 20 food retailers increased their share of the grocery store sales from 40 percent in 1987 to 59 percent in 2001. As a result, all economic agents along the value chain of fruit and vegetable production have been affected by the impact of consolidation on prices, as well as the introduction of new marketing and trade practices.

For example, major retailers may require special packaging or costly in-store promotional services, require slotting fees to assure shelf space, and charge other fixed fees. Retailers may also favour year-round suppliers, producers that consistently meet specified quality standards, and other requirements that may place small and/or seasonal producers at a disadvantage.

Characteristics of U.S. Fruit and Vegetables Farms

USDA’s annual Agricultural Resource Management Survey (ARMS) provides information on the financial condition, production practices, resource use, and economic well-being of U.S. farm households. Below we provide information on U.S. fruit and vegetable growers, focusing on farms that receive at least half of their gross value of production from the sale of fruit and vegetables. These farms tend to be smaller in size (acres) and less diversified in the varieties they produce. They have, on average, higher net farm incomes, more financial assets, and financially have performed better than most other commodity sectors in U.S. agriculture. Ac-
According to ARMS data, these farms accounted for 75 percent of all the farms producing fruit and vegetables in the United States and contributed 95 percent of the total value of U.S. fruit and vegetable production in 2003. Operators of these farms also tend to be older and more educated than their counterparts in other farming operations. Regionally, these farms are concentrated in the West and the South. Although a significant volume of fruit and vegetables are also grown in the Midwest and Northeastern regions of the country, these areas tend to feature operations that rely less on fruit and vegetables for total farm revenue.

Geographical location determines which crops are grown in rotation with fruit and vegetables. The competing crops are small wheat, corn, soybeans, cotton and hay. On average, the crop mix on the fruit and vegetable farms considered is 1.4 commodities (inclusive of fruit and vegetables). These farms vary widely in size, ranging from very small residential and retirement farms to establishments with annual sales well over $1 million. Using the USDA classification, about 17 percent of the farms considered, mostly located in the West and the South, can be classified as commercial farms (annual sales greater than $250,000). More than half of these farms can be characterized as rural-residence farms (annual sales less than $250,000 and whose operators report their primary occupation as retirement or off-farm employment). The remainder (about 26) of these farms fell into the intermediate farm category (annual sales less than $250,000 and whose operators report farming as their primary occupation).

2.2.2. Risk Factors Affecting the US Fruit and Vegetable Sector

The risks affecting the US fruit and vegetable farmers are varied, reflecting the size of the US and different climatic regimes that effects this sector. Next we briefly discuss major category of risks affecting this sector. We then consider risk management practices by established and well organized farmer cooperatives and look to see how such cooperatives manage episodes of market crisis.

Price Variability

Fresh fruit and vegetable prices are more volatile than other agricultural commodities. Extremes in weather and pests primarily disrupt fruit and vegetable production, resulting in large fluctuations in supply, leading to swings in prices, especially in markets where additional import volume is not immediately available. For farmers, oversupply can lead to crop abandonment and financial hardship when prices fail to cover production costs.

In general, the composition of farm gate prices and marketing costs are important factors in determining consumer level prices of U.S. fruit and vegetables. At the aggregate level, the farm value of U.S. fresh fruit and vegetables represented about 19 percent, while the farm value of processed fruit and vegetables was about 16 percent of the retail value in 2004. The spread between farm gate and con-
sumer prices reflects the costs of inputs, such as labour, energy, transportation, and storage. Given the large spread between farm level and retail prices, fluctuations of the farm prices are fully transmitted to retail level. As for fruit and vegetable price correlations, few price series show a high level of correlation. However, some degree of price correlation can be found among select products, reflecting that these crop pairings share similar growing conditions and are marketed in similar ways.

The price trend in fruit and vegetable sector has been upward, reflecting increased demand for these products. Both farm level and retail prices for fresh fruit and vegetables have kept pace with inflation over the past decade, but retail prices appear to have increased significantly in real terms. This reflects greater increases in marketing and transportation costs. Because growers have become more efficient in crop production, farm prices have generally risen more slowly than prices in the general economy. Consumer prices for fresh fruit and vegetables have risen at a faster pace than prices for all food consumed at home (not away from home), reflecting stronger demand and increasing transportation and marketing costs over the past decade. Meanwhile, processed fruit and vegetable have experienced lower price increases due to declining demand. Increasing yields have enabled the growers of processed fruit and vegetables to stay in business despite the flat real prices.

Production Risks

Most US F&V production is seasonal and weather conditions represent very significant risk to production. Aside from climate risks, variability in input costs including items as seed, fertilizer, chemicals, fuel, custom work, and hired labour represent significant production risks. The production of fruit and vegetable is labour intensive. Moreover, labour expenses tend to be greater for fresh-market crops than for processed-market crops, for which production tends to be more mechanized. At an average of nearly 42 percent of total input costs, labour is the single largest variable cost on fruit and vegetable farms in 2003. Chemicals (including fertilizers) were the second largest variable expense in 2003, accounting for 18 percent of total variable costs. Seed and transplants were also significant annual expense.

In addition to variable expenses, fixed cash expenses such as insurance premiums, real estate and property taxes, interest, rent, and lease payments were a significant part of the costs of the farms under consideration. When these fixed expenses are added to variable cash costs, the average fruit and vegetable farm paid $185,727 in total expenses in 2003.
2.2.3. Public programs affecting income risk in the US F&V market

Presently, the U.S. fruit and vegetable industry benefits from a number of Federal programs that serve to stabilize and enhance income, such as ad hoc disaster payments (Non-insured Crop Disaster Assistance—NAP), crop insurance, marketing and promotion assistance, food aid purchases, export promotion (including the Market Access Program), tree replacement assistance, cost-share assistance and other assistance for implementing conservation measures, and Trade Adjustment Assistance. However, while the industry has set its goals on the expansion and enhancement of domestic and international demand for U.S. fruit and vegetables, it still seeks legislative assistance with several other issues. The industry is concerned about ensuring access to an affordable farm labour supply, further opening export markets and promoting products overseas, realizing full (and even expanded) funding of the various titles within the Specialty Crops Competitiveness Act of 2004, and ensuring the domestic promotion of fruit, vegetables, and tree nuts. In the past, these issues have generally not been included in farm bill legislation but as separate legislation.

Disaster Assistance

Growers of fruit, vegetable, and tree nut crops who did not purchase crop insurance or do not have established Federal crop insurance programs for their crops are eligible for Federal financial assistance under NAP, administered by USDA’s Farm Service Agency (FSA). The program provides payments to qualified growers who lose at least 50 percent of their crop or are unable to plant more than 35 percent of their acreage due to a natural disaster. Payments are made on the loss exceeding 50 percent of expected production, based on producers' yield and production records.

The amount disbursed to fruit and vegetable growers under NAP varies depending on natural disasters (if any) affecting crops in a given year. Because many commodities in the fruit and vegetable industry are not part of the Federal crop insurance program, growers of such commodities are reliant on NAP or ad hoc disaster aid for financial assistance during years of extensive crop loss.

In response to the extensive damage to Florida’s horticultural industry in 2004 following three devastating hurricanes, Congress enacted the Florida Hurricane Assistance Programs (FHAP), administered by USDA’s FSA. FHAP comprises three programs directly established for horticultural crops: the Florida Citrus Disaster

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26 This section relies heavily on a recent document produced by the USDA: “Fruit and Vegetable Backgrounder” by Gary Lucier, Susan Pollack, Mir Ali, and Agnes Perez. VGS-313-01 Economic Research Service/USDA. The whole document is available online at: http://www.ers.usda.gov/publications/VGS/apr06/vgs31301/vgs31301.pdf
Producers eligible for disaster assistance programs are also eligible to apply for the Disaster Debt Set-Aside Program, whereby they may be allowed to set aside a portion of their Federal debt in order to maintain their farming operation. Growers are also eligible for emergency loans and the Emergency Conservation Program.

Producers of fruit and tree nuts are also eligible for Federal assistance when there is a crop loss due to a natural disaster under the Tree Assistance Program (TAP). Under TAP, eligible producers can receive assistance to replant trees, vines, or bushes damaged by bad weather. Growers, however, do not receive compensation that reflects the productivity of lost trees, vines, or bushes. Therefore, payment under TAP would be the same for a newly productive tree as it would be for a mature tree that produced a much larger crop.

Federal Crop Insurance

The federal crop insurance program is administered by USDA’s Risk Management Agency. The program is designed to protect crop producers from unavoidable risks associated with adverse weather, and weather-related plant diseases and insect infestations. A fruit and vegetable producer who chooses to purchase an insurance policy must do so by an administratively determined deadline date, which varies by crop and usually coincides with the planting season. Crop insurance is available for most crops.

The federal crop insurance program was instituted in the 1930s and was subject to major legislative reforms in 1980, and again in 1994 and 2000. The Agriculture Risk Protection Act of 2000 pumped $8.2 billion in new federal spending over a five-year period into the program primarily through more generous premium subsidies to help make the program more affordable to farmers and enhance farmer participation levels, in an effort to preclude the need for ad-hoc emergency disaster payments. Since 2000, the federal subsidy to the crop insurance program has averaged about $3.3 billion per year, up from an annual average of $1.1 billion in the 1990s and about $500 million in the 1980s. Nearly two-thirds of the current federal spending is used to subsidize producer premiums, and the balance primarily covers the government share of program losses and reimburses participating private insurance companies for their administrative and operating expenses.
The crop insurance products available to US fruit and vegetable growers, protects farmers against yield risk, or against the combination of yield and price (revenue) risk. Three products offer basic protection against major production losses due to weather, wildlife damage, fire, or other catastrophe: Catastrophic Coverage (CAT); Non-Insured Crop Disaster Assistance (NAP); and Actual Production History (APH) coverage. These policies are the least costly crop insurance products as they only guard against yield risk.

The Catastrophic Coverage (CAT) offers very basic protection for a list of specific major crops, including annual and perennial crops. Non-insured Crop Disaster Assistance (NAP) offers protection very similar to CAT, at a low cost. NAP is available for most crops that are not eligible for CAT. Actual Production History Coverage (APH) provides greater protection than CAT or NAP, and consequently it costs more. APH coverage can be arranged on a field-by-field, or area-by-area basis. In addition, special quality considerations can sometimes be written into the policy, for example for extra premium apples. APH coverage is subsidized so that growers pay only about 40% of the actuarial costs.

The Adjusted Gross Revenue Insurance (AGR) program is the main crop insurance product available to fruit and vegetable producers that protects against both yield and price risks. Because of this broader protection, AGR is more costly than CAT, NAP or APH coverage. However, AGR is also highly subsidized. For example in New York state, growers pay only about 25% of the actuarial costs. AGR is especially well suited for small and/or diversified growers of fruit and vegetables who grow several crops and whose direct sales are mostly from crops grown on the insured farm rather than purchased for resale. Growers who elect AGR must also take MPCI if over 50 per cent of their expected income is from insurable crops. However premiums and benefits are coordinated so that farmers will not pay double premiums, nor collect double benefits.

In crop year 2008, crop insurance is available for a large number of specialty crops. The State where crop insurance is available depends on the specialty crop (see [http://www.rma.usda.gov/pubs/state-profiles.html](http://www.rma.usda.gov/pubs/state-profiles.html) for a list of crops included). Insurance is available in the primary growing areas for these crops. If the specialty crop is not a pilot program crop, producers in areas for which actuarial documents are not available may apply for insurance coverage through a written agreement.
Tab. 12. Specialty crops for which Federal Crop Insurance is available (2008)

<table>
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<tr>
<th>Specialty Crops</th>
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<tbody>
<tr>
<td>Almonds</td>
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<tr>
<td>Apples</td>
<td>Mango Trees (Florida)*</td>
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<tr>
<td>Avocados (Revenue*, APH*)</td>
<td>Mint*</td>
</tr>
<tr>
<td>Avocado Trees (Florida)*</td>
<td>Mustard*</td>
</tr>
<tr>
<td>Bananas*</td>
<td>Nursery Naval Oranges</td>
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<td>Banana Trees*</td>
<td>(Citrus Dollar*, APH)</td>
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<tr>
<td>Blueberries</td>
<td>Onions</td>
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<tr>
<td>Cabbage*</td>
<td>Papaya*</td>
</tr>
<tr>
<td>Cherry (Dollar)*</td>
<td>Papaya Trees*</td>
</tr>
<tr>
<td>Chile Peppers*</td>
<td>Peaches</td>
</tr>
<tr>
<td>Citrus</td>
<td>Peanuts (APH, GRP)</td>
</tr>
<tr>
<td>• Grapefruit</td>
<td>Pears</td>
</tr>
<tr>
<td>• Lemons</td>
<td>Pecan</td>
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<tr>
<td>• Limes</td>
<td>Peppers</td>
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<tr>
<td>• Mandarins</td>
<td>Plums</td>
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<td>• Murcotts</td>
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<td>Figs</td>
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<td>•Peaches</td>
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<tr>
<td>Fresh Market Sweet Corn</td>
<td>Strawberries*</td>
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<td>Fresh Market Tomatoes (APH, Dollar)</td>
<td>Sweet Corn for Canning</td>
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<tr>
<td>Grapes</td>
<td>Sweet potatoes*</td>
</tr>
<tr>
<td>Green Beans for Canning</td>
<td>Table Grapes</td>
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<tr>
<td>Green Peas</td>
<td>Tomatoes (Canning and Processing)</td>
</tr>
<tr>
<td>Macadamia Nuts</td>
<td>Walnuts</td>
</tr>
</tbody>
</table>

Note: “*” indicates that the crop program currently insured under pilot programs of limited scope and duration, APH stands for Actual Production History, CRC stands for Crop Revenue Coverage, GRIP stands for Group Risk Income Protection, GRP stands for Group Risk Plan, RA stands for Revenue Assurance. Specialty crop-plan combinations are shown in bold print (for example, avocado has two plans).

Use of Crop Insurance by Fruit and Vegetable Growers in United States:

This section highlights the experience of the US FV sector in using crop insurance products to manage price and production risks. This brief presentation is based on the USDA report on Specialty Crop Insurance27, which provides an overview of the progress made by the Federal Crop Insurance Corporation (FCIC) in research and development of innovative risk management products and the progress made by FCIC in increasing the use of FCIC's risk management products by producers of specialty crops, by small- and moderate-sized farms, and in areas that have been deemed to be under-served.

The Risk Management Agency (RMA) has achieved significant progress, where 21 of the 31 crops named in the 2002 Farm Bill were insured by 2004, with 8 still in the pilot stage. Six of the remaining 10 named crops were under pilot projects 2004. In addition to the expansion of crop insurance programs, the RMA established risk management education programs for specialty crop producers in a number of States by partnering with State departments of agriculture, universities, and grower organizations. The objective of these partnerships included survival in the agricultural market place, risk management opportunities for alternative crops, risk analysis and decision support skills to help producers manage risks inherent in agriculture, and other general agricultural risk management issues and opportunities.

A number of measures are used to assess the success of the efforts placed in promoting the use of crop insurance by FV sector. One of these measures is the Number of Insured Policies for Specialty Crops. The Number of Insured Crops or Agricultural Commodities (1998-2003) has increased from 48 to 62 (a 29-percent increase, or about 6 percent per year). During the same period, the number of total crops insured has increased from 70 to 88 (a 26-percent increase, or about 5 percent per year). Moreover, the number of specialty crop-plan combinations insured increased from 48 to 63 (a 31-percent increase, or about 6 percent per year). Lastly, the number of total crop-plan combinations insured increased from 90 to 114 (a 27-percent increase, or about 5 percent per year).28

Overall, of the 46 specialty crops the report considered, total crop insurance increased 28 percent during 1998-2002, from 58,139 to 74,504 policies. This is a significant rise in demand that is likely to be further enhanced under the 2008 Farm Bill (see next section).

In the United States, the Federal government has been expanding its role in providing subsidized crop insurance for fruit, tree nuts and vegetables for several years, and the USDA has a mandate to provide crop insurance programs for as many crops as possible. The total crop insurance budget of about US$2 billion per year is mainly spent on field crops, but a small amount (about 10%) is provided as subsidy to fruit and vegetable crops. In addition, the Noninsured Assistance Program provides free crop insurance for crop disasters, with outlays averaging US$100 million in recent years.

The expansion of crop insurance is controversial. Currently, about 25 fruit and nut crops are covered. It is difficult to design effective programs for other crops. Fewer vegetable crops are covered by crop insurance because seasonality, price variability, very localized growing conditions and other complications make program design exceedingly complex. Furthermore, growers do not want to encourage additional planting of crops in less favoured areas because of an incentive to collect in-

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28 For example, corn has five different insurance plans and is counted as five crop-plan combinations.
Insurance benefits. This problem is a major concern in fruit and vegetable crop insurance.

As of 2006, the USDA’s Risk Management Agency (RMA) administers crop insurance policies for over 100 crops. Since the late 1990s, many fruit, vegetable, and tree nut policies have been created. Policies, which can vary by State, may cover a single commodity regardless of its end use or provide separate coverage for fresh and processing markets. Separate policies also cover fruit and nut trees in addition to the commodities harvested from them. The RMA has established pilot programs that test new policies for specific crops in specific States or regions of the country. Many of these pilot programs are for fruit, vegetable, and tree nut crops. Separate crop insurance policies cover more than 40 fruit, tree nut, and vegetable crops (the number is greater when considering policies by variety or State). According to the 2002 Census, 49 percent of the combined harvested area on fruit and vegetable farms was covered by some type of crop insurance program.

Commodity Procurement for Domestic Feeding Programs

USDA’s Agricultural Marketing Service (AMS) purchases food products from handlers and processors. AMS makes some purchases to remove surplus commodities if the products can be used by recipient agencies. By purchasing some of a commodity output, AMS lessens the supply in the marketplace, helping improve prices received within the industry. All food purchased by AMS must be produced in the United States. In recent years, surplus removal has accounted for about two-thirds of the annual value of fruit, vegetable, and tree nut purchasing by AMS. The other one-third of AMS purchases, consisting of nonsurplus commodities, was directed to various domestic feeding programs at the request of recipient agencies. The food purchased by AMS is provided to schoolchildren through the National School Lunch Program, to Native Americans, and to the needy and the homeless through various Federal food assistance programs. AMS purchased food is also provided as emergency relief to individuals recovering from the effects of a natural disaster.

Purchases of fruit and vegetables are an important component of USDA’s domestic feeding programs. Before declining in fiscal year 2005, AMS purchases of fruit and vegetables increased for 3 consecutive years (Fig. 5). In 2002, AMS purchased 1.24 billion pounds (fresh-weight equivalent) of fruit and vegetables, fresh or processed, valued at $355 million. In 2004, purchases increased to 2 billion fresh-weight equivalent pounds, valued at $447 million. In comparison, other AMS purchases in 2004 included 213 million pounds of beef products ($135 million), 149 million pounds of chicken products ($92 million), and 14 million pounds of eggs ($12 million), as well as other products (dairy and grains are purchased by FSA under a separate program).
Food Assistance Programs

USDA’s Food and Nutrition Service (FNS) administers various feeding programs, including those for which food is acquired through AMS food purchase programs. FNS programs include the Food Stamp Program; Special Supplemental Nutrition Program for Women, Infant, and Children (WIC); and school meals (such as the National School Lunch Program, School Breakfast Program, Child and Adult Care Food Program, Summer Food Service Program, Special Milk Program, and Team Nutrition Program); along with other programs to provide nutritional meals to seniors, natural disaster victims, and others.

The Food Stamp Program generally allows participants to make their own food choices. Participants are allowed to purchase all food items, including fresh and processed fruit, vegetables, and nuts. Participants may also use Food Stamps at farmers’ markets to purchase fresh produce. WIC, however, limits the products that eligible participants can purchase with WIC vouchers at participating retail outlets. For the purchase of fruit and vegetable products, WIC participants can use vouchers only for juice, dry beans, and dry peas.

Pregnant women can also use vouchers for carrots. Nutritionists and the fruit and vegetable industry have been lobbying Congress and USDA to include more fruit and vegetables in the program, as a way of expanding domestic consumption of their products and improving nutrition among WIC participants. As a result, USDA is considering expanding the amount of fruit and vegetables that can be purchased with WIC vouchers.
Marketing Orders

Marketing orders, administered by committees of industry handler and grower representatives with oversight by AMS, are designed by the industries themselves in accordance with Federal requirements to establish and maintain orderly marketing conditions within fruit and vegetable markets and therefore provide an important function in terms of market risk prevention and management. There are currently **34 Federal Marketing Orders covering fruit, tree nuts, and vegetables in the United States.**

Various mechanisms are used in each marketing order to meet their goal, including enforcing product quality standards, regulating the flow of product to the market, standardizing packages and containers, creating reserve pools for storable commodities, and authorizing production and marketing research and advertising. Industries vote to establish marketing orders, which are subject to Federal oversight of certain aspects of their operations.

Once established, a marketing order binds all individuals or businesses serving as “handlers” in a geographic area covered by the order. Marketing orders may also affect imports. Under the Agricultural Marketing Agreement Act of 1937, Section 8e, imports of commodities for which domestic marketing orders are in effect can be required to be in compliance with the same or comparable regulations on grade, size, quality, or maturity issued in the marketing order. The fruit, tree nut, and vegetable commodities covered by marketing orders annually generate cash receipts exceeding $11 billion.

National Research and Promotion Programs

Federally sanctioned research and promotion programs are self-help programs, requested and funded by the industry groups that they serve. The goal of these programs is to expand, maintain, and develop markets for individual agricultural commodities in the United States and abroad. The Secretary of Agriculture appoints national program boards comprising producers, handlers, importers, and processors (depending on which industry members pay assessments to fund the programs), as well as public members. The boards conduct promotion, market research, production research, and new product development under the supervision of AMS.

In 2005, six national research and promotion programs covered fruit and vegetables, including cultivated blueberries, Hass avocados, mangos, mushrooms, potatoes, and watermelon. A May 2005 Supreme Court ruling that the beef industry’s marketing promotion program (Johanns v. Livestock Marketing Association), did not violate the First Amendment (free speech) rights of producers who disagree with how the promotion funds are spent ended 4 years of uncertainty for these programs, following a lower court ruling that the mushroom promotion program violated the First Amendment.
Nutrition and the Fruit and Vegetable Pilot Program

To encourage increased consumption of fresh fruit and vegetables by children, the 2002 Farm Security and Rural Investment Act (Farm Act) authorized the Fruit and Vegetable Pilot Program. This program initially offered fresh fruit and vegetables free of charge to children in 100 schools in four States (Iowa, Indiana, Michigan, and Ohio), and 7 schools on an Indian reservation in New Mexico. Schools distributed fruit and vegetables using kiosks, vending machines, and various in-class methods. The program was funded for the 2002-03 school year at $6 million and eventually garnered support throughout the country. Given this support, the program was extended through the 2003-04 school year.

Country of Origin Labelling

In 2002, Congress incorporated Country of Origin Labelling (COOL) into the Farm Act. Mandatory labelling rules were slated to go into effect by September 30, 2004, but Congress and the President agreed to delay the implementation of mandatory COOL through September 30, 2006 (except for wild and farm-raised fish and shellfish), to revisit some of the legislative requirements and consider making COOL voluntary. Unless the law is changed, retailers will be required to identify fresh and frozen fruit and vegetables (among many other commodities) by their country of origin (domestic or foreign) effective October 1, 2006. Program implementation will come under the responsibility of USDA, AMS.

Specialty Crops Competitiveness Act

The Specialty Crop Competitiveness Act of 2004 became law in December 2004, but Congress did not appropriate funds to operate the program. The four title act authorizes a total of $54 million annually over 5 years to enhance production and use of specialty crops and improve the world competitiveness of U.S. producers of fruit (including dried fruit), vegetable, tree nut, and nursery crops (including floriculture). About 80 percent of the funding (subject to annual appropriation of funds) is earmarked for block grants through the various State departments of agriculture for planning and providing programs, subject to approval of the U.S. Secretary of Agriculture, that are of importance to local producers and consumers of specialty crops. The act also authorizes an additional appropriation of $2 million annually to support Section 3205 of the 2002 Farm Act, which provides assistance to remove, resolve, or mitigate sanitary and phytosanitary and related barriers to trade. The Technical Assistance for Specialty Crops (TASC) Program is designed to open, retain, and expand markets for U.S. specialty crops. It helps U.S. exporters address phytosanitary or other technical barriers that prohibit or threaten exports of U.S. specialty crops. Eligible crops include all cultivated plants and their products produced in the United States, except wheat, feed grains, oilseeds, cotton, rice, peanuts, sugar, and tobacco. Since 2002, TASC has been funded at $2 million per year. A research title in the act authorizes the annual appropriation of $5 million for
research on methyl bromide alternatives. In mid-2005, Congress allotted an initial $7 million for the act.

2.2.4. Risk Management Practices in U.S. Fruit and Vegetable Sector

Fruit and vegetable (FV) production is believed to have considerable potential for profitability in the US, as compared to field crops such as corn and soybean, as FVs offer the potential to produce higher incomes per unit of acreage. With this income potential, however, comes sizable risks. These risks can be categorized as either those impacting revenues, or production costs.

Yield and Price Risk

Variability in gross revenues (price times yield) results from fluctuations in production (yield) and price. The ability of the producer to deal with both types of variability will impact on the profitability of their enterprise. The US-FV growers are generally advised to avoid the drive for higher yields and rather focus on having sufficient sales of high quality products to achieve sustained profitability. Therefore, unlike the observed drive to maximize the yield on major field crop, the focus in recent years for the FV crops has been to improve quality and marketability.

The main yield risks US-FV producers face come in the form of adverse weather and pest damage. In a perennial crop, yield risk can take the form of year-to-year variability, or more serious damage which reduces the long-term production potential of the planting. Although yield risk is important, it usually has readily identifiable causes and remedies. For example, in many parts of US, average seasonal rainfall falls below what is required for optimal production of fruit and vegetable crops. US-FV growers (individual farmers and cooperatives) have reduced the effects of yield risk through irrigation, pest management practices, and site and seed (trait) selection.

An important instrument for managing yield risk in FV sector in US is crop insurance, and we have already detailed on it. While it is important to minimize the effect of yield risks and its impact on profitability, it is not sure whether yield risk is in facts the major concern. Marketing risk may be much more serious, and one problem is that FV producers are usually more equipped to deal with yield risk than those associated with marketing.

Marketing Risk

Marketing plays a crucial role in US FV production and growers are generally advised to plan their marketing strategy well in advance of planting specific crops.
This is particularly important for perennial crops where decisions about which varieties to plant are made several years prior to the first crop.

Knowledge of what the market requires (in terms of form and quality) and when to market is the key to success for individual and cooperatives alike. Some have argued that marketing acumen provides the reasons why “good” growers go out of business, while others in less ideal production circumstances thrive.

Developing a marketing strategy requires careful evaluation of the supply and demand for given product and investigation of market alternatives. The successful FV marketer strive to grow products which satisfies highly specific quality standards, that sell at a premium.

Indeed, a major part of USDA support for this segment of the US farm economy is directed at reducing marketing risks faced by fruit and vegetable growers. Strategic marketing planning requires specification of target markets, or the individuals or businesses identified as the most desirable customers. The selection of target markets in turn drives decisions about products (including varieties and packaging), promotion, pricing, location, and distribution strategies.

Seven traditional (distribution) alternatives are generally available to the FV growers: wholesale market, marketing cooperatives, local retail, roadside stands, farmers markets, pick-your-own, and processing. Other options such as rent-a-row/tree, community supported agriculture, and Internet and/or mail order are gaining popularity depending on the nature of the farm operation and the crops grown.

**Wholesale marketing** is often done on a producer assignment basis, where shippers market and ship the fruit for a predetermined rate. Whether a shipper is used to take the crop to the wholesale market, or it is transported directly by the individual grower, this marketing alternative is subject to the greatest price fluctuations. Marketing cooperatives generally use a daily pooled cost and price, which spreads price fluctuations over all participating producers.

**Local retail** (selling directly to grocery stores) is another alternative, but it requires considerable time in contacting produce managers and providing consistent quality when the store requires the produce. Roadside stands, pick-your-own operations, and farmers markets are other marketing outlets that are primarily used by smaller growers. These outlets provide an opportunity for growers to receive higher than wholesale prices for their produce. In this situation, however, there may be significant expenses for advertising, building and maintaining a facility, and serving customers' needs. In a Pick-Your-Own (PYO) operation, harvest costs are saved, but growers must also be willing to accept some wastage. Furthermore, growers who market direct must be cognizant of the greater legal risk that is faced in dealing with consumers directly. The risk of food contamination, injuries (especially for PYO operations), and other potential liability claims significantly increase the cost of insurance for many direct marketers.
Depending on location, processing may or may not be a marketing option. Processing prices are often much more volatile than fresh-marketing prices. However, successful processing cooperatives, such as National Grape Cooperative (Welch’s) and Ocean Spray are examples of cooperatives whose marketing practices reduce variability of cash flow for their members as well as usually supplying a premium over cash market prices.

Price and quality are synonymous in fruit and vegetable production. Unfortunately, it is not always easy to know what is meant by "high quality" and quality judgment often varies from year to year. US Federal grade standards do not exist for all crops and those that have them are often not very specific. Often there is only one recognized quality grade, U.S. No. 1, which means produce of "good average quality". Different class of buyers, however, have additional criteria by which they judge produce quality including flavour, ripeness, aroma, cleanliness, and the absence of pest damage and foreign material.

Proper disease management, harvest practices (including picker instruction and supervision), and post-harvest handling are critical to marketing success. Cooling produce to remove field heat and improve shelf life is especially important. Treatments to reduce decay may be another important consideration. Sorting and washing of some fruits and vegetables may be required to help maintain quality and improve appearance. For certain crops like small fruits and other delicate produce, sorting and/or washing is not an option; harvest crews must be well-trained, and quality continuously monitored to assure a marketable crop.

Because of the quality requirements, skilled labour is perceived to be the most important risk factor for marketing FV in US. Indeed, currently this is the most important issue for the FV farm lobby. We will provide detailed information on managing labour shortage risks in the FV sector here.

Costs of Production

Fruit and vegetable production is among the most costly farming in the US. For certain vegetable crops, pre-harvest costs may amount to several thousand dollars per acre. For perennial crops, substantial initial investments are required and many years pass before returns are realized. For most perennial crops, the pre-productive costs for land preparation and establishment are often many times the cost of annual crops. This is the period where growers are most exposed to financial risk. US FV growers are advised to assess their ability to absorb losses during the pre-productive period and not rely on single enterprises for current and future income.

Focusing on specific costs, the expenses associated with fertilizers and pesticides are relatively minor. The major cost by far is for harvesting and marketing the crop. Labour management and costs are the primary concern. Good labour management is a key to profitability of the FV sector. Understanding the labour market and
planning for adequate and experienced labour is critical to having a high-quality crop ready to market. US FV growers must understand the federal, state, and local laws which apply to the use of agricultural labour. These laws include those relating to migrant and seasonal workers, immigration, child labour, wages and hours, withholding taxes, unemployment compensation, family and medical leave, worker's compensation, worker protection (pesticide exposure, safe workplace, field sanitation), and migrant housing. Communicating a farm’s personnel policies is a key element in effective human resource management. We can provide additional information on how USDA supports FV farmers with labour issues here.

**Risk management and Financial Planning**

Understanding the magnitude of the financial risks and the nature of cash flows in fruit and vegetable production requires the preparation of enterprise financial plan that are based on estimates of the revenues (income), costs, and profitability associated with the production of agricultural products. US fruits and vegetable growers are advised to create financial plans that (according to USDA educational materials):

- enumerate the revenues (income) received for a crop,
- enumerate the inputs and production costs for a crop,
- estimate benefits and costs for specific changes in production practices,
- estimate break-even price and/or yield for market planning purposes, and,
- generate financial records that would support applications for credit and government support

Farmers are urged to use prices that reflect the markets they operate in and the actual productivity of their enterprise, given their specific resource situation (land, labour, equipment, etc.). The USDA provides historical data that are specific to crops and locations, helping FV farmers archive these objectives.

Well designed financial plans (there are numerous vendors that supply PC based software to construct dynamic financial plans for a farm operation) enable farmers to conduct benefit-cost analysis of various farm decisions and crop choices, based on production costs that are unique to the individual’s operation. The well constructed financial plan enables FV growers to assess the impact of changes in variable costs (marketing, fertilizer, chemicals, fuel, repairs, and hourly or seasonal labour) and fixed costs (depreciation, taxes, interest on investment, land charges, annual labour, and insurance). The financial plan enables the farmer to determine the optimal level of hedging activity that must be undertaken.
2.2.5. Proposals of income stabilization accounts

In recent farm policy debates, several proposals for a whole-farm revenue safety net program have been put forward in the United States. Such programs would be based on revenues from all farming activities combined, would not be linked to the production of particular commodities, and could offer a safety net to all farms. Prominent among these are farm income-stabilization (savings) accounts and whole-farm revenue insurance.

Farm income-stabilization (or savings) accounts are designed to encourage farmers to manage risk by making deposits to special accounts in high income years and making withdrawals, when needed, in low-income years.

The government would provide incentives, such as tax deferrals and/or matching contributions, to encourage farmer participation and to help farmers accumulate reserves. Thus far, the farm income-stabilization account proposals have been put forward as supplements to other farm programs, but none of the proposals has been enacted.

Examples of proposed farm income-stabilization account programs include:

1. **Farm and Ranch Risk Management (FARRM) Accounts.** FARRM accounts would allow farmers to take a Federal income tax deduction for a deposit of up to 20 percent of eligible farm income (defined as taxable net farm income from Schedule F, plus net capital gains from the sale of farm assets including livestock but not land). Deposits would be made into interest-bearing accounts and earnings would be distributed and taxed annually. Withdrawals from principal would be at the farmer’s discretion and taxable in the year withdrawn. Deposits could stay in the account for up to 5 years, with new amounts added on a first-in, first-out basis. Deposits not withdrawn after 5 years would incur a 10-percent penalty. FARRM accounts were first proposed following the passage of the 1996 Federal Agriculture Improvement and Reform Act to encourage farmers to save a portion of the transition payments during the relatively high-income years of 1996-97. FARRM accounts were introduced in Congress in 1998, have been reintroduced several times, and were part of the administration’s budget proposals in 2001 and 2002.

2. **Counter-Cyclical Accounts (CCAs).** With CCAs, the government would match farmer deposits to special savings accounts—up to a limit. The producer could deposit such amounts as the producer considered appropriate, but government contributions would be limited to 2 percent of the producer’s 5-year average adjusted gross revenue and could not exceed $5,000 for any applicable year. Funds in the accounts would earn interest at commercial rates. A farmer would be allowed to withdraw from the account only when his or her adjusted gross revenue fell below 90 percent of its average over
the 5 previous years. The withdrawal amount would be limited to what would be needed to raise current adjusted gross revenue up to 90 percent of the 5-year average gross revenue. CCAs were proposed in the initial version of the 2002 farm bill that passed the Senate, but were dropped from that bill by the House-Senate conference committee (Library of Congress, H.R. 2646).

3. Individual Risk Management Accounts (IRMAs). The IRMA program would offer both tax deferrals and government matching contributions as incentives for producers to make deposits to special accounts. Producer deposits would be deductible from pretax income; deposits and interest would be taxable only upon withdrawal. The government would make matching deposits of 2 percent of Schedule F gross farm income.

IRMA balances would be limited to the equivalent of 150 percent of a producer’s annual average Schedule F gross farm income over the previous 3 years. Producers would be allowed to withdraw from their IRMA only when income fell below 80 percent of its average over the previous 3 years. The withdrawal amount would be limited to what would be needed to raise current income to 80 percent of the 3-year average.

IRMAs were proposed in 1999 by the Alabama Farmers Federation study committee. The Alabama proposal tied IRMA to Federal crop insurance and implied that funding for IRMA would come in part from crop insurance subsidies. Under the proposal, a producer who deposited at least 2 percent of gross farm income in an IRMA would receive catastrophic crop insurance (CAT) coverage at no cost, but additional insurance purchased would not be subsidized.

2.3. Other Countries

2.3.1. Canada

Farm income protection in Canada is a strongly felt political issue. It dates back to the period of colonization of Center and West territories, when the government pushed farmer to start and maintain agricultural activities in very harsh territories. This argument has been historically used to justify a comprehensive safety net system that lasts still today, and which is based on a combination of crop insurance and public compensation of damages from natural adversities. In 1939, the Praire Farm Assistance Act (PFAA), issued after a drought that hit the Western part of the Country, created a form of income guarantee for wheat producers based on an index of area yield. If the average yield of farms included in a given area (usually corresponding to a township) would fall below a certain reference value, all farmers in town received a payment.
In 1959, the safety net provided by the PFAA was enlarged through the setting up of insurance programs. The Crop Insurance Act authorized payment of subsidies and the issue of loans to the provincial governments that started crop insurance programs. In this way, the operation of local crop insurance programs was promoted through share of 50% of operational costs and up to 20% of the premiums, charged on the Treasury budget. Since, all Canadian provinces have created and maintained their own crop insurance programs.

These programs have worked although their performances were not deemed brilliant. In 1964, the Crop Insurance Act was emended to create a reinsurance fund administered by the Federal Government. Further amendments in 1966 and then in 1973 brought the level of total subsidy on crop insurance premium to about 50%, shared in varying proportions by the Federal and local Governments.

Between 1991 and 1995, Canada was the first Country to develop a form of revenue insurance, that is an insurance which included a price component. The Gross Revenue Insurance Plan (GRIP) ensured an indemnity in case the actual revenue from the insured crop would fall below a predetermined revenue trigger. This reference level was determined according to the historical farm yields multiplied by a price calculated as the moving average of the prices of last fifteen years. These revenue insurance was heavily subsidized, up to the point that farmers paid roughly one third of the total cost of the program. During the four years in which it was in operation, the program accumulated a deficit of about one billion Canadian dollars.

The high cost of the system based on crop insurance has motivated the Canadian government to find new ways of guaranteeing adequate income risk management capacity to their farmers. Although provincial crop insurance programs still exist, the road taken from 1990 by the Canadian Government is definitely based on the promotion of precautionary savings. In 1990 the first NISA (Net Income Stabilization Accounts) was established. The program was designed to help farmer achieve long term stability of their disposable income from farm activity.

Farmer who elected to participate in the program, could open a savings accounts with one of the participating banks, where they could deposit money, by receiving a matching contributions by the State and by Provincial Governments. The funds accumulated in the NISA account would constitute a reserve to use in the years when farm incomes would fall below average.

After a few years of operation, the effectiveness of the NISA accounts as a means for income risk stabilization started to be questioned. In the years 1998/99, even when farm incomes were very low, farmers tended not to withdraw money from their NISA accounts, thus revealing that the cost for farm households of their farm income fluctuations were likely to be lower than the benefits, in terms of higher rates of returns, of the funds deposited in the NISA accounts.
This was probably due to the fact that farmers, in those years, could manage their income risk in other ways, incurring low costs. For example, at the time the NISA program was in place, Canadian farmers had access also to subsidized crop insurance and to a set of compensating payments from the AIDA (Agricultural Income Disaster Program).

The AIDA program started in 1998, to provide support to Canadian farmers who had experienced sudden and severe drop in their farm income for reasons beyond their control. The program was funded 60% by the federal government and 40% by the provincial governments. An AIDA payment was based on the farm’s gross margin, which was defined as allowable income minus cash operating costs adjusted to take account of personal factors. The coverage does not exceed the 70% of the previous three years average gross margin, individual farms payments are capped.

In 2004 the total farm cash receipts from disaster payments amounted at C$238 Million; these payments were made under AIDA and its related provincial disaster programs such as Agricultural Disaster Insurance Program (ADIP), Ontario Whole Farm Relief Program (OWFRP), Farm Income Disaster Program (FIDP) and British Columbia's Whole Farm Insurance Program (WFIP) (Canadian statistics, 2005).

In addition, the Transitional Industry Support Program, intended as a bridge towards full operation of the new CAIS (Canadian Agricultural Income Stabilization) program, provided a total of C$680 million to cattle producers damaged by the closure of the Canada-US border, and C$250 million to producers of all eligible commodities, including the cattle industry, across Canada.

Beginning in 2004, the Canadian Agricultural Income Stabilization (CAIS) scheme replaced and integrated the former NISA. CAIS was actually based on the producer production margin, where a margin is defined as “allowable farm income,” that includes proceeds from production and insurance, minus “allowable (direct production) expenses”. The program generated a payment when a producer’s current year production margin fell below the producer’s reference margin, which was based on an Olympic average of the program’s previous five-year margins (that is subtracting the highest and lowest values).

One important feature of CAIS is that producers had to participate in the program with their own resources. In particular, a producer is required to open a CAIS account at a participating financial institution and deposit an amount based on the level of protection chosen (coverage levels go from 70% to 100% of the “reference margin”). Governments match the producers’ withdrawals in different proportions for different coverage levels.

As it can be seen by this brief historic review, the commitment of the Canadian Government in the so called “business risk management” programs has always been very consistent, estimated by 2005, at around C$1.8 billion per year.
The various programs were intended as part of a comprehensive *Agricultural Policy Framework* (APF) that worked until 2006. In June 2007, the House of Commons Standing Committee on Agriculture and Agri-Food tabled a comprehensive report on the new Canadian agriculture and agri-food policy, *Growing Forward*, which will eventually and completely replace the current *Agriculture Policy Framework* (APF). The Standing Committee’s recommendations covered the five elements of the new policy framework:

- business risk management (BRM);
- environment;
- science and innovation;
- renewal; and
- food safety and quality.

*Growing Forward* will include measures to help producers and others in the industry capitalize on new and evolving markets at home and abroad and continue to contribute to the environment and the health and wellness of Canadians.

A new suite of programs available to farmers will respond to producers’ demands for more responsive, predictable and bankable programming to replace the CAIS program. With the exception of AgriRecovery, which remains to be determined, programs will be cost-shared on the basis of traditional arrangements.

The programs include:

- **AgrinInvest** - a savings account for producers, supported by governments, which provides coverage for small income declines and allows for investments that help mitigate risks or improve market income.
- **AgriStability** - provides support when a producer experiences larger farm income losses. The program covers declines of more than 15% in a producer’s average income from previous years.
- **AgriRecovery** - is a disaster relief framework which provides a coordinated process for federal, provincial and territorial governments to respond rapidly when disasters strike, filling gaps not covered by existing programs.
- **AgriInsurance** - is an existing program which includes insurance against production losses for specified perils (weather, pests, disease) and is being expanded to include more commodities.
In particular, AgriStability, together with AgriInvest, replaces the coverage previously provided under the Canadian Agricultural Income Stabilization (CAIS) program.

As CAIS, AgriStability is based on margins:

- **Program margin** - allowable income minus allowable expenses in a given year, with adjustments for changes in receivables, payables and inventory. These adjustments are made based on information submitted by the farmer himself through an AgriStability harmonized form.
- **Reference margin** – the average program margin for three of the past five years (the lowest and highest margins are dropped from the calculation).

Should the production margin fall below 85% of the individual reference margin in a given year, a program payment would be triggered.

### 2.3.2. India

India is another country with a long tradition in policies for farm risk management. In India, agricultural risks are exacerbated by a variety of factors, ranging from climate variability and change, frequent natural disasters, uncertainties in yields and prices, weak rural infrastructure, imperfect markets and lack of financial services including limited span and design of risk mitigation instruments such as credit and insurance.

Despite these constraints, India debated the feasibility of crop insurance schemes, since independence, evolving through a series of schemes that led to the current National Agricultural Insurance Scheme (NAIS), introduced in 1999.

The system is compulsory for farmers who take crop loans, while voluntary for others. It covers Food crops (Cereals, Millets & Pulses), Oilseeds, and Annual Commercial / Horticultural crops (sugarcane, cotton, potato, onion, chilly, turmeric, ginger, jute, tapioca, coriander, cumin, ispaghul\(^{29}\) (*Plantago Ovata*), fennel, fenugreek, annual banana, annual pineapple, etc.) However, mangoes, apples, grapes and oranges are not yet covered.

The premium rates are fixed at 3.5% for oilseeds & bajra\(^{30}\) and 2.5% for cereals, millets & pulses, during Kharif; in the Rabi season, they are 1.5% for wheat & 2%

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\(^{29}\) The botanic name of Ispaghul is *Plantago Ovata*. It is a plant used to produce seeds which are very common in all Indian city markets and deemed very valuable for their nutritional and pharmaceutical properties. The seeds are identified either with the Farsi name “Ispaghul” or with the Arab one “Bazrequatuna”.

\(^{30}\) Bajra is a type of Pearl Millet (*Pennisetum Typhoides*), the main food crop in Rajasthan.
for other food crops and oilseeds, while the rates for annual commercial / horticultural crops are actuarially set by the Indian Agricultural Insurance Corporation.

Small/Marginal farmers are subsidized in premium to the extent of 50 %, to be shared equally between the Centre & States. The premium subsidy is, however, to be phased out over a five year period, on a sunset basis. Accordingly, the eligible subsidy between 2004-07, is 10 percent.

The government also provides a form of reinsurance. Until transition is made to an actuarial regime, Govt. of India and States shall share claims beyond 100% of the premium collected, for food crops & oilseeds, on 50:50 basis. In case of annual commercial / horticultural crops, claims beyond 150% of premium in the first 3 or 5 years, and 200% thereafter, are borne by the Centre and State, on a 50:50 basis.

Till Rabi 2005-06, NAIS covered 79.16 million farmers for a premium of Rs. 2,332.50 crores\(^{31}\) and finalized claims of Rs. 7,255.75 crores.

Starting in 2006, the Working Group on Risk Management in agriculture, organised by the Planning Commission of Government of India, has been analysing the different issues related to the risk in agriculture for the implementation of the eleventh five year plan (2007-2012) (Government of India, 2007)\(^{32}\).

Starting from the consideration that the governments in developing countries such as in India cannot bear all losses arising out of risks in agriculture, The working group have concluded that the involvement must necessarily stand restricted to enhancing the coping capacities of the farming communities, institution building, stepping in, in times of catastrophic losses and correcting imbalances to which the agricultural sector is exposed to from time to time on account of its inherent vulnerability.

Accordingly, the Working Group has recommended measures for the eleventh Plan period to strengthen the institutions, systems and mechanisms involved in the mitigation and transfer of agricultural risks, such as:

- Transition of the Crop Insurance Scheme to an actuarial regime supported by upfront subsidy in premium with insurers taking full responsibility for claims, save catastrophe claims.
- Strengthening the weather insurance system through technological developments like electronic weather stations and remote sensing technology.

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\(^{31}\) A crore is a unit in the Indian metric system corresponding to ten million units.

\(^{32}\) http://planningcommission.nic.in/aboutus/committee/wrkgrp11/wg11_risk.pdf
• Increase in penetration of livestock insurance considering its future potential contribution to rural income growth.

• To introduce farm income insurance scheme to protect farmers’ incomes more comprehensively.

• To introduce price stabilization fund and credit risks management fund to insulate farmers from price volatility.

• To manage environmental risks arising from climate variability and change through early warning systems, capacity building of farmers and institutional interventions.

• To develop institutions like commodity futures, markets, contract farming, agricultural warehousing infrastructure, etc. to mitigate price risks.

• Recognizing the need to manage the multiple risks in an effective manner a centre for integrated risk management in Agriculture is proposed to be established in public–private partnership.

In India, a price stabilization fund already exists. This was established by the Ministry of Commerce for four plantation crops (Tea, Coffee, Rubber and Tobacco). A price spectrum band is announced every year, by taking into account a seven year moving average of international prices, for the four plantation crops. If the domestic price is between -20 per cent and + 20 per cent of the moving average price, then the year is categorized as normal year, if it is below 20 per cent the year is deemed a distress year, and if it is above 20 per cent, the year is considered a boom year. In boom year, farmers will have to contribute Rs.1000 (up to 4 hectares) to the price stabilization fund account, while in distress years, the Government of India will contribute Rs.1000/-, and in normal year the contribution will be Rs.500 each from the Government of India, as well as from the farmers. The scheme was introduced in 2003, to address the price fluctuations in the post WTO period.

The present scheme is deemed not attractive by the Working Group on Risk Management, due to inherent problems in scheme design. The amount of assistance provided is very small, and the scheme needs to be restructured, in combination with an insurance scheme. (Government of India, 2007)

A credit risk fund is another tool projected by the working group on risk management. It will specially help meet debt repayments, when commodity prices fall. It would reduce defaults and ameliorate repayment related issues, which have been leading to the suicide by farmers. It is designed to smoothen the negative effects of earning shortfalls, based on gross sum of shortfalls in income for individual crops resulting out of price decline.
The scheme is designed for those who have availed credit from scheduled commercial banks. It is based on the original loan appraisal report of the financial institutions. For estimating credit worthiness, a particular price and production from the enterprise is used. If the earning plunges below a threshold level of income from a particular crop, for which the loan was availed, due to fall in commodity prices, farmers will become eligible for assistance. The threshold level is suggested as 10% fall in income when initiating repayment, from the appraised amount at the time of loan sanction. Fall in prices alone, will be accounted for in the scheme, to calculate the threshold value of income. Farm harvest prices would be taken as the benchmark price, while calculating income. This price is published for different districts, by the Department of Economics and Statistics, of the state concerned.

The assistance will be in the form of an interest free amount, limited to a maximum of 50% of the loan, further capped at Rs. 50,000/-. The amount will be debited against the loan amount, and will be made available directly to the financial institution, which will help to eventually avoid issues connected with non repayment of loans. This amount will be treated as an advance amount to the farmer, to repay the principal and interest. The remaining 50 per cent amount will have to be raised by the farmers.

The farmer will have to pay back the amount within a maximum period of five years, based on the gravity of the crisis. Eligible crops and districts, may be decided at the state level, dependent on the severity of the crisis. Strict norms could be laid out in deciding the crops and areas covered, like downward movement in prices for at least 2 years, etc.

A corpus fund has to be established with contributions from the Government of India, State Government and Financial institutions, preferably in the proportion of 20%: 40%: 40% respectively. The initial corpus, may be about Rs.4,000 crores.

2.3.3. Australia

Australia has had an income-stabilization account program, the Farm Management Deposits (FMD) program, since 1999. The incentive for farmers to make deposits under the program is a tax deduction for deposits. As long as the funds remain in the account for at least 12 months, taxes are deferred until the funds are withdrawn. In this regard, the FMD program resembles the farm savings account proposals that have been considered in the United States, particularly FARRM accounts (see section 2.2.5 above.)

Despite implementation of the program in a period of relatively favourable farm income, participation has been low. By the end of 2002, only about 10 percent of dairy farms and 15 percent of all other farms were participating in the program. Still, participating farm operators had accumulated large balances in a relatively short period. By the end of 2002, there were nearly A$2 billion in 39,500 FMD ac-
counts, for an average account balance of about A$48,000. The primary reason that farmers have been able to accumulate such balances in a short period of time is that there is no annual deposit limit, only a maximum total deposit cap of A$300,000. The only limit on the annual tax deduction is that it cannot exceed the primary production income for the year. As a result, during the record year of 2001-02, farmers deposited about 10 percent of the net value of farm production or about A$1 billion.

Since 2002, widespread drought in Australia has sharply reduced income and slowed the growth of deposits. By 2004, the accounts had grown to A$2.6 billion with the number of accounts increasing by about 10 percent to 43,309. Participation in Australia’s FMD program is highest for the largest and most profitable farms. An analysis of Australian farms found that farms with FMD accounts were larger, had higher rates of return and more liquid assets, even without considering the FMD accounts, than farms without such accounts.

2.4. Analysis of the proposals for market risk management tools within the EU F&V sector advanced during the consultation period

As recalled in the preamble to this report (see Chapter 0), during the period that preceded the F&V CMO reform, a consultation was launched by the EU Commission in order to gather the opinions of interested parties on a series of issue potentially interested by the reform.

Among these, the question of short term crisis prevention and management was explicitly included. Four options were suggested in the consultation documents as possible solutions to be included in the new CMO.

The “status quo Plus” option foresaw the maintaining of the withdrawal system as the main market crisis management tool, possibly amended to take into account WTO regulations and to ensure that withdrawn product would be disposed of in socially acceptable way.

The “insurance” option contemplated the introduction of community contribution to premiums paid by producers for insurance against crises caused by natural phenomena, which might have corresponded to an anticipation for the F&V sector, of one of the options that were included in the debate over the more general framework of risk and crisis management in agriculture that was being carried over at the EU level.

The “double destination” option foresaw instead the introduction within the CMO of specific agreements between POs and the processing industry for the supply of the products with double destination to the aim of assuring a supplemental outlet in case of short term crisis on the market for fresh products.
Finally, the “fund” option foresaw the possibility, for Member States that wished so, to create a Fund, co-financed from CMO resources, which would take charge of the actions needed to prevent or manage crisis, within a framework to be established at a European level. Access to the Fund could be limited to members of POs, or extended to all producers in a region or in a Member State, under conditions that would be defined. The Fund would finance a range of actions that could respond rapidly to crises. The extent of Community co-financing and the range of actions would be subject to certain defined variants.

As pointed out by the steering group who carried on the consultation, the subject of crisis management has been subject to a great deal of debate during the consultation. The main conclusions of the debate were that:

a) There is a need of better defining the different types of crisis;

b) Contributors to the debate from Southern European countries, generally prefer the continuation of the withdrawal system, while asking for new measures to be added in order to improve the systems’ crisis management capacity;

c) Northern countries supported only measures intended for management of short-term incidental crises caused by special weather conditions, and public measures should not interfere with the autonomous capacity of the sector itself to adjust to market unbalances;

d) General acceptance is found for possible introduction of new measures which would not disturb competition;

e) “Insurance” is seen as an interesting option, while “double destination” is clearly opposed by many (especially from the processing industry) who fear that it might become a way of transferring a crisis from the fresh to the processing sector;

f) Finally, “Fund” is seen as an interesting option by many, who call for further elaboration.

As we know, the reform has taken into account these conclusions in defining the new measures for crisis management to be authorized within POs Operational Programmes, which included green harvesting/non-harvesting, promotion and communication tools in times of crisis, training, harvest insurance, help in securing bank loans and financing of the administrative costs of setting up mutual funds.

The reform has avoided the introduction of specific measures outside the operation of POs, in continuity with the objective of increasing the attractiveness of POs as the major instrument for achieving the sector stability and progress.

No general measure at the EU level has been introduced with the specific aim of market intervention in case of market crises, such as might have been a fund ad-
ministered at the Community level, or the participation to community level insurance programs.

First partial and preliminary reactions to the reform, with reference to the progress achieved in terms of the sector’s capacity for market risk management are mixed, as we already discussed in section 2.1.6. Positive expectations on the new measures were motivated by the fact that the reform give more strength to POs (also because it potentially attracts more funds to be devoted to crisis management) and that it introduces new instruments. The opinion of respondents believing that the CMO reform will not improve the capability to manage market crises instead are essentially based on the difficulties to protect producer who are not associated to POs in Countries were the diffusion of POs is still weak.

By taking a deeper look at the documents produced during the consultation, we notice that, almost all of the participants to the consultations did not go, with their documents, beyond a generic expression of interests towards a “fund”.

The impression is that, in general, the option of a fund was taken, perhaps correctly, somewhat more broadly than simply as a short-term market risk management device. Rather, it has been likely foreseen by many as an institutional framework trough which POs (or possibly individual producers) might invest funds (receiving partial or full matching contributions from the Community budget) to finance many things (withdrawals, income stabilization procedures, operational costs and insurance costs, etc) much in line with the spirit that is currently informing the financial intervention on the POs operational funds.

Only one document, jointly presented by a group of farm cooperative associations of France, Italy and Spain (Felcoop, Fedagri Confcooperative, Legacoop agroalimentare, Confagri and Confederación de Cooperativas Agrarias de España) went to the point of advancing specific proposals on how an actual “Crisis management Fund” might be organized. The proposal of the farm cooperatives’ delegates included specific indications on the legal framework on which the fund might be based, the management of the fund, the triggering mechanisms for access to the fund and the possible funding.

Although nothing would prevent any cooperative or Producer Association to independently organize mutual funds to the aim of jointly finance initiatives, in order to exploit either a risk pooling feature of the mutual fund, or the economies which may be generated in performing some of the management activities on a wider scale than at the individual producer level, the proposal set forth in the document is explicitly aimed at defining a fund to be included within the framework of a Community level initiative, benefiting from financial support from the CMO.

Such an objective would obviously require that conditions be set on the interventions tools which the fund ought to finance and which should be agreed upon in or-
order to be considered legitimate and therefore “eligible” for public support. The list of “eligible” tools presented in the document includes:

- A mechanism for supply limitation;
- A system of processing aids
- Storage aids
- Insurance premiums
- A “compensation fund”
- Other actions, such as preventative actions, promotion, etc.

The inclusion of activities that are already foreseen in the operational programmes of POs (such as withdrawals and promotion activities) suggests that the fund they propose is intended as a way to improve on the already existing operational funds, rather than representing a specific new risk management fund.

In particular, we notice that the mechanism for supply limitation, as it is described, is nothing more than a withdrawal system, which would entitle POs to refrain for marketing part of the product supplied by their members, for which producers would receive a compensation sufficient to cover production and harvest costs (therefore, higher than the current Community Withdrawal Compensations). The product withdrawn would be then freely distributed, perhaps within food aid programs, or reversed on the fields of the PO member (it is not clear whether after composting, to be used as a fertilizer?) In the first case, an additional compensation would be required to cover distribution costs.

The real innovation compared to the current withdrawal system seem to be the way of setting up the ceiling on the possible amount of product withdrawn, which would be equal to 15% of the marketed product in one year, with the possibility of accumulating unused quotas over a three years period, so that in some cases, it might be possible to withdraw up to 45% (!) of the yearly product.

In terms of the other actions to be included among those financed by the fund, which might be characterized as risk management activities (namely, insurance premiums, and the “compensation fund”), the document is limited to few general statements, with no analysis of the actual feasibility of such actions.

Insurance is intended to include coverage against climatic adversities, trade “accidents”, prices and revenues. Also, it is stated that the coverage should include the indirect losses of cooperatives and POs, generated because of the increase in unit fixed costs due to the reduction of the marketed quantity.
The “compensation fund” should serve the purpose of paying a compensation (either to the producers, or to the OP, in order to cover its fixed costs) whenever the market price of the product would fall below a predetermined minimum price.

Although it is not clearly stated in the document, these measures should probably be considered at least in part mutually exclusive, lest the possibility of double compensations that might arise, for example, by the withdrawal compensation and the insurance indemnities due to the reduction of the marketed quantity.

Moreover, there are several reservations that might be raised against some of the proposed measures which appear to be potentially very costly, and for which the need or the opportunity of Community contribution is unclear. Without a specification of further details on the actual possible implementation of many of these measures, however, it is difficult to express a judgment on their feasibility, potential effectiveness and actual distribution of benefits and costs.

Nevertheless, the document presented by Felcoop, Fedagri Confooperative, LegaCoop agroalimentare, Confagri and CCAE is a welcome contribution to the discussion carried on in this study, and many of the proposed measures will be analyzed in detail in the next phase, within the proposal of a comprehensive security system.

3. Inventory and analysis of existing tools and proposals: Market monitoring

3.1. A brief preliminary note on methods

The inventory of tools listed below has been drawn up after an accurate and wide-ranging selection of both European and extra-European bodies that gather, process and disseminate information on significant producers and consumers in the fruit and vegetable (F&V) sector. By “tools” we refer, in this context, to:

- a) bodies carrying out surveys in all industry segments, at local, national, European and extra-European levels
- b) survey and processing techniques adopted by these bodies
- c) methodologies for the use, dissemination and communication of results
- d) databases owned by bodies and made available to the EC
- e) skills and energies within bodies which are made available to the EC for this specific purpose.

Our research strategy makes use of various techniques: this is not only due to the fact that an adequate methodology requires subsequent stages to further the
analysis and knowledge of the matter under investigation, but also to the objective
difficulties we encountered, which have often not allowed us to reach the neces-

sary level of analysis required by research objectives. It is indeed understandable –
as the analysis of results below shows – that the bodies do not operate in a similar
manner, at a comparable level of analysis, with the same objectives and with the
same availability to co-operate. For these reasons we were not always able to fol-
low the methodological sequence described below for all bodies surveyed.

However, this funnel-shaped technique has in many cases allowed us to highlight
something which had not been identified before the survey was carried out: bodies
that had been considered indispensable – at the beginning of our research project –
to obtain a complete status quo overview, often declare that they only refer to
one or few research bodies for their information and strategic requirements, thus
highlighting the fact that knowledge can be reached by referring to few, but signifi-
cant sources. We therefore decided to focus our analysis on those structures that
can supply most of the answers to our research questions.

We are fully aware of the fact that we have not reached a complete census during
this initial phase of our work, but we believe we have obtained an adequate snap-
shot of the existing situation.

The methodological path can be subdivided in the following analytical tasks:

- analysis of existing bibliography;
- web search for bodies operating not only in the research sector, but
  also in communication, institutions, etc.;
- identification of other similar organisations operating at major interna-
tional fairs and events;
- survey of stakeholders for identified bodies;
- administration of questionnaires to eligible bodies;
- telephone interviews for further analysis of gathered information.

Based on their primary objectives, institutes, organisations and agencies were
classified into four main categories:

a) Research institutes (RES) excluding those operating in the technical,
genetic and similar research fields
b) Marketing organisations (MAR)
c) Institutions / Associations (INS) carrying out statistical research activity
  or economic policy analysis in the F&V sector
d) Press agencies (PRE) operating in the F&V sector
With regard to above-mentioned categories, having found that press agencies and specialised magazines do not act as primary data sources and do not process data, but only disseminate data surveyed and/or processed by other entities, we will not supply information on press agency analysis in this report. For the same reason, we will not refer to some of the contacted organisations that do not survey data directly, but use data gathered officially by national institutions. Among excluded organisations we find for example ANEIOA for Italy that mentions ISMEA, ISTAT, EUROSTAT and FAO as its data sources, ANEECOOP for Spain that mentions the Observatory of the Ministry of Agriculture and MERCASA, CMA, FMC and IFIGW in Germany that exclusively depend on ZMP and, finally, SIEPA, the Serbian Investment and Export Promotion Agency, that depends on the Serbian national agency.

Tab. 13. List of surveyed bodies

<table>
<thead>
<tr>
<th>Body</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZMP - Zentrale Market und Preisberichtstelle GmbH</td>
<td>DE</td>
</tr>
<tr>
<td>CSO - Centro Studi Ortofrutticolo</td>
<td>IT</td>
</tr>
<tr>
<td>FRESHFEL - European Fresh Produce Association</td>
<td>IT</td>
</tr>
<tr>
<td>AREFLH – Fruit Vegetable and Horticultural European Regions Association</td>
<td>EU</td>
</tr>
<tr>
<td>INTERFEL - Interfel Profession de la filière des F&amp;L</td>
<td>FR</td>
</tr>
<tr>
<td>CEAFL - Comité de Bassin Rhône Méditerranée</td>
<td>FR</td>
</tr>
<tr>
<td>SNM - Service des Nouvelles des Marchés</td>
<td>FR</td>
</tr>
<tr>
<td>CTIFL – Centre Technique Interprofessionnel des F&amp;L</td>
<td>FR</td>
</tr>
<tr>
<td>CIRAD - Centre de Coop. Intern. Recherche Agronomique</td>
<td>FR</td>
</tr>
<tr>
<td>INH - Institut National d'Horticulture</td>
<td>FR</td>
</tr>
<tr>
<td>VEGEPOLYS</td>
<td>FR</td>
</tr>
<tr>
<td>Brussels Export Ministère</td>
<td>BE</td>
</tr>
<tr>
<td>Consorzio Infomercati</td>
<td>IT</td>
</tr>
<tr>
<td>ITC - The International Trade Centre</td>
<td>CH</td>
</tr>
<tr>
<td>FPC - Fresh Produce Consortium</td>
<td>UK</td>
</tr>
<tr>
<td>Icex - Istituto Español de Comercio Exterior</td>
<td>ES</td>
</tr>
<tr>
<td>INFOHORT of AAFCC's Food Value Chain Bureau</td>
<td>CAN</td>
</tr>
<tr>
<td>CMPE - Moroccan Center for Export Promotion</td>
<td>MO</td>
</tr>
<tr>
<td>Observatorio de Precios Agroalimentarios M.A.P.A.</td>
<td>ES</td>
</tr>
<tr>
<td>ISMEA - Istituto di Servizi per il Mercato Agricolo Alimentare</td>
<td>IT</td>
</tr>
<tr>
<td>EFC - European Fruit Cooperation</td>
<td>UK</td>
</tr>
<tr>
<td>GROUPE ESA – Angers Agricultural High School</td>
<td>FR</td>
</tr>
<tr>
<td>FEPEX - Federación Española de Productores Exportadores</td>
<td>ES</td>
</tr>
<tr>
<td>Catalonia Qualitat - Ass. d'Org. de Productores de fruita</td>
<td>ES</td>
</tr>
<tr>
<td>CNR-IBMET</td>
<td>IT</td>
</tr>
<tr>
<td>C.M.P.A - Canadian Produce Marketing Association</td>
<td>CAN</td>
</tr>
<tr>
<td>CORPEI - Export and Investment Promotion Corporation</td>
<td>ECU</td>
</tr>
<tr>
<td>Brisbane Markets</td>
<td>AUS</td>
</tr>
<tr>
<td>CFFA- Chilean Fresh Fruit Association</td>
<td>CHI</td>
</tr>
</tbody>
</table>

An important parameter taken into consideration was the geographical region covered by single research activities in surveyed bodies, in order to obtain a significant coverage for each level of analysis. We begun by excluding bodies with a small or insufficient territorial presence, while surveying organisations within the above-
mentioned categories which owned or could produce useful information at the follow-
ing levels:

- production macro-regions (e.g. the European or African Mediterranean area);
- entire nations;
- part or all EU27 countries;
- non-EU European countries;
- large Asian, North-American, South-American, New-Zealand, African areas.

We then analysed work methodologies adopted by single bodies:

- usable types of processed data;
- degree of access to data owned by the organisations;
- access mode;
- information production;
- availability of organisations to participate in the proposed research study.

Tab. 13 lists all surveyed organisations that expressed their availability to co-
operate and that were considered useful in identifying bodies and tools that can provide information required to create a security fund for the prevention of main product crises.

3.2. Selection criteria and indicators

The types of information the survey has been referred to are:

- Production data
- Meteorological data
- Prices
- Market and distributional sector data
- Import and export
- Data collected and/or processed by EC - DG AGRI

The criteria used to catalogue information sources are:

A) Geographical coverage of sources:
- Regional
- National
• EU 27
• Non-EU European countries
• Worldwide

B) Survey mode:
• direct
• indirect

C) Survey frequency and mode:
• Survey frequency
• Time coverage of data

D) Information sources and territory:
• Source (primary and/or secondary)
• Nation

With reference to prices, the survey on data sources was carried out on the basis of current price data and expected price data (forecasts) and took into consideration three price levels on the F&V chain (for both current and forecast prices): production (farm gate) price, wholesale price and retail price. We then applied to information on prices one more selection criterion represented by the subject of survey:
• Source price
• Retail price
• Production price

With respect to the market and the distribution sector and to the import/export information, classification of sources took into account the survey topic, too. That meant to classify data and/or information sources according to whether data collection refers to prices or to quantities and, limited to market and distribution sector, according to goods being surveyed.

To synthesise the results of the analysis, carried out following above-mentioned criteria, we referred to 3 indicators:

1. **Data availability.** The indicator reflects positive answers with regard to availability of data/information within interviewed bodies.

2. **Data accessibility.** The indicator reflects information regarding access and dissemination modes for available data.

3. **Data functionality.** The indicator reflects the evaluation of available and accessible data, which can be used to prevent and manage market crises in the F&V sector. More specifically, for meteorological data the indicator is built by putting together information regarding frequency and geographical coverage of surveys and, in a second analytical stage, by adding a third factor, i.e. the features of the life cycle for a category of goods (F&V in this case), or even better for a specific product. Only in this way it is possible to evaluate the utility of a meteorological forecast with
specific time and space features, in relation to the objective of preventing and managing crises in the F&V sector.

3.3. Analysis of market monitoring data processed

3.3.1. Production data

Among bodies analysed 13 declare they possess specific data on F&V production. These bodies include three major European research and study centres specialising in the sector (CSO, ZMP and CIRAD), a EU-level market observatory which avails itself of AREFLH’s (Producers' Organisation) experience, an association of professional organisations operating in the production and distribution of legumes and fresh fruit (Interfel), two producers' associations (Freshfel and EFC), a producers' organisation (CEAFL, Fepex, Catatonia Qualitat), a ministerial body (SNM-SCEES), a technical centre (CTIFL), a national trade body (CMPE). These bodies can be classified on the basis of survey type:

- six bodies gather data directly
- four bodies, among which a ministerial one, acquire and process secondary data or data surveyed on commission
- three bodies use both directly gathered data and data collected by other bodies.

In the case of indirect use of data for the purposes linked to the objectives of single bodies, primary sources of privileged information are as follows:

- at a national level:
  - the respective Ministries of Agriculture;
  - POs and associations/unions that represent them.
- at a supranational level:
  - FAO and EUROSTAT

With respect to products:

a) seven of the chosen bodies maintain that they gather general fruit and vegetable (F&V) data
b) pears, apples and nectarines are the most observed fruits, with four bodies each
c) only one body maintains to own quantitative data on potato production (Germany)
d) only one body maintains to own data on the volume of imported F&V products (bananas, pineapples, avocados, tomatoes, etc.)

As far as survey frequency is concerned, the most common one is yearly (ten cases altogether). Two bodies declared they use both yearly and monthly surveys,
while another two bodies (one only for the Italian territory – including regional breakdowns – and the other one at a global level, even though only for member F&V production regions) collect production data on a weekly basis.

With regard to availability of time series, four bodies declare they own data since 1998, two from the first 2000s, while remaining bodies did not specify the start year for their surveys.

As far as area data is concerned, we discovered that as many as ten of surveyed bodies own and use systematic information, with the following territorial stratification:

- 5 at both national and regional levels
- 2 at a regional level only
- 3 exclusively at a national level
- 2 at a global level (ZMP and Areflh)
- 2 at the EU 27 level

This data can guarantee an adequate system for covering production and seasonal quantity data at a local level. Most of cultivated area surveys are carried out on a yearly basis (nine cases out of ten) in Germany, Italy and France. In this last country a centre reports a monthly collection of data on cultivated areas.

With regard to forecasts, approximately a third of surveyed bodies carries out production forecasts. Of these, eight also carry out cultivated area forecasts.

Geographical coverage is mainly at a national level; only in two cases it is global, even though for a few specific products, such as asparagus, strawberries, nectarines and peaches, plums, table grapes and melons.

Forecasts are available on an annual basis, only in three cases on a monthly basis and in a single case, although limited to some imported tropical products (bananas, pineapples and avocados) also on a weekly basis.

### 3.3.2. Meteorological data

The correlation of production and consumption on meteorological data depends on various aspects that are linked to the production season (fall/winter vs. Spring/summer production cycles), mode of cultivation (open fields vs. green houses), seasonality of consumption (i.e., whether products are considered as typically “winter” type, a phenomenon which is claimed to be relevant, for example, for cauliflowers). All these considerations makes it difficult to define which type of meteorological information is more relevant in an absolute sense, rather, for each product/region combination there might be some information that is more crucial than other. For this reason, at this stage we do not consider in detail the specific meteorological variable recorded.
A more detailed analysis, carried out by means of interviews and questionnaires, did not allow us to identify bodies which are specifically and systematically focused on meteorological data surveying or that have in-house staff or tools aimed at this particular type of survey. Only two associations, Fepex and Catalonia Qualitat, have declared that they own meteorological-type data. The first association however only processes for its internal use data collected by other entities such as the National Institute-Planalytics – USA. The second one carries out weekly processing of data obtained from official sources, POs and other organisations. The French body Groupe-Esa manages three databases, among which one for climate data.

It should be noted that, due to the presence of institutional meteorological services with a national coverage, which also have a good detailed information at a local level, it is rare to find other bodies working in this field.

However, our desk analysis produced the following results:

- Searching for currently available sources in the field of meteorological forecasts we were able to identify various online sites which offer the same search procedure virtually in all cases.
- These sites allow the user to select the production area for a particular product and then to view meteorological forecasts for the following three, five or seven days. Such a tool is immediately accessible to all operators, even though it is not very useful for our research objectives, especially when considering that it offers only short-range forecasts (max. one week).

In general, available meteorological forecast information sources and data are numerous and diversified. This data is strongly influenced by the different degree of territorial regionalisation existing in different states. In Annex 1 we report three different examples of agro-meteorological services: A) the Regional Agricultural Agencies operating in Italy; B) the ECMWF (European Centre for Medium-Range Weather Forecasts) operating at an international level; C) the IPCC (Intergovernmental Panel on Climate Change) operating at an supernational level.

### 3.3.3. Prices

The following analysis of data sources is based on the distinction between the three market levels.

With regard to production prices, within the group of surveyed bodies – at least in Italy and Germany – we discovered the existence of a single organisation that since 1998 collects, at both national and regional levels, weekly data on F&V production prices. In this case, time series are available since 1998.
With regard to producer prices, in Italy, the official source is the ISMEA Observatory that makes use of the producer price survey network, established in 1965. Chosen survey sites have been identified based on their representation degree within the first exchange phase with regard to volume of products traded and to geographical position (36 markets for vegetables, 37 markets for fresh fruit).

In France the producer price survey is carried out on a daily basis, at both national and regional levels, by the service of the Ministry of Agriculture and Fishery, by means of direct survey. Other French-based bodies we interviewed (see CTFIL) declared they use this source.

Only one of the interviewed bodies (CIRAD), that has in-house staff specialising in data surveying and database creation, and that specialises in tropical products, carries out direct surveys in Equatorial countries.

In Spain, our survey showed that the Observatory on prices established at the Ministry of Agriculture, Fishery and Food gathers producer prices for a basket of 33 products.

With regard to wholesale prices our survey shows that:

- bodies entrusted with wholesale price data collection are often linked together. As a matter of fact we discovered the existence of agreements among similar bodies in EU 27 countries such as Italy, France, Germany and Spain (between Consorzio Infomercati, MERCASA, ZMP and Services des Nouvelles Marchés - SNM) for wholesale price data collection regarding a basket of F&V products, comparable and agreed upon by the parties. Surveys in these cases have a variable frequency, from weekly to monthly;
- most of interviewed bodies that survey wholesale price data depend in some way from national ministries (e.g. in France and Italy), in some cases as internal ministry agencies (e.g. SNM), in other cases because they are linked to the various institutional authorities by agreements and conventions (see for example the one between MISE and Consorzio Infomercati);
- surveying is carried out directly at producer level, in wholesale markets and agrofood centres;
- at the level of single states, in most cases wholesale price monitoring is carried out on a daily basis.

In Canada there are daily reports available on national and imported products. All quoted prices are provided by a group of wholesale dealers operating in specific markets. Report data directly refer to quoted prices (i.e. they represent the price requested from wholesale dealers to retailers) and are not subject to any process-
ing or treatment. Monitored markets are: Calgary, Edmonton, Halifax, Moncton, Ottawa, Regina, St. John’s, Saskatoon, Vancouver, Winnipeg. Weekly reports are available on national and imported products. Data is provided by a group of selected wholesale dealers operating in the markets of Montreal and Toronto.

In Australia the Brisbane Market Official Monitoring Service publishes a weekly report on the variation, with respect to the previous week, of the average price of a group of products (F&V) sold at the “Brisbane Markets”, the main F&V wholesale market in Queensland and one of the six central markets established in Australia. The survey concerns 20 products that have been subject to increases or decreases of the average price due to the availability of a greater quantity of product. Price variations concern only Queensland’s products sold at the “Brisbane Market” and may differ from those related to products from other sources available at the same time on the same market.

The Italian observatory (ISMEA) makes use of the wholesale F&V market survey, in agreement with the Ministry of economic development. Surveys are carried out on 14 wholesale agrofood markets which are considered representative in terms of product quantities and geographical position.

In France also for wholesale prices the most important survey is the official one carried out by institutional bodies, quoted by three of the interviewees with reference to the acquisition of data to be processed and disseminated among its members (in the case of associations and/or organisations) and to third parties (in the case of bodies, etc.).

In Spain, our survey showed that the Observatory on prices established at the Ministry of Agriculture, Fishery and Food gathers producer prices for a basket of 33 products.

Within the chosen sample, nine bodies gather retail prices.

A different situation can be found in Italy where there is a partial survey, currently only for six cities (Consorzio Infomercati) and for a few products, defined within an agreement with the Ministry. The survey is carried out on a weekly basis and was only started a year ago. Furthermore, the Price and Tariff Observatory (Osservatorio dei prezzi e delle tariffe) makes use of a survey network (ISMEA) on Italian household purchases (carried out in partnership with AC-Nielsen). The survey is based on a sample of 6,000 families, stratified according to socio-demographic and territorial variables, representing the whole Italian situation and that are actively involved in the survey process through the so-called home-scanning technology. Average national prices for each sector are calculated as weighted averages, with weights corresponding to the volumes of fruit and vegetables purchased by Italian families for the week under examination.
In Spain, our survey showed that the Observatory on prices established at the Ministry of Agriculture, Fishery and Food gathers producer prices for a basket of 33 products.

As far as price forecast data is concerned, the only interesting experience we found among the surveyed bodies – in terms of survey scale (regional to global) and use of sources (member APOs and other important bodies such as FAO and Eurostat) – is the Areflh market observatory. This annual survey was started in the year 2000 and focuses on a few specific products such as asparagus, strawberries, nectarines, peaches, plums, table grapes and melon.

Lastly, the interesting activity of the French agronomic institute that supports the development of French South and foreign territories and has been focusing on the most popular imported F&V products: pineapples, avocados and tomatoes, etc.

3.3.4. Market and distribution sector

Only six of those interviewed in the field of large-scale distribution had data available regarding this sales channel. Specifically, two of them collect data from the Italian market using different methods. Both these structures monitor the retail prices of products using direct methods, checking them weekly at large scale retail outlets. One of them collects data on all fresh fruits and vegetables and the other only collects data relevant to products contained in the food basket agreed with the Ministry of Economic Development, who commissions the survey. Both structures carry out surveys at national and regional levels and in one case also regarding the 27 EU countries, but only one is able to provide records from 1998, as the other has been carrying out this job only since 2007.

In France, one organization has been carrying out surveys since 1998 on national and regional levels, collecting data regarding quantities and prices of fruit and vegetables sold in Large Scale Retail outlets. The survey is carried out weekly on a national and regional basis. With regard to the French large-scale retail sector, an association of Professional Organisations for production and distribution of vegetables and fresh fruit carries out a yearly survey of prices and quantities sold. This survey is also carried out nationally using a consumer panel.

The data on stocks in the fruit and vegetable sector are collected by 11 of the structures that we analysed. They are distributed geographically as follows:

- 1 in Canada
- 4 in France
- 1 in Germany
- 2 in Italy
- 3 in Spain
The experience of the eleventh structure stands out. It is the worldwide network of fruit and vegetable producing regions, which communicate monthly data regarding stored volumes of peaches, nectarines and pears, collecting them directly from the associations of fruit and vegetable producers in Portugal, Spain, France, Italy, Greece and Belgium.

In the case of Italy, Germany and French ministry data, information is also available on a regional basis.

With regard to possible variations for fruit and vegetable products, surveys have been carried out in four cases for apples, four more for pears and one each for kiwifruit, peaches and nectarines.

The Canadian body collects information directly at source from the warehouse operators for the volume of potatoes stored.

Foreign market surveys collect data on prices and quantities. Four structures (two of which are Italian) carry out weekly surveys on European markets. One of its Italian branches widened its market survey to non-EU markets to include several countries in the world, thus providing a record dating from 1998. On a world level, Areflh also carries out indirect surveys, in other words, by processing data obtained from APOs and from public entities and private companies in Argentina, Chile, USA, South Africa, New Zealand and Morocco

### 3.3.5. Import and export

Sixteen of the organizations selected collect import/export data; eight of these monitor prices and quantities, six others monitor only quantities and two only prices.

In general, the organizations that deal with import export include two Trade Institutes (Morocco and Spain), a National Ministry (France), five research centres (France, Germany and Italy) and several more associations.

The information available did not allow analysis in much detail of the methodological characteristics used for the surveys. The Italian databank on national agrofood trade (Ismea) stands out with data on trade flows of agrofood products at a national, regional and provincial level.

The frequency of data collection varies considerably, from weekly to yearly. Only in two cases, both French, are records available over a period of at least ten years. In the French case the Fruit and Legumes category is preferred to that of fruit and vegetables.

The main method of data collection used is indirect and based on various sources, some of which were confidential and not declared by the interviewees.
3.3.6. Data collected and/or processed by EC - DG AGRI

As we will see in the following paragraphs DG AGRI uses, elaborates and possesses many different types of data on production, prices etc. which can be accessed from different systems and databases, most of them of EC property, but not all of them harmonised.

Currently, Common Agricultural Policy (CAP) processes are partially managed via an IT system (AMIS 2), together with traditional paper-based solutions or IT office productivity tools, like spreadsheets. At present, a new EC project – ISAMM – is being developed. The ISAMM project aims at creating a new IT system to support the EC, in order to manage the CAP and the CMOs. The ISAMM project will also cover the review, harmonisation and simplification of CAP processes. This system should cover the business processes related to the management of agricultural markets, excluding the budget and control processes or the processes linked to the rural development measured and already covered by existing systems. Therefore most of the data reported here below should be available through a unitary IT system.

Current data on actual production within the EU.

Clearly, ample data has been collected and processed, especially for products in the F&V sector which have availed of productive direct aids, as in this case community contributions have been distributed on the basis of quantities produced (or cultivated areas) on the basis of the SPS. The sources of information within DG-AGRI mainly consist of the following:

A) CATS – Clearance of Account Trail System – this database contains all the clearance of account information. The unit responsible for it is Unit J1 (Coordination of horizontal questions concerning the clearance of accounts). This is the database containing the most detailed information, at DG AGRI level and on a yearly basis, on both financial and production issues. Most of the data concerned are checked on land. This very useful database is related to the functioning of the SPS “direct aids” scheme, therefore the possible changes caused by “decoupling” the F&V CMO must be considered for future data availability on production.

Coverage: European Union by Regions (NUTS II and NUTS III).

Timing: the financial data are available from the years 2000 to date.

Variables: The CATS database contains a significant amount of information concerning:

a) data relating to payments
b) data relating to beneficiary (applicant)
c) data relating to declaration/application

d) data relating to security

e) data relating to products (number of hectares / tons)

f) data relating to inspections

g) additional data relating to export refunds

A more detailed list of such information is contained in Annex I and III of the Commission Regulation (EC) No 1359/2005.

B) AgriView data warehouse – this database records the EAGGF Guarantee financial information by Member State and by budget line, on a yearly basis. The unit responsible of EAGGF Guarantee financial information is the Unit I1 (Budget management). This database does not report data on production but only on EU expenditure.

C) FADN - Farm Accountancy Data Network - it was launched in 1965, when Council Regulation 79/65 established the legal basis for the organisation of the network. It consists of an annual survey carried out by the Member States of the EU. The services responsible in the EU for the operation of the FADN collect accountancy data every year from a sample of the agricultural holdings in the EU. Derived from national surveys, the FADN is the only source of micro-economic data that is harmonised in all countries. Holdings are selected to take part in the survey on the basis of sampling plans established at the level of each region in the EU. The survey does not cover all the agricultural holdings in the EU but only those which could be considered commercial due to their size. The methodology applied aims to provide representative data along three parameters: region, economic size and type of farming. While the European Commission is the primary user of analyses based on FADN-data, aggregated data can be found in the Standard Results database. The representative samples of farms are frequently used for socio-economic impact analysis.

D) EUROSTAT - Fruits and vegetables (annual data) – provides information by Member State on: Area of production, Harvested production and Yields, for each F&V production (or for aggregates). It also provides a “supply balances sheet” by Member State on major figures (production, imports/exports, stocks) for a selection of the most relevant F&V products. EUROSTAT data are mainly gathered from the statistical authorities of each MS. It is evident that the data provided is mainly based on statistical processing. An orchard survey is conducted every 5 years at EU level.

E) Agricultural statistics reports, published by DG AGRI and namely:
a) "Rural Development in the European Union - Statistical and Economic Information yearly Report" provides statistical and economic information, at national and regional levels, covering the three objectives of Rural Development policy 2007-2013. It also gives an overview of the implementation of Rural Development policy for the programming period 2000-2006. Most of the information presented in this report outcome from various sources and documents (Eurostat databases, European Environmental Agency, DG Agriculture and Rural Development's statistical and financial reports), but are compiled here in a structured way and integrated in a single document.

b) "Agricultural trade statistics yearly Report" provides detailed information on the agricultural trade of the EU (around a thousand tables and graphs). Data is available per chapter, aggregated product level and by region, in values and quantities. Most of the information presented in this report comes from the EUROSTAT database.

c) "Agriculture in the European Union - Statistical and economic information yearly Report" Covers a wide range of subjects: the economic situation in agriculture, structures, trade, markets, financial aspects and rural development. Most of the information presented in this report comes from various sources and documents (Eurostat databases, European Environmental Agency, DG Agriculture and Rural Development's statistical and financial reports).

F) **POs production information**, provided from POs to each MS, as specified in Art. 44 of Council Regulation No. 2200/96. In this case it has to be considered the wide differentiation between MS in which productive aggregation is very high, and MS in which the marketed production represented by POs accounts for only a marginal percentage of the total.

**Current data on actual prices and consumption.**

With regard to **current prices within the EU**, on the basis of Council Regulation No. 2200/96 (and consequent applicative regulations issued by the Commission) the wholesale prices on the markets for certain relevant fresh F&V products, are recorded on the basis of Commission Regulation No. 877/2004. Prices are recorded within Agriview and EUROSTAT New Cronos database, for class I products, ex packing station, sorted, packaged and, where applicable, on pallets. For the products listed in the Annex, the MSs shall forward to the Commission, on Wednesday each week, a notification detailing the average price recorded for each market day on the markets listed in the Annex for the types and/or varieties of products and the sizes and/or qualities stated in the Annex for which there have been transactions. In the interests of transparency, the Commission informs the MSs of the prices recorded throughout the Community and the Community aver-
average price. It has to be considered that at present this regulation is under revision and a Commission proposal for the amending regulation is expected for April 2008.

As far as the current prices in the major non-EU markets of the main commercial partners is concerned, as well as domestic consumption in the main EU commercial partners, from interviews carried out it is has been seen that DG AGRI does not possess or process its own data. Normally, this is obtained by consulting external databanks (i.e. FAOSTAT or USDA). When there is special need for up-to-date information, DG AGRI officials refer to external sources (commercial operators in the field) with whom they have working relationships or to experts in this sector who are part of the 5 specific “forecast working groups” (potato – peaches and nectarines – apples and pears – citrus fruit – tomato).

With regard to actual consumption or quantities marketed within the EU, interviews have revealed that normally, actual consumption is not verified using direct surveys but is estimated using macroeconomic variables from DG AGRI (Production + Imports – Exports + Stock variation).

Current data on non-EU commercial flows (imports/exports).

In this case too it is important to distinguish between the surveys that are carried out using two different commercial flows. The surveillance system on import prices of F&V has been based until 31/12/2007 on Council Regulation (EC) No 2200/96 - TITLE V Trade with third countries. At present, after the F&V reform of 2007, the provisions for the entry price system are laid down in the new Council regulation 1182/2007 and Commission Regulation 1580/2007. The Entry Price scheme requires that each working day the EC fix a Standard Import Value (SIV) for each product under this scheme. For the periods set out in the Annex of the same regulation and for each origin, a SIV equal to the weighted average of representative prices, less a standard amount of ECU 5/100 kg and ad valorem customs duties. SIVs are published daily in the Official Journal. MS communicates (only for fresh F&V listed in part A of the Annex to Commission Regulation No 3223/1994) the average representative prices of products in “representative markets” (as listed in Art. 3 of Commission Regulation No 3223/1994) imported from non-EU countries sold in the representative import markets and total quantities relating to the prices referred. Representative prices are recorded for each product listed, for all available varieties and sizes, at the importer-wholesaler or wholesaler-retailer (if the former is not available) stage.

However, the Export refunds scheme, also regulated until 31/12/2007 by Council Regulation (EC) No 2200/96 - TITLE V Trade with third countries, does not require collection of exported F&V prices but only the quantities for which the request of export refund is presented.

The 2007 reform of F&V CMO abolished the export refund scheme, and left the price reporting system practically unchanged. As a result, today the DG AGRI pos-
serves data on prices and quantities of some of the principal imported products, communicated daily to the MSs for purposes of calculation of SIV.

Another relevant and useful source for foreign trade data is represented by Eurostat's COMEXT database. It contains the official European Foreign Trade Statistics and includes detailed statistics on the trading in goods of each MS (reporting country) with the rest of the world on an annual basis. The basic indicators are trade value and trade quantity. These external trade statistics further refer to the direction of trade flow (import or export) and the reference period. Trade goods are classified by the 8-digit European Harmonized System. The time dimension covers the data since 1988 for the EU15 Member States and data since January 1999 for the 12 New Member States up to the present.

An international trade data source frequently used is also the United Nations Commodity Trade Statistics Database - UN Comtrade - containing detailed imports and exports statistics reported by statistical authorities of close to 200 countries or areas. It concerns annual trade data from 1962 to the most recent year. UN Comtrade is considered the most comprehensive trade database available with more than 1 billion records. The database is continuously updated.

**Data forecasts on the main production and market variables**

An overall analysis (at EU and International levels) of the current marketing year and a brief forecast for the following months is provided twice a year for 5 of the most relevant F&V productions (potato – peaches and nectarines – apples and pears – citrus fruit – tomato) by 5 specific “forecast working groups”. These groups are part of the Consultation Advisory Groups, which bring together, on the Commission’s invitation, representatives of the various social and economic interests as well as sector experts. At the end of each meeting a report is drafted with no specific structure. Data, tables and graphs are provided by DG AGRI and by participants. Only the overall analysis of current and previous years is published on the WEB, while the forecasts, conclusions and proposals coming from each meeting are only for internal DG AGRI use.

An overall agro-meteorological analysis and a forecast for some crops are provided by the Joint Research Centre. JRC is a research based policy support organisation and an integral part of the European Commission. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. The agro-meteorological analysis covers the European region, the Black Sea area, the Maghreb and Eastern European countries. A specific “MARS bulletin” is published between 6 and 8 times a year. This project is extremely useful for the purposes of our analysis, as it is a tangible application and development of the agro-meteorological analysis. The production estimates are processed on the basis of specific “cultivation and production development models” and according to the meteorological trends seen both from satellites and from land. To be useful for
the F&V sector, this application should be implemented considering the different “cultivation and production development models” for each one of the principal products above.

Some early production estimates, for some crops, are provided by EUROSTAT to MSs and to the EC only.

Forecasts owned or processed by DG AGRI on other relevant, domestic or international, productive or market variables did not emerge from our interviews and desk analysis.
3.4. Analyses of characteristic data processing functions of the surveyed structures

A great amount of data is available as shown in the previous analysis. National and supranational structures can supply statistical data, time series, forecasts and studies of various types. They are mainly leading European research centres and institutions which, as already mentioned, monitor data at a world level too. An important thing to mention is the fact that while almost all structures generate statistical data, the drafting of forecasts, time series, comparisons and in general more sophisticated elaborations are entrusted to leading research centres, used by non-specialist organisations.
The readiness to supply data is globally high. If however one considers that data production is mainly managed by specialist centres whose main economic purpose is the performance of such activities, in most cases data are provided against payment, or at least at the specific and direct request for access to such data. Only in a small number of cases are data provided free of charge. Finally, it should be noted that data are often produced only for the internal use of the structures generating such data. This situation is frequent for associations of supply chain operators, in which secondary research is conducted on data to support the specific task of disseminating information performed by these associations. Not infrequently however such organisations have shown a readiness to disseminate their elaborations to the outside too.

Tab. 15. Surveyed organisations by type of data access

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Free</th>
<th>At a charge</th>
<th>On request</th>
<th>For internal use</th>
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<tr>
<td>ZMP - Zentrale Market und Preisberichtstelle GmbH</td>
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<td>CSO - Centro Studi Ortofrutticolo</td>
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<tr>
<td>FRESHFEL - European Fresh Produce Association</td>
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<td>AREFLH - Ass. Regioni EU Frutticole ed Orticole</td>
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<td>INTERFEL - Interfel Profession de la filière des F&amp;L</td>
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<tr>
<td>CEAFL - Comité de Bassin Rhône Méditerranée</td>
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<td>SNM - Service des Nouvelles des Marchés</td>
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<td>CTIFL – Centre Technique Interprofessionnel des F&amp;L</td>
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<td>CIRAD - Centre de Coop. Intern. Recherche Agronomique</td>
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<td>INH - Institut National d'Horticulture</td>
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<td>VEGEPOLYS</td>
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<td>Brussels Export Ministère</td>
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<td>Consorzio Infomercati</td>
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<td>ITC - The International Trade Centre</td>
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<td>FPC - Fresh Produce Consortium</td>
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<td>Icex - Istituto Español de Comercio Exterior</td>
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<td>INFOHORT of AAFC’s Food Value Chain Bureau</td>
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<td>CMPE - Moroccan Center for Export Promotion</td>
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<td>Observatorio de Precios Agroalimentarios M.A.P.A.</td>
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<tr>
<td>ISMEA - Istituto di Servizi per il Mercato Agricolo Alimentare</td>
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<tr>
<td>EFC - European Fruit Cooperation</td>
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<tr>
<td>GROUPE ESA - Scuola superiore di Agricoltura d’Angers</td>
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<tr>
<td>FEPEX - Federación Española de Productores Exportadores</td>
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<td>Catalonia Qualitat - Ass. d’Org. de Productores de fruita</td>
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<td>C.M.P.A - Canadian Produce Marketing Association</td>
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<tr>
<td>CORPEI - Export and Investment Promotion Corporation</td>
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<tr>
<td>Brisbane Markets</td>
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<tr>
<td>CFFA- Chilean Fresh Fruit Association</td>
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Of special relevance for the present study is the possibility of gaining access to raw data, through which the working hypotheses of the research can be tested.
In this respect the availability of such data is not very high. This can be explained by the fact that many of the structures involved in the survey simply conduct secondary analyses of data, oriented more towards their own specific ends. The attempt made through interviews to go back to the origin of data, i.e. to the primary sources, served only to confirm the relevance of well-known sources, such as FAO and Eurostat. Also to be noted is the fact that even research structures gather primary data relative to their goals, thus there is unlikely to be vast coverage for information that would serve our purpose.

There remains the fact that the data on which all the above-described categories of statistical elaboration are constructed are available against payment from some leading research centres, while they can be obtained free of charge from some institutions and associations.
Tab. 16. Surveyed Organisations by availability of raw data

<table>
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<tr>
<th>Willingness to supply raw data</th>
<th>Free</th>
<th>Against payment</th>
<th>Other</th>
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<tr>
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<td>GROUPE ESA - Scuola superiore di Agricoltura d'Angers Exportadores</td>
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<td>☐</td>
<td>☐</td>
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<td>☑</td>
<td>☐</td>
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<tr>
<td>CNR-IBMET</td>
<td>☑</td>
<td>☐</td>
<td>n.r.</td>
</tr>
<tr>
<td>C.M.P.A - Canadian Produce Marketing Association</td>
<td>☑</td>
<td>☐</td>
<td>n.r.</td>
</tr>
<tr>
<td>CORPEI - Export and Investment Promotion Corporation</td>
<td>☑</td>
<td>☐</td>
<td>n.r.</td>
</tr>
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<td>Brisbane Markets</td>
<td>☑</td>
<td>☐</td>
<td>n.r.</td>
</tr>
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<td>CFFA- Chilean Fresh Fruit Association</td>
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The table below gives the ways in which data are disseminated by structures. Dissemination is via the main media channels: periodicals, specialist journals, CD ROM, the Internet. Computer-based communication is most common, but paper-based periodical publications are also frequent.
Tab. 17. Surveyed organisations by information dissemination mode

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Periodicals</th>
<th>Online publications</th>
<th>CD-ROM</th>
<th>Specialist magazines</th>
<th>Reports</th>
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<td>☑</td>
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<tr>
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<tr>
<td>FRESHFEL - European Fresh Produce Association</td>
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<tr>
<td>AREFLH - Ass. Regioni EU Frutticole ed Orticole</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>INTERFEL - Interfel Profession de la filière des F&amp;L</td>
<td>☑</td>
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<tr>
<td>CEAF - Comité de Bassin Rhône Méditerranée</td>
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</table>

With reference to the characteristics of data, the table below shows the main types, for the various varieties of fruit and vegetable products that are surveyed. There are products for which data are gathered extensively for the whole chain, in terms of both actual production and output and market forecasts. In particular, European fruit dealers focus on the economically most relevant products, such as peaches, nectarines, pears and strawberries, and on possible competition from non-European products, such as bananas and pineapples. With regard to vegetable products, tomatoes and asparagus are particularly monitored throughout the supply chain. Finally, with regard to products defined as “sensitive” in the present study, our preliminary tool survey highlights the careful monitoring (in all phases) of peaches and apples, for fruit, and tomatoes for vegetable products. Surprisingly, surveyed agencies were not particularly interested in the trends of lemons, clementines, red fruits and, above all, cauliflowers.
Tab. 18. Data types by product

<table>
<thead>
<tr>
<th>Product</th>
<th>Production</th>
<th>Area</th>
<th>Stocks</th>
<th>Output prices</th>
<th>Wholesale prices</th>
<th>Retail prices</th>
<th>Price forecasts</th>
<th>Quantity forecasts</th>
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</tr>
</tbody>
</table>

Another interesting point is that all structures, with the exception of the two already cited, which deal only with fruit, are generally in possession of data regarding the F&V sector in general. The table below gives structures broken down by data type and variety of fruit and/or vegetable. The most interest – and consequently the highest concentration of research - is undoubtedly in apples and pears. This is so in particular for relative stocks (7 structures), the surveying of production (4 structures) and quantity forecasts. For other monitored products interest was high for quantities produced and for production forecasts for nectarines and peaches.
Tab. 19. Number of organisations by data and product

<table>
<thead>
<tr>
<th>Product</th>
<th>Production</th>
<th>Area</th>
<th>Stocks</th>
<th>Output prices</th>
<th>Wholesale prices</th>
<th>Retail prices</th>
<th>Price forecasts</th>
<th>Quantity forecasts</th>
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</table>

In the table below structures are broken down by the geographic scope of their surveys and/or elaborations. For all segments of the analysis conducted we did not uncover researches that offered total coverage: at this level no sources were able to offer data on prices (output, wholesale and retail).

Two of the variables we analysed, *Geographic coverage* and *Products involved*, made it possible to gauge the coverage of information, in terms of country and product, provided by selected structures. This highlighted some gaps that may be bridged over time. It is not felt, indeed, that the inventory of instruments fully covers the universe of subjects that could help to create a system for the gathering and dissemination of info in the F&V sector. For instance:

- the observed sample did not help to identify the subject institutionally designated to gather and process information on the F&V sector in every State expressly involved in the study;
- likewise, research centres expressly oriented towards the sector were not identified in every State. On the other hand, CSO and ZMP would appear to be able to offer quite a broad range of information in terms of products and the scope of observation;

- there is an absolute dearth of information tools, as stressed several times in the preliminary study, in the meteorological field, at an institutional level and in terms of ad hoc research centres.

**Tab. 20. Data by geographic coverage of the organisations**

<table>
<thead>
<tr>
<th>Geographic scope</th>
<th>Production</th>
<th>Surface area</th>
<th>Stock</th>
<th>Output prices</th>
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<th>Quantity forecasts</th>
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</table>

From an initial examination of the sample, redefined according to the analysis described above, in relation to countries indicated in the TOR and considering the two variables a) **direct accessibility to data** (i.e. published directly on the sites of respective data gathering/processing structures) and b) **products specified in the specifications**, the following may be noted for each information “category”.

For the three **price levels** (production, wholesale and retail), countries that can provide already directly accessible information are: France, Spain and Italy.
With regard to surface areas used and quantities produced, the country that can count on directly accessible information is Spain, through the statistical section of the M.A.P.A. (Ministerio de Agricultura, Pesca y Alimentación).

As for large-scale retail trade there is direct access to information in France through the Service des Nouvelles des Marchés.

As regards data on imports and exports, main sources are confirmed to be the Foreign Trade Institute and the Ministry of industry, tourism and trade for Spain and the Ministry of trade for Belgium.

For the categories stocks and forecasts of quantities, surface areas and prices, the analysed sample does not appear to show the existence of directly consultable data for the countries specified.

The considerations made up to this point mainly take into consideration the indicator of current accessibility to information, i.e. the possibility for users to make direct use of data on the sector. The results clearly show that at this point in time the data that can be directly accessed are those gathered and published by institutional organisations and agencies, mostly coming under Ministries or indeed from Ministries themselves. If we do not consider the possibility of directly accessing data, it may be noted that the range of information is a little broader, at least in terms of data collectors and data categories observed.

An overview of the situation, in this sense, is given in the table below. It shows the above structures that openly disseminate their data plus structures that allow consultation upon the issue of a password (the case of online publication), a subscription or supply of data against payment.
Tab. 22. Institutions that provide information by type of information

<table>
<thead>
<tr>
<th>Subjects making information available</th>
<th>Information categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSO</td>
<td>Surfaces</td>
</tr>
<tr>
<td>MERCASA</td>
<td>Quantities produced</td>
</tr>
<tr>
<td>Info Mercati</td>
<td>Large-scale retail</td>
</tr>
<tr>
<td>SNM</td>
<td>Production prices</td>
</tr>
<tr>
<td>ICEX</td>
<td>Wholesale prices</td>
</tr>
<tr>
<td>ZMIP</td>
<td>Retail prices</td>
</tr>
<tr>
<td>ISMEA</td>
<td>Imports/exports</td>
</tr>
<tr>
<td>MAPA</td>
<td>Stocks</td>
</tr>
<tr>
<td>CIRAD</td>
<td>Surface area forecasts</td>
</tr>
<tr>
<td>Belgium Ministry of Trade</td>
<td>Quantity forecasts</td>
</tr>
<tr>
<td></td>
<td>Price forecasts</td>
</tr>
</tbody>
</table>

For “weather forecasts”, as already observed in previous paragraphs, the search for currently available sources has led to the identification of tools that are immediate, practical and widely available to all operators (online weather forecasts), but that are of little practical value for the goal of preventing and managing crises caused by climatic adversity, especially considering the fact that these are short-term forecasts (of up to a week). Data gathering activities in the agrometeorological sphere are carried out, it should be reiterated, by the Space Applications Institute (SAI) of the Joint Research Centre (JRC) and in particular the European Soil Bureau and the MARS (Monitoring Agriculture with Remote Sensing) project.33

IBMET-CNR has created an international database called “agrometeorology: info, data and operational support”34, containing information on different meteorological applications in agriculture for the management of farming operations and for risk management, as well as for strategic and operational guidance. The main peculiarity of the institute is its original system of experimental seasonal forecasts, which

33 With reference to the monitoring of crops and yield forecasts, this system is based on four activities: 1. acquisition and management of meteorological data from synoptic stations and numerical simulators, 2. calculation of agro-meteorological parameters simulating crop growth trends, 3. acquisition and management of meteorological satellite data (NOAA, METEOSAT) and data from other low-resolution sensors (SPOTVegetation), 4. statistical modelling. The results of the integration of such information – European farm season maps and yield forecasts for main crops (cereals, oleaginous crops) – are published of a regular basis in the MARS bulletin (http://mars.aris.sai.jrc.it/stats/bulletin). Available at : http://www.agrometeorology.org

34 Available at: http://www.agrometeorology.org
go beyond the “snapshot” limit of 10-20 days, and are now being applied in both Africa and the Mediterranean region for food crisis alerts, civil defence systems and agricultural campaign forecasts. Two seasonal forecasting techniques have been developed, the “analogue technique” and the “dynamic technique”. The former is based on the proximity of monthly anomalies of sea surface temperatures and respective trends in different years, observed over the period 1979-2003. Sea surface temperatures have indeed been identified as potential candidates for determining the climate of the following season at a global level, and in particular in Europe and northern Africa. With the latter technique, global atmospheric predictability on a seasonal time scale has been investigated through numerical experiments, with the so-called Global Spectral Model of the HydroMeteorological Research Centre of Russia (HYDROMET), to gauge its sensitivity and response to disturbances caused by sea surface temperatures in oceanic areas.

These agro-meteorological activities are a consequence of the strong demand from general directorates in very sensitive fields. Soil and meteorological data are two key elements for forecasting harvests, and therefore for the rational management of stocks and for monitoring the evolution of worrying phenomena that have spread in recent years, such as erosion and desertification. The users of such information are government and international organisations, in particular DG-AGRI of the EC. The results are also of interest to all actors in the chain in member States and respective regions.

With regard to import/export data, the sample uncovered national structures that monitor flows in terms of both volumes and prices from and to the relative State. Global EU data are in the possession of the DG-Agri on prices and on the quantities of chief products imported, communicated daily by member States, and of EUROSTAT in the COMEXT database (see on this point paragraph 2.7 Data collected and/or processed by EC DG AGRI - Part I Preliminary Study)

Resuming our examination of the sample and, as already said, for purely informational purposes, sample subjects can be broken down according to the type of collection, direct (D) and/or indirect (I), undertaken by them.

Finally, in relation to the sample analysed and going beyond EU borders, data are published online for wholesale prices in Canada and in Australia, by Infohort and Brisbane’s market respectively.
### Tab. 23. Institutions that make information available by type of information and type of data collection

<table>
<thead>
<tr>
<th>Information categories</th>
<th>CSO</th>
<th>MERCASA</th>
<th>Info Mercati</th>
<th>SNM</th>
<th>ICEX</th>
<th>ZMP</th>
<th>ISMEA</th>
<th>MAPA</th>
<th>CIRAD</th>
<th>Ministry of trade, Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface areas</td>
<td>D/I</td>
<td>D</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantities produced</td>
<td>D</td>
<td>D</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>I</td>
<td>D</td>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large-scale retail</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production prices</td>
<td>I</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale prices</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>I</td>
<td>D</td>
<td>I</td>
<td>I</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Retail prices</td>
<td>D</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports/exports</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stocks</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface area forecasts</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price forecasts</td>
<td>D</td>
<td>D</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: D = Direct; I = Indirect

### 3.5. Analysis of the proposals for Market Monitoring Systems

In this section we report on the inventory we have carried out on the numerous proposals of possible measures and tools to be included in the F&V CMO that have been advanced during the long debate that has accompanied the process of CMO reform. The survey of materials on the subject includes all relevant scientific literature that has been produced in recent years and the various documents that have been produced by involved parties, and in particular:


6. The European Parliament report on simplification of the common organisation of the market in F&V (2004/2193(INI)).


The preliminary fact finding mission to the DG-Agri has provided the occasion in which all the relevant documents that are not available through public sources have been obtained. Within each document, has been analysed the existence of a generic or specific proposal for the market monitoring operating scheme, tools or outputs. This analysis has been also focused on the possible existing cross-matching of the different proposals with the major analysis themes of the present study:

1. Current data on actual production,
2. Current data on actual consumption,
3. Current data on extra-EU import and export flows,
4. Forecasts on most relevant production and market variables
Our goal was of assessing each useful proposal in terms of the potential impact on prevention and managing of market crises, through the following indicators:

1. Indicator “availability improvement” of the data: the possible improvement respect to the status-quo, suggested or regulated, concerning the specific data availability for both institutional operators and DG AGRI.

2. Indicator “accessibility improvement” of the data: the possible improvement respect to the status-quo, suggested or regulated, concerning the access procedures and dissemination of the available data.

3. Indicator “functionality improvement” of the data: the possible improvement respect to the status-quo, suggested or regulated, concerning the actual utilization of the available data for the prevention and managing of market crises in the F&V sector.

In this context as “status-quo” we mean the information system aimed at supporting the F&V market monitoring management at EU level, as settled at present by the current regulations. As improvement respect to the present we mean any structured proposal aimed at providing for a possible further development of the procedures or instruments for the F&V market monitoring management at national or EU level.

The greater part of the numerous proposals that have been advanced during the long debate that has accompanied the process of CMO reform resulted not providing any improvement respect to the status-quo of the information system aimed at supporting the F&V market monitoring management at EU level.

Only two proposals include some generic proposal and namely:

A) The European Parliament report on simplification of the common organisation of the market in F&V (2004/2193(INI)) Provides for a generic proposal in point 21: “introduction of a fruit and vegetable production forecasting system by means of market observatories, at both Community and national level, to track potential market crises and thereby enable a swifter response”.

B) Contributions obtained through the public consultation concerning the F&V CMO reform. - SEC(2007) 74. Although none of the reactions represented in this document can be considered a structured proposal providing for a possible further development of the procedures or instruments for the F&V market monitoring management, it is of specific interest in this study context to take into account the general reaction expressed by MS, Administrations and Stakeholders.

In summary:
A) Positive opinion in developing market monitoring centres or observatories (to collect and analyse data) has been represented by:
- 42% (13 out of the total 31) of Member States & Administrations which provided reactions. Among these there are: the Government of Turkey, Greece, the Ministers of Agriculture of Poland, Latvia, Hungary, France, 6 Spanish Administration, EUROSTAT.
- 26% (22 out of the total 84) of Stakeholders which provided reactions

B) No specific position (positive or negative) has been represented by:
- The Ministers of Agriculture of ES, IT, FR, CY, EL, PT, HU
- 55% (17 out of the total 31) of Member States & Administrations which provided reactions
- 74% (62 out of the total 84) of Stakeholders which provided reactions

C) Negative opinion in developing market monitoring centres or observatories (to collect and analyse data) has been represented by:
- The Ministry of Agriculture of Belgium.
- 2,4% (2 out of the total 84) of Stakeholder Organisations which provided reactions

3.6. Market monitoring centres - case study

Two different operating models of monitoring centres have been chosen for this case study:

1. CSO (Italy): a private organization, market oriented, providing monitoring services for a limited number of F&V products and mainly to the POs members of CSO. The data collection is performed by CSO with the data provided directly by its members.

2. SNM (France): a public institution created almost 50 years ago by the Ministère de l'Agriculture et de la pêche, providing public monitoring services for the greater part of agricultural products marketed in France (and a greater part of F&V products). Among the market monitoring services it is carried out also a “Price index monitoring” in order to determine possible market crisis situations. The data collection at all 3 marketing stages is made directly by SNM.

Aim of this case study is to analyse the most relevant functioning elements of the two different monitoring centres, and to define their strength points in order to reveal possible hints for the setting up of a Market monitoring system at national and/or at EU level.
As above reported the two “operating models” are widely different, mainly due to their different institutional mission (public or private market monitoring service), but we can observe the following specific “strength points” of their operating which are common for both organizations:

**Accuracy of raw data gathering**

This is a real “must” for any monitoring activity, therefore both organizations have invested a great part of their resources in this task, and both resulted as highly reliable by the public opinion of major stakeholders. CSO in Italy is considered, by the F&V Unions, the most efficient monitoring centre, while SNM experience is at present used for the setting up of public monitoring services in some of the New Member States.

CSO approach is based on its strong and direct relationship with its members (POs). The reliability of the data they provide, as well as information timely, is guaranteed by the fact the same POs are the utilizers of the monitoring results and forecasts.

SNM data gathering model is mainly based on the existence of both: (i) personal/professional direct and strong relationships between sector or product operators and SNM Expert, (ii) SNM Product Experts with a very high professional standard and consolidated market knowledge on that specific product.

**Coverage of data sample in respect to the commercialized quantity**

It is a basic element for any statistical activity and therefore both organizations have focused a great part of their efforts in this topic.

CSO covers more than 50% of the national production for some specific products (e.g.: peaches and nectarines), and some 11% of the total F&V national production. SNM farmgate price gathering is carried out on almost 50% of the national production for the major F&V products (included in the “Price index” scheme).

This coverage results appear to be at a top end level of any possible monitoring centre “data gathering operative model”.

**Analysis of monitoring results and elaboration of forecasts by product experts**

This appears as a “plus” of the two organizations. A correct reading and contextualization of the monitoring results, even on a weekly basis during the “hot periods” for the different products, is considered a real value added service by operators. A wide outlook of market trends, and the forecast of possible evolutions, is also considered very valuable by operators, under the condition of it’s reliability, and for
both organizations they are considered highly reliable because developed by real
Experts, and in both cases on a weekly basis and available on the following day.

**Concentration of the monitoring information in a unique site, and accessibility via web**

Both organizations utilize external data (e.g.: exports/imports, meteorological data etc.) to provide a wide and complete “tableau de bord” of selected marketing information. This is an evidence of how important appears to the operators the information concentration, also in terms of time saving instead of switching between one information research and the other, and this is particularly true in the WEB-net.

The web accessibility to all of the available information, although protected by passwords or subjected to service contracts or similar, is considered as a “regular communication basis” by operators. For some specific products or destinations the web availability of marketing data facilitates even some of the overnight activities which, in this sector, are not so unusual.

**Adaptation of monitoring services to specific operators needs**

CSO and SNM have a different target and carry out the monitoring services on different contexts, therefore it clearly appears the need for a “target shaping” of their services, only as an example: CSO focuses a great part of it’s activity on the forecasts, while a strong characterization of SNM services consist in the “Price index” publishing. This ability to meet operators needs is surely a strength point of both organizations

A detailed analysis on both monitoring centers, in terms of information services provided and of data gathering methodology, is reported in Annex.

**3.7. Conclusions of the inventory of existing tools**

The analysis carried out on the tools in this inventory is summarised below in a synoptic table (Tab. 24). For each type of information there are three indicators: availability, accessibility, and functionality, which are measured on a progressive scale according to increasing degree of usability.
The main conclusions of our analysis of the “data gathering scenario” can be summarized as follows.

1. Production data
   a) Availability
      Both in terms of current and forecast information, data for production quantities and cultivated areas, as well as respective forecasts, are quite common among institution/association (INS/ASS) bodies, while less frequently found in study and research centres (RES) that are more focused on other elements, among which prices. Data are present almost in all States and are available mainly at competent authorities of central government bodies. Mainly in the EU, a major role in the provision of production quantity and cultivated areas by type of product data is carried out by POs which provide them for third party uses but also to carry out ad hoc processing activities. Coverage levels of information provided by POs increase when passing from single organisations to their aggregation bodies, i.e. respective associations and unions.
   
   b) Accessibility
      When bodies possess so-called “institutional” sources (i.e. official sources) data are accessible freely and are broadly disseminated by surveying organisations. The same holds true for research centres depending from Ministries, but not for those centres that carry out research activities for economic purposes.

   c) Functionality
      Data surveyed by central government bodies in the various states are the most significant, especially for their territorial importance.

2. Meteorological data
   a) Availability
      Only 3 structures, 2 of them among the category Institutions / Associa-
tions and the other one a Research institute, possess meteorological data.

b) **Accessibility**

Data access is easy and almost always free.

c) **Functionality**

Weather data should be analysed over a significant period by product and a significant range (number of years). Today’s statistical strategies for forecast projections show clear weaknesses in what should instead be the strong points of this proposal. In any case, new database systems and control models are being developed.

3. **Price data**

a) **Availability**

i) **Production prices**

Within the group of surveyed bodies – at least in Italy and Germany – a single organisation collects, at both national and regional levels, weekly data on F&V production prices. In this case, time series are available since 1998.

ii) **Wholesale prices**

Bodies entrusted with wholesale price data collection are often linked together. As a matter of facts, there are agreements for wholesale price data collection regarding a basket of F&V products, comparable and agreed upon by the parties. Surveys in these cases have a variable frequency, from weekly to monthly. Most of interviewed bodies that survey wholesale price data depend in some way from national ministries (e.g. in France and Italy), in some cases as internal ministry agencies (e.g. SNM). Surveying is carried out directly at producer level, in wholesale markets and agrofood centres. At the level of single states, in most cases wholesale price monitoring is carried out on a daily basis.

iii) **Retail prices**

Within the chosen sample, nine bodies gather retail prices. A different situation can be found in Italy where there is a partial survey, currently only for six cities (Consorzio Infomercati) and for a few products, defined within an agreement with the Ministry. The survey is carried out on a weekly basis and was only started a year ago. Furthermore, the Price and Tariff Observatory (Osservatorio dei prezzi e delle tariffe) makes use of a survey network (ISMEA) on Italian household purchases (carried out in partnership with AC-Nielsen).

b) **Accessibility**

In general data accessibility depends on the body that owns the data. In
the case of institutional sources, data can be used freely and gratuitously, while in the case of private entities access is on demand and subject to economic conditions.

c) **Functionality**

There is a significant number of surveying bodies. Prices are among the most observed elements at all levels of the commercial chain: production, wholesale and retail.

With regard to territorial stratification, most bodies carry out nationwide surveys. This could be particularly interesting with a view to establish a monitoring network based on national observation sites (this could include all price levels). The observed sample does not present a wide geographical coverage.

### 4. Market and distribution sector

a) **Availability**

With regard to large-scale retail and storage, structures which possess data are mainly from the “institutions and associations” category. With regard to volumes of stored goods, it is mainly the associations of producers who have the data, as they obtain this from their members. Specifically, while associations/institutions gather a lot of data regarding volumes and prices at the LSD outlets, research centres concentrate exclusively on prices.

b) **Accessibility**

Although data is widely available, in most cases it is produced by entities whose business is data production, thus the data must be paid for and obtained directly from them.

In the case of trade associations, surveys and data processing are usually carried out solely for internal purposes of that organization. However, except for a few cases where data access has an additional cost, there is willingness to share it outside the organization, especially for purposes of research.

c) **Functionality**

With reference to the volumes of stored fruit and vegetable products (as shown in the following table), it is worth noting that data has been obtained for two “delicate” fruits (peaches and apples), and one “delicate” vegetables (tomatoes). Many different situations exist within the fruit and vegetables sector, because the products are of different types, and the number and types of intermediaries in various market phases also differ. The combination of factors such as the product, variety, zone of origin, destination area, suppliers and buyers at every phase contributes to making a long and complex distribution chain. Large-scale retail is the prevalent distribution method at present, and thanks to its specific organiza-
tional characteristics, it seems to contribute decisively to increasing the efficiency of the whole distribution sector.
However, the survey shows an insufficiently detailed level of information with regard to specific varieties of fruit and vegetables.

5. Import and export

a) Availability
The topic of import/export is of interest primarily to institutions, above all the various institutes for foreign trade – and associations, especially trade associations. Only two out of nine surveyed research institutions collect this kind of data. Import/export data collected by the five organizations on a worldwide level needs to be carefully evaluated as it applies to macro areas or certain specific products and not the whole range of fruits and vegetables.

b) Accessibility
There is no special difficulty in obtaining these data as most of them are provided by Foreign Trade Institutes.

c) Functionality
Foreign trade institutes which are active within countries because of their number and the data they provide are an important source for public and private sector marketing decisions both at national and international levels. The same holds true with regard to the ability of the main research centres surveyed, to carry out analysis and data processing on the subject.

6. Data collected and/or processed by EC - DG AGRI

a) Availability
As far as data on actual production goes, at the moment DG AGRI uses an indirect method of information gathering (data collected through the CATS system) which was connected to the direct payments system (SPS) until 31/12/2007. The reform of the CMO and the continuing passage to the decoupling system are therefore critical to the future availability of this data. Even the direct system of information gathering from the POs, in consideration of their present limited impact on the total marketed volume at the EU 27 level, and considering the high level of differentiation of production organizations within the different MSs, is highly critical to the future availability of such data.
As far as statistical estimates of actual production, there is wide availability of data which has been gathered and processed using time tested procedures.
The system for collecting domestic wholesale prices is based principally on Reg. 877/04, and it provides a significant quantity of data. The main
criticisms are related to some of the principal elements which are surveyed (type of goods selected, product coverage, quality and uniformity of data obtained, etc.).

With regard to F&V prices on world markets there is no system of direct data collection and the EC therefore uses spot analyses or the main international databanks (FAOSTAT and USDA). The survey system for commercial flows at the moment is based mainly on statistical surveys carried out periodically by EUROSTAT in COMEXT regarding both daily price and quantitative surveys of imported F&V and included in the Entry Price scheme, with the purpose of calculating SIV.

The system of processing and availability of principal production variables and market data forecasts or the main F&Vs, is extremely limited. Only 5 product groups have been analysed under “forecast working groups” and although the MARS Bulletin from JRC is published frequently (6/8 bulletins per year) it presently covers only potatoes from among the F&Vs.

b) Accessibility

It should be noted that while DG AGRI has complete accessibility to CATS source, the actual usability of the site for any external operator is limited to aggregation levels of information which limit its usefulness for the prevention of possible market crises.

Also for the survey system for domestic wholesale prices, both DG AGRI and the MSs (who are regularly notified) enjoyed complete accessibility, external operators were limited.

With regard to the market pressure of F&V flows imported to the EU, the surveying and recording system was completely accessible only for DG AGRI. However, there is total accessibility for operators to results of surveys processed by the EC (SIVs data) as they are published daily on the OJ and distributed on the WEB.

Finally, the system for processing and distribution of data forecasts on the principal market and production variables, is extremely limited (results of analyses carried out by “forecast working groups” on 5 products), and does not allow non-DG AGRI access to forecasts. The same non-disclosure policy has been adopted for data shared via WEB with the MARS Bulletin.

c) Functionality

The availability of data regarding actual production (surveyed using the CATS system) is of critical importance for the future and turns out to be the major factor determining their functionality. The low level of accessibility by external operators is therefore a secondary factor with respect to possible decoupling from the CATS system.

Regarding instead the statistical estimates of actual production, their func-
tionality for purposes of preventing and managing market crises is greatly limited by their lack of timeliness. Acquiring and processing this data requires time that is not always compatible with the need to prevent possible market fluctuations in a timely manner.

The future functionality of the system for domestic wholesale prices survey and that of the imported F&V flows to the EU, is basically linked to the outcome of the revision and updating process for Reg. 877/04 and the possible updates on the parameters adopted in the system for collecting Entry Prices. In this case too, difficulty for external operators to have access turns out to be a second level discriminating factor with respect to the previous one.

Although it is currently limited in terms products covered and accessibility, the system for processing and distribution of principal production and market variables forecast data, has potential regarding usability with respect to the objective of crisis prevention in F&V sector.

In short:

A) We first ascertained the existence of a broad and varied availability of information on production and the F&V market, made available by a large number of data gathering and/or processing centres in the sector or at a regional or national level. This potential availability of information has however been difficult to acquire for potential users, especially due to the fragmentation of tools disseminating such information: sectoral magazines, websites, institutional observatories, etc.;

B) As a second result we ascertained non-existence of a networking system (interchange of information on the market and of monitoring knowledge) at a Community level among those centres that acquire and/or process Market Monitoring information.

C) A look at the current situation points to the absence of a “system” that can guarantee the broadest accessibility and transparency of available information, or of a mechanism which, collecting existing information sources, is capable of communicating information that covers as broad a range as possible and offers the greatest amount of detail, in terms of both geographic coverage and categories of data.

It may thus be concluded that our analysis possesses quite a broad coverage, though characterised by a high fragmentation of sources and by a (currently) limited degree of accessibility for end users.

Tab. 25 on page 126 summarizes which information category is available and with which geographical coverage, for each of the 16 most sensitive F&V products, by each of the analysed data provider.
Further, as a result of the case study we conducted on CSO and SNM operating models, we can conclude that:

- The operating models we analyzed could be implemented only for those MS where:
  - production is characterized by a high level of organization (high percentage of marketed production by POs and APOs) and operators are willing to contribute to their creation, or
  - there is already a national organization characterized by a strong and direct relationship with producers, or at least with a relevant part of them

It is to be stressed that both circumstances are, at present (or even in short-term) mostly absent in a great number of EU-27 MS. This leads us to conclude that a proposal for a monitoring system, at national level, based on a specific operating model (of the kind analyzed in the case studies) would have few chances of concrete implementation, at least in a short-time span.

- Adopting the SNM operating model as a benchmark to set up a monitoring centre at national and EU level (resulting so in an organization with a functioning model similar to EUROSTAT) will probably fail on the most relevant objectives of: (i) timely information, (ii) concrete implementation in a short-time reference. Furthermore it would notably increase, respect to the status quo, the management and operational costs of the market monitoring system at both, national and EU level.

- The analysis highlighted the concrete opportunity for benefiting from the existing available information, although heterogeneous in type, quality and accessibility. To achieve such a goal, however, there is the need for the identification of a system able to:
  - guarantee a concrete availability of information which results at present fragmented or not accessible
  - assure an upgrading/evolving route, in both terms: quantitative and qualitative, of the technical as well as content characteristics
  - facilitate a possible optimization of the most costly monitoring task (data gathering) by a possible activity sharing between the organizations which at present have to repeat it each time raw data are needed.
Tab. 25. Available data category (for each of the sensitive F&V products) and geographical coverage, by information provider

<table>
<thead>
<tr>
<th>Products</th>
<th>SNM</th>
<th>ZMP</th>
<th>MAPA</th>
<th>MERCASA</th>
<th>CSO</th>
<th>INFOMERCATI</th>
<th>ISMEA</th>
<th>CIRAD</th>
<th>Brussels Exp. Min.</th>
<th>ICEX</th>
<th>INFOHORT</th>
<th>Brisbane Markets</th>
<th>CMPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>cauliflowers</td>
<td>a b c d e f g</td>
<td>a b c d e f g</td>
<td>a b d f</td>
<td>d e f</td>
<td>d f</td>
<td>c e f</td>
<td>d e f</td>
<td>g</td>
<td>g</td>
<td>e</td>
<td>e</td>
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</tr>
<tr>
<td>tomatoes</td>
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<td>a b d f</td>
<td>d e f</td>
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<td>g</td>
<td>g</td>
<td>e</td>
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<td>g</td>
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<td>g</td>
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<td>e</td>
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<td>e</td>
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<td>a b d f</td>
<td>d e f</td>
<td>c d f</td>
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<td>e</td>
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<td>c e f</td>
<td>d e f</td>
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</tr>
<tr>
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</tr>
<tr>
<td>peaches</td>
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<td>c d f</td>
<td>c e f</td>
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<td>g</td>
<td>e</td>
<td>e</td>
<td>g</td>
<td></td>
</tr>
<tr>
<td>watermelons</td>
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<td>a b c d e f g</td>
<td>a b d f</td>
<td>d e f</td>
<td>c d f</td>
<td>c e f</td>
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<td>g</td>
<td>g</td>
<td>e</td>
<td>e</td>
<td>g</td>
<td></td>
</tr>
</tbody>
</table>

Key: Data provided
- a - Surface areas
- b - Quantities produced
- c - Large Scale Retail (volumes and prices)
- d - Production price
- e - Wholesale price
- f - Retail price
- g - Import/Export volumes (extra EU)

Subjects making information available
- SNM - Service des Nouvelles des Marchés
- ZMP - Zentrale Market und Preisberichtstelle
- MAPA - Observatorio de Precios Agroalimentarios
- MERCASA - Empresa Nacional
- CSO - Centro Studi Ortofrutticolo
- INFOMERCATI - Consorzio Infomercafis
- ISMEA - Istituto di Servizi per il Mercato Agricolo Alimentare
- CIRAD - Centre de Coop. Intern. Recherche Agronomique
- Brussels Exp. Min. - Brussels Export Ministère de la Région de Bruxelles-Capitale
- ICEX - Istituto di Servizi per il Mercato Agricolo Alimentare
- INFOHORT - Horticulture Section of AAFC's Food Value Chain Bureau
- Brisbane Markets
- CMPE - Moroccan Center for Export Promotion

Scope
- National
- EU-27
- North America
- South America
- Other Countries
h - Stocks (volumes)
4. Conclusions from the preliminary study. The status of price risk management practice in the European Fruit and Vegetable System

The preliminary study has led us to survey a considerable amount of information and data on the general issue of how to manage risk in agriculture. In this paragraph we shall try to summarize the most relevant conclusions that can be drawn from the analysis of such information. The purpose is that of paving the way for the following chapter, which focuses on the analysis of the feasibility of a comprehensive security fund and of a possible market monitoring system.

Farm income stabilization has been an old concern of European policy makers, which included it an explicit objective of the Common Agricultural Policy since its inception. For a long time, however, this concern has been obfuscated by the steady growth rate of farm incomes promoted by the set of support policies that characterized the pre-MacSharry CAP. Stable and high supported prices have made it unnecessary for most European farmers to develop and use explicit tools for price insurance, which explain for example the long delay in the diffusion of futures trade for the major agricultural commodities in Europe.

In recent years the landscape has dramatically changed. The gradual but continued reduction of price support policies has brought to the stakeholders’ attention the possibility that prices might vary, which has immediately had the consequence that use of price risk management tools has boomed (see Fig. 6).

The situation of fruits and vegetables producers, however, has been somehow different from that of crop producers, given that the former have not benefited of the same type of market intervention that characterized, for example, cereals and oil seed CMOs. The lack of direct price support justified other forms of intervention, among which notably the possibility of compensated market withdrawals. Up until at least 1996, recourse to withdrawals has been a typical character of the EU-15 F&V sector, to extents that sometime have been detrimental to the political sustainability of the entire CAP, when, for example, the destruction of huge quantities of peaches, nectarines or tomatoes withdrawn from the market were brought to the general public attention in the evening newscast.
Following the CMO reform of 1996, things have changed. The way in which the intervention has changed have drastically reduced the incentives towards overproduction that had plagued the system, and recourse to withdrawals correspondingly been reduced. At the same time, however, an argument started to be raised that F&V producers were left with an overall lower capacity to face market crisis, and the pressure started to be put on the need to develop new mechanisms.

Judging from the intensity of the debate, the relevance of the phenomenon of market crises in the fruit and vegetable sector appear to be high, although it is difficult to backup such impression with quantitative assessment.

Nevertheless, the need to precisely assess the actual relevance of the phenomenon is crucial for proposing any change in the existing policy, and therefore we start our feasibility analysis by conducting a detailed analysis of available price data in order to measure the frequency of occurrence of episodes that might be classified as market crisis.

**Mutuality and price equalization within Producer Organization**

The analysis of the prevailing behaviour of Producer Organization, as revealed by the repeated surveys that we have conducted, has shown that the practice of price equalization (which could be part of the functions that such a type of organization performs) is not common among Europe F&V POs. The reason that appears to be more convincing for this type of behaviour is that price is considered to be an extremely powerful mechanism for rewarding quality production in a sector, such as it
is fresh fruits and vegetables, where quality is a key element of marketing success. Equalizing price might be counterproductive, in that it might eliminate the incentive for individual producers in trying to achieve a higher quality of their production. One of the crucial elements of product quality, in the market for fresh fruits and vegetables, is the timing of production. According to many marketing managers in the F&V sector, price premiums represent an essential signal to ensure that production is oriented to the market and to prevent the creation of structural problems.

This observation, however, has only a limited relevance with respect to the question of whether or not Producer Organization do in fact provide protection against real market crises, given that a market crisis is something that goes beyond the normal price variation that is typical of the highly seasonal market for fresh vegetables and fruits, and the variation of prices that is justified by the quality.

One issue that will thus need to be considered when delineating the elements of a comprehensive price risk management system is that the definition of the status of market crisis should be kept distinct from the normal price reduction that is observed during periods of peak production or during periods of low demand. A detailed periodic monitoring of the price (possibly weekly, if not daily), and the definition of the status of crisis with reference to a trend-corrected, historic average price, seem to be essential elements to ensure that no confusion is made between a real crisis and the normal seasonal price fluctuation.

By definition, also, a crisis is something systemic. This means two things: first that there might be many events that could be classified as market related risk, and that, from the perspective of a single producers, may be very serious, yet they would not be covered by a mechanism of protection against crisis. Second, that the economic consequences of a market crisis for a certain product cannot be effectively dealt with resources provided only by producers of that product. There are always, in other words, two components in the risk that is faced by an institution such a Producer Organization, an Association of Producer Organizations, or any other form of producer association: the idiosyncratic component, made of those accidental events that would affect some of the members, and for which the institution might possess enough capacity to spread the risk through mutual agreements between its members, and the systemic component, for which the risk management potential must be found by engaging in contractual relationship with other economic agents, or by relying on public solidarity.

Where to draw the line that separates idiosyncratic from systemic risk, however, depends on the boundaries that one decides to give to the ‘risk pool’. In other words, if security funds are defined on a product-by-product basis, then typically market crisis will be systemic. If, alternatively, one defines a multi-product or even a multi-sector security fund, then many market crises would no longer be systemic with reference to the entire fund.
In the next part of the study, we analyze the issues of the optimal scope of a security fund with reference to various aspects, most notably, the presence and incidence of basis risk and the possibility for internal risk sharing, that are crucial elements to assess the merits of any proposal.

**Significant lack of market based mechanisms**

One conclusion that is safe to draw from the analysis of the existing tools and policies, is that there is a significant lack of culture, in the European agriculture in general, towards using market based modern financial tools to manage risk.

There may be two reasons for such status of affairs. One may be that the benefits from the possible use of futures and options has likely been obfuscated by the implicit price stabilization that has been provided by the CAP for many products for many years. One may speculate that, if prices of cereals, oilseeds, etc. would have been more variable, active markets for derivative instruments might have developed earlier, with a positive effect on the promotion of a general positive attitude of farmers towards use of financial instruments.

The other one is the role that insurance have played in agriculture, often in concomitance with the public intervention. Especially in Italy, Spain and Greece (which are also three of the major fruits and vegetable producing countries in Europe), a conviction seems to have formed among farmers that insurance is the best, if not the only instrument to manage risk. The presence of public support, either in the form of premium subsidy or as direct provider of insurance, have likely had the effect of hiding the true cost of insurance coverage for risks that may generate problems of adverse selection, moral hazard, or high reinsurance costs due to the systemic nature of the losses. One may thus argue that farmers are not fully aware of the real social cost implied by the provision of risk protection in agriculture through publicly supported crop insurance, and therefore tend to overestimate their value\(^{35}\), and to generate political pressure in asking for even more public support.

**A few reservations on the potential for subsidized insurance as an efficient tool for price risk management**

When carefully analyzing the actuarial performance of many publicly supported multi-peril crop insurance programs, one simple consideration should raise concern on the effectiveness of public expenditure in those cases: a subsidy exceeding 50% in a subsidized crop insurance program for an extended period of time means that, unless the insurance companies are willingly making systematic losses, the amount of money that is released as payment of indemnities to farmers, is lower than the amount of money released by the Government as subsidy to premiums.

\(^{35}\) See Wright, 2006 and Cafiero and Cioffi, 2006 for an extended discussion of the issue.
Apart from considerations linked to the transaction costs linked to the administration of the program, farmers would get more, on average, if the government would distribute the amounts paid as premium subsidies, directly as damage compensations to the farmers.

In other words, if the subsidy to the premium needs to be close or above 50%, there are efficiency arguments in favour of direct administration of the crop insurance by a governmental agency, and against a market based insurance provision.

On the other hand, if the problem is related to the transaction costs generated by the informational problems that plague traditional insurance, it is clearly not through subsidizing the premiums that the problem is resolved. In this respect, recent interests towards other type of insurance-like mechanisms, such as for example index-based contracts, seems to be very promising in some circumstances, such as, for example, is the case of weather related losses which can be effectively dealt with through use of index based insurance (See Cafiero et al. 2007 and the references therein).
Part II
Feasibility Study
5. Feasibility analysis of a Security Fund

5.1. Introduction: the main conclusions from the preliminary study and the content of the feasibility study

As for the preliminary study, the report will present results separately for the two components of the study: the “security fund” and the “market monitoring system”. Where relevant, synergies and complementarities between the two instruments will be duly highlighted.

In the preliminary study we have taken stock of the existing status of:

- the set of instruments and tools currently available in Europe to manage the risk of market crisis in the Fruits and Vegetable sector;
- the set of instruments and tools potentially usable, as it emerged from a survey of experiences in other countries and sectors
- the general level of awareness concerning the possibility and the economic impact of market crises, as it emerged from the analysis of various proposals that have been advanced during the CMO reform process.

There are several major conclusions that can be drawn from our preliminary study.

The first is that, although the issue of market crises has often taken centre stage in the discussions on the possible evolution of the CMO, the actual relevance of these phenomena has never been measured in a systematic way. The reason might be traced to the lack of availability of detailed and systemic data on farm revenues to be linked to the data on market prices, which would allow to measure the impact of market crises, as identified by period of exceptionally low prices, on fruit and vegetable producers revenues and income. FADN data, unfortunately, can only be of limited use to this aim, given the limited number of farms that are surveyed for a long enough period to capture the incidence of infrequent phenomena such as market crisis.

To the aim of trying to obtain a measure of the relevance of market crises in the European fruits and vegetables sector, in this chapter we will analyze in some detail the existing official data on prices as collected by the European Commission and made available through the Agri View database.

The second conclusion, which is likely linked to the same reasons that justify the previous conclusion, is that, although there is a considerable awareness of the problem of market risk in the F&V sector, the set of adopted instruments and policy
to face their consequences is still quite limited. With the exception of the Spanish insurance system, which has been recently expanded to include revenue coverage, the provisions of the old CMO (namely, market withdrawals) appear to have been the only instrument used directly by producer organizations to explicitly cope with the possible consequences of market crisis, and its use has decreased substantially with the reduction of the level of public support, channelled through the Community Withdrawal Compensation, that followed the reform of 1996.

While a commendable effort has been put in other activities, such as production planning and communication and promotion, which would have an effect in terms of prevention of market crises, in most cases producers have been left alone in coping with the consequences of market crises once they have occurred. This observation is, in various ways, at odds with the common perception that the market for fresh fruits and vegetables is quite unstable, if compared with that of other agricultural products, and with the repeated concerns voiced by producers.

Although new provisions have been included in the recent regulations that define the new F&V CMO, to the explicit aim of improving the resilience of EU F&V production in face of market instability, the current situation is (and will still be, in the near future) one in which a EU wide coherent “system” for market risk prevention and management is lacking.

The relative scarcity of private mechanisms used to actively manage market risk, and the reactions of the stakeholders to various occasions in which this study has been presented must thus be taken either as evidence of the existence of objective difficulties in properly managing market risk in the conditions of the EU F&V sector (among which, for example, the lack of readily available reliable data on market conditions) or of the fact that market crises, after all, do not have serious economic consequences on the involved farms. In either case the evidence would point to usefulness of the results of this study.

In this second part, our effort will be that of defining the elements of what might be such a EU wide market risk management system, which we shall call the “F&V Security Fund”, and to analyze its practical feasibility providing a comprehensive view of the conditions that prevail in the EU F&V sector. To do so, we shall first present the result of an analysis on the level of market integration and of the frequency of occurrence of market crises in the fruit and vegetable sector in EU as they could be detected from the more complete set of currently available price data, namely, the AgriView database.

36 Apart from what has already been pointed out in the preliminary study (see section 1.3.1) we shall analyze in details the merits of revenue insurance as a possible component of a comprehensive security fund to manage price risk in the next section.
37 Reference is made to art. 9, paragraph 2 of Council Regulation (EC) No 1182/2007.
38 The AgriView database reports monthly data on market prices recorded on a number of representative markets across the EU. For more information see section 0 on page 95. Monthly
Next, we shall introduce the conceptual framework for risk management in the context of the European Fruits and Vegetable market that informs our proposal to then will describe the proposed “F&V Security Fund” and finally discuss of the main problems that will need to be resolved in the possible implementation of the system. The analysis of the implementation will be then conducted in part III of the study.

5.2. Integration and market crises on EU F&V markets based on official data

To define the feasibility of a security fund to manage market crises in the EU F&V sector, it is useful to understand the dimension of crises occurring in the EU. It means to verify what is the frequency of such crises, which kind of products are affected by these situations, what is the length of crises and their spatial spread. This last issue is particularly relevant in our study because the spatial dimension of market crises defines the degree of simultaneity of such events in the EU F&V markets. The simultaneity of market crises or, on the contrary, their spatial isolation, affects the kind of instrument that can be used to reduce the economic effects of crises. It is well known that insurable risks must be characterized by a low degree of correlation of the risky events. If the correlation is high (systemic) and risky events are characterized by an high probability to occur simultaneously, insurers incur the risk of high losses if such events occur.

The problem of spatial dimension of market crises brings about another issue that is relevant in this framework that is related to the integration between the several F&V markets in the EU. Overproduction at local level can generate a crisis in the local market if it is isolated and not integrated in other markets. In integrated markets when prices are low in one market it is possible to sell part of excess production on other markets where prices are higher. The sale will continue to be profitable until the prices in the destination market will be equal to the prices on the local market increased by transportation costs. Therefore it is relevant to understand if the EU F&V markets are integrated.

5.2.1. A few notes on the economic analysis of market integration

The definition of market integration in economic analysis is strictly linked to common patterns of prices observed on the different markets. If such prices show a strong correlation it is possible that this may be due to the links existing among the markets. Generally speaking, it is not only relevant to know if markets are inte-

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fruits and vegetable prices for the period 2001-2007 for all reference market were made available to us by the DG-Agri services and we thank them.
grated but also to know the degree of integration or, to be more precise, to under-
stand if and to what extent shocks originated in one market are transmitted to other
markets

Analyses of market integration are based on time series analysis of prices. The
econometric approaches perform tests on the parameters of price transmission
models aiming at the validation of the so called “Law of one price”. According to
this law, prices of perfectly substitute goods differs at most for the transportation
cost that must be borne to transfer the produce from one market o another.

The literature on market integration proposes several empirical approaches based
on econometric analysis procedures. To verify the market integration level statisti-
cal tests on parameters of dynamic regression models have been proposed. More
precisely, to test the integration level between markets statistical tests have been
proposed on vector auto regressive (models) in which the price of a generic prod-
uct on a market is related both to its price in the previous period and on the price
on another market.

VAR models permits to test either causality relationships between prices or cointe-
gration relationships between series. With the first approach it is possible to look if
there is a one-way or a two-way relationship. Such approach is based on the
Granger causality test that is aimed to verify if a joint restriction on parameters of
the equation that are posed equal to zero can be accepted or not. In this way it is
possible to say if price variation on a market “cause” variation of prices on another
market, or more precisely, if price variation on a market happen before price varia-
tion on the other market. Cointegration analysis permits to verify the existing of
short or long terms relationships.

Other studies instead of a one to one relationship proposed an asymmetric
mechanism of price transmission, in which a central and secondary markets are
assumed. This approach assumes that there is a more relevant market because of
its geographical position or because of its size respect to a group of satellite mar-
kets. This predominant market would exert a strong influence on the determination
of prices on the secondary markets it is linked to.

However each of the two approaches has limitations on the capability to measure
and explain the observed dynamic of prices. Econometric analysis and statistical
tests must be supported by careful description and analyses of the involved mar-
kets because the former alone cannot identify among different alternative causes
bringing to the same level of market integration.
5.2.2. Literature review of market integration in the fruits and vegetable sector

Among contributions in the literature, analysis regarding F&V markets are very few and are based on different methodological approaches. The very peculiar features of the F&V products (large number of varieties, perishability and limited storability characterizing many produce, and as a consequence seasonality in consumption and marketing make the analysis of F&V markets integration very complex and require the simultaneous use of the different approaches available. For example, cointegration analysis wouldn’t be appropriate for products whose prices have a strong seasonal pattern.

At this stage of the study, we propose a study on market integration based on descriptive analysis and on correlation analysis carried out on a limited number of products.

5.2.3. Analysis of integration between markets and spatial dimension of crises

The analysis has been performed on the series of prices recorded on EU markets, as reported in the Agriview database. From the outset, we must note that it has not been possible to integrate prices with traded quantities that also could bring further information to the analysis. The Agriview database reports daily prices as transmitted weekly by MS to the DG-AGRI according to the provisions of Reg (EC) 2200/96, the data are collected on several EU markets, identified as “reference markets” (see also section 0 above. It must be noted that these markets have different characters: some of them are closer to the production location while other are closer to the major consumption centres.

Selection of the sample products

The analysis has been carried out successfully only on three products: cauliflowers, tomatoes and apples, mainly because of the lack of sufficiently detailed availability of prices for the other commodities in the Agriview database.

The three products chosen, however, are representative of a broad range of fruits and vegetables, in the sense that their markets differs widely in their characteristics: cauliflowers and tomatoes are two vegetables, characterized for their limited storability and for the high incidence of transportation cost; especially for cauliflowers, transportation on markets too far from the production area is virtually impossible. On the other side, apples are storable products, a feature that makes it possible to sell them all year long and on different markets. We therefore expect that the degree of market integration be very different in the three cases considered.
Tomatoes are produced both in greenhouses and in open fields. Produce under greenhouses are sold from late autumn to winter and spring month. Cauliflowers are only produced in open fields.

A further problem to be considered in our study arises from the wide number of varieties that characterizes both apples and tomatoes. In the case of apples several varieties were taken into account, while in case of tomatoes we only considered the round tomatoes variety. Cauliflower do not show prices for different quality of product.

The objective of this analysis is to find the relationships existing between the different markets of a product by mean of price analysis. It has been carried out in such way to find common patterns of prices collected on the different market as well as the frequency, length and dimension of crises.
**Tab. 26. Distribution of data related to "Tomato" per Country and General Market**

<table>
<thead>
<tr>
<th>Country</th>
<th>City/Market</th>
<th>N. cases</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
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<tr>
<td></td>
<td>Wien</td>
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<td>62,0</td>
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<td></td>
<td>Wolfsdorf</td>
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<td>43,9</td>
<td>29,1</td>
<td>86,0</td>
</tr>
<tr>
<td></td>
<td><strong>Sub-total</strong></td>
<td><strong>865</strong></td>
<td><strong>56,7</strong></td>
<td><strong>21,8</strong></td>
<td><strong>180,0</strong></td>
</tr>
<tr>
<td><strong>Belgium</strong></td>
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Source: Agriview Market Price
The definition of a market crisis

To perform this task we have defined a crises as the event in which the price observed in a certain moment on a market is lower by more than 25% of the average price recorded over the previous five years in same period and market. To make the computation manageable, we transformed daily prices in weekly prices, this transformation also helps in reducing the number of missing observation of daily prices collected on a market.
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<td>1.2</td>
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**Total** 51361 100.0

*Source: Agriview Market Price*

Because the prices collected in the Agriview database on many markets are not sufficient to perform meaningful analysis, for each product considered it has been preliminarily necessary to select some markets where the number of observations for each market and their distribution over time were sufficiently detailed.
The case study of tomatoes

The distribution of daily tomato prices on different EU markets, as reported in the Agriview database is described in Tab. 26.

Given the available information, we made a selection of markets on which to carry out the analysis that are synthesized in Tab. 27. Because after 2004 the number of observations in the Agriview database strongly decreased for most markets, we have limited the analysis to the period 2001-2004. Crisis were identified comparing the weekly prices with the average price observed in the same week in the previous five year. In the following table we indicate the year and the week in which crises occurred at least on four markets.

We found at least one market crisis in 127 weeks over a total of 261 weeks. Limiting our analysis to weeks in which crises happen on at least four markets, we observe that such events occurred in 29 weeks. The market on which crises occur with the highest frequency is Chateau Renard in France, with 53 crises followed by Sint Katelijne Waver, with 49 crises. Murcia also has a high number, 39, of market crises while other markets in Spain show a lower number of crises.

Generally observed crises last for long period. For example, in 2001 we observe a crises that involves up to six markets from the 32nd to the 44th week. Involved markets are in Spain and France. Shorter but wider is the crises observed in 2002. It last four weeks involving at least once all markets we considered in the analysis, with the exception of the two markets in Greece and the Helsinki market. Other crises are scattered in the four years we considered but are shorter.

The correlation analysis (Tab. 28) shows some interesting results that deserve further analysis. We can observe that price correlation is high for a group of markets located in Spain, France and the UK, that are mainly markets closer to the retail level, while the two market in Greece and Helsinki appear to be not integrated with the previous group of markets and isolated. Of course the two markets in Greece seem very close each other.
Tab. 28. Correlation matrix of tomato prices observed on EU markets

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<th>Birmingham</th>
<th>Chateau Renard</th>
<th>Den Bosch</th>
<th>Dublin</th>
<th>Glasgow</th>
<th>Helsinborg</th>
<th>Ierapetra</th>
<th>Liverpool</th>
<th>London</th>
<th>Malaga</th>
<th>Murcia</th>
<th>Pyrgos</th>
<th>Sint Katelijne Waver</th>
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The case study of cauliflowers

The distribution of daily prices of cauliflowers according the different EU markets collected in the Agriview database is described in Tab. 30. We selected series on 14 markets, whose coverage of the EU markets is rather low, being concentrated in four countries.

Tab. 29 reports the number of crises, defined in the same way that we did for tomatoes, occurred in the 14 selected markets. The distribution of crises in the market of cauliflowers is rather different from those occurred in the case of tomatoes. We observe that in more than half of weeks we considered there a been a crisis. However more than 40% of crises was regarding one market, while only in six weeks the crises involves more than half of the markets we considered.

The reason why cauliflowers market crises seems to be less systemic may be related to a certain degree of isolation that characterizes these markets. The correlation analysis we performed on these prices shows very low correlation coefficients for most part of prices collected on the different markets. Only in few cases these coefficients are greater than 0,5. Moreover, a certain degree of is only shown by the UK markets.

The reason why the EU markets of cauliflowers appear to be less integrated than the tomatoes market may be due to several factors, like the lower specific weight that makes unit transportation costs higher, the lower storability and also the reduced quantity traded of this product. The reduced integration of cauliflowers markets makes local crisis more frequent, while on the other side crises are less widespread.

Tab. 29. Distribution of number of markets interested by a concomitant crisis event

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<th>Cumulative Percent</th>
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### Tab. 30. Number of daily price of cauliflowers collected on each market

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*Source: our elaboration on data Agriview*
Tab. 31. Correlations between prices of cauliflowers on different EU markets.

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Key: values larger or equal to 0.5 are highlighted
Source: our elaboration on Agriview data.
5.2.4. The case study of apples

Distribution of daily prices of apples according the different EU markets and countries collected from the Agriview database is described by Tab. 32. We selected series on 13 markets, on which we identified market crisis, their simultaneity and the correlation of prices.

The analysis shows results very different from those related to the other two products analysed. The first consideration is that the number of crises for this product are much less than for the others. The following table shows that crises have been observed in 94 weeks over the 328 that were scrutinized. Moreover the simultaneity of crisis is greatly reduced: only in two weeks we observe crises on four markets (the three markets in Greece and one in Portugal). It is worth to observe that in most cases crises are observed on the three market of Greece.

These result are further understood by looking at the correlation matrix of prices, that shows strong linkages between the markets of France and Belgium, while the markets of Spain and Greece form two separate blocks. It is also worth to note that prices in Bolzano are not correlated to prices observed on other markets.

It can be affirmed that although market of apples do not appear very integrated, the storability of the product reduces considerably the frequency of crises that are relatively more frequent in the area at the periphery of the EU market and production areas as in Greece and Portugal.
### Tab. 32. Distribution of data related to "Apple - Golden Delicious"

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### Feasibility Study on Introducing a Security Fund in the Fruit and Vegetables Sector

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Tab. 33. Correlation matrix of prices of apple on EU markets.

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<th>Geldermalsen en Omstreken</th>
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<th>Girona</th>
<th>Lleida</th>
<th>Naoussa</th>
<th>Nimes</th>
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5.2.5. Conclusions from the analysis of market integration

The brief preliminary analysis of the status of market integration that we have conducted has highlighted a few elements which may prove important for the next phases in this feasibility study.

First, and foremost, we have to note that, based on the extraction from the Agriview database that has been made available to us, the level of detail with which the data are reported does not, in general, allow for a precise assessment of the crisis risk profile for many fruit and vegetable products. Even for the few products where a dense grid of data is reported, it is clear that the coverage is far from being exhaustive, a point already noted in the preliminary study on market monitoring systems. Not all markets in Europe have the same detail, and in no case there are indication of the actual quantities being exchanged in each day or week for which the price is reported.

This means that, based on these publicly available data, no analyst will ever be able to produce a reliable assessment of any proposed risk management tool, given that it would be impossible to determine the actual interests at stake, which depends on the combination of quantity and prices.

Unless specific data is collected for any given case (i.e., a specific producer organization, involved with a specific set of products on a specific set of markets) the only method for determining the expected performance of risk management tools is by simulations based on ad-hoc hypotheses on the frequency of the possible losses, something we shall return when discussing the implementation of a security fund in Part III of the study.

Nevertheless, the analysis has already shown that the occurrence of market crises is not a widespread phenomenon, at least not as much as the attention that the question seems to have gathered during the debates accompanying the process of CMO reform, and that the related potential losses are likely to be far from being catastrophic. This means that the proper way of dealing with the issue of market crises is that based on the general theory of financial risk management, with only limited reference to the emerging field of catastrophic risk management that has developed for such risks as earthquakes, floods, terrorism, etc.

It is with this consideration in mind that we now move on the feasibility analysis of possible security fund in the EU agriculture in the next section. The attention will obviously be on fruits and vegetables, but we hope that the considerations we will be making might prove interesting and informative for other sectors too.
5.3. A conceptual framework for risk analysis in the conditions of the EU fruit and vegetable sector

In this section we introduce the conceptual framework that informs our proposal for a security fund intended to manage the typical market risk faced by EU fruit and vegetable producers. After introducing the basic ideas on our view of the roles of policy and markets in the field of risk management, we will provide some useful definitions and then list possible tools to be introduced in a comprehensive security fund.

5.3.1. Fundamental ideas

The fundamental principle on which a theory of risk management should be based, is the concept of solidarity, i.e., the simple consideration that the overall burden of an adversity is lower, the more it can be spread over a wider group of individuals. Even if we confine ourselves to considerations related to material wealth and financial gains or losses, that is, even if we speak only of economic risk management, the only assumption needed to justify the gains that can be obtained by “spreading” the risk is the decreasing marginal utility of wealth, that is, the fact that who has more “cares less” for an additional euro of who has less. This implies, for example, that, let us say, “wealthy investors” would be willing to assume part of the risk that “poor producers” face (and for whom it may be catastrophic) in exchange for a fee. In case the event occurs, the social consequences of the loss to the “wealthy investors” will be much lower than the one that the “poor producers” would have suffered without the transfer of risk.

In a way, effective risk management can be described as ex-ante solidarity, obtained by converting one potentially big loss into many actual small losses, that is, by transferring the burden of the risk from the shoulders of one or few to that of many (be it from few one or few years to many years, from one or few persons to many persons, from one or few groups to many groups, etc.) or from the shoulders of who is less capable of sustaining onto those of whom is in a better position to hold it.

Solidarity is well accepted and understood when it is discussed within family affairs, religions and other non-economic activities, and it would be easy to present evidence of cases when such solidarity is clearly manifested, as it occurs for example in the aftermath of natural disasters. The challenge of economic analysis (and what makes many suspicious that what we are truly talking about is solidarity when discussing of economic mechanisms for risk management) is the fact that economists talk of incentives that should motivate people to engage in solidarity, which means to accept the risk of a small loss in exchange for an expected return.

To be sure, many agree in principle that there should be no purely “economic” motive behind solidarity, (otherwise, what one is describing would not be solidarity, but
rather the behaviour of sophisticated “jackals” who wait for other to be in trouble to take a personal advantage.) The reason why there is nevertheless merit in discussing of economic principles on which to base risk management activities is because nothing justifies the fact that material resources be wasted, when it can be avoided, even if resources are being used to mobilize solidarity. Economic theory can provide very useful insights in this sense and the objective of economic analysis of risk management mechanisms, therefore, can be described as that of providing prescriptions on how to obtain an adequate level of risk protection at the lowest possible cost to the whole society.39

Obviously, social security can be provided by the State through non-market mechanisms, and indeed it is routinely done in virtually all forms of organized communities, ranging from families and village communities to States. The key question however, is whether, for any specific risk, the accepted level of security is achieved at the minimum cost in terms of the material resources that will need to be allocated or not. The answer is usually no. For many risks, efficiency gains might be obtained by relying on private mechanisms, without compromising the level of security that is provided. Other than from very dramatic risks, for which human life and other fundamental human rights are at stake, the direct provision of security by the State is usually less efficient than the one that could be obtained via private mechanisms, and there are very compelling arguments in favour of saving the usually scarce public resources that will be better used in cases of real humanitarian emergencies.

As soon as we have moved beyond the provision of fundamental human needs, market mechanisms can be efficient in allocating material resources, and there is no reason why they should not be exploited, when possible, to obtain from those who can dispose of excess material resources, that they would put some of it to the use of providing security to those who most need it. As in all other cases in which markets are involved, however, the indispensable element to obtain such desired efficiency in material resource allocation, is that the State monitors the market to avoid that it become the instrument in the hands of those who have some power to unduly extract rent.

Sometime, it is sufficient that the State provides even just a “competitive threat” to prevent the establishment of rent-extracting positions. Taken with reference to the provision of security, market mechanisms can and should be used to the extent that they can allow for an effective risk spreading at a cost lower than the one the

39 We are dealing here with the problem of the optimal design of risk contracts, which is often done from the perspective of a social planner. There is a large literature on this issue, dealing with efficiency and equity issues. In general the informational requirements to design the right contracts are huge, which have prevented the finding of universally valid solutions (see for example sections 1.3.1 and the last part of chapter 4 for a discussion of some of the problems with insurance contracts). Nevertheless, this is a justification for continued research, not for concluding for the impossibility of designing better contracts.
State would have to sustain to achieve the same spreading of risk within the Society through other mechanisms. In this case, usually the most valuable function that the State can provide is by serving as the clearing house for information that would lead to competitive outcomes in the risk sharing market.

The situation that must be avoided, is that inefficient policy, ganged up with few monopolistic financial firms seeking rents, would exploit informational advantages to bend pseudo-market mechanisms to the objective of extracting rents from both those who are in need of acquiring security and those who are unaware of the risk involved in investments.

Hoping that the preceding discussion will serve the purpose of reducing the effects of some ideological preconceived ideas on the role of economic incentives and mechanisms when dealing with risk management, we move now to more technical details of an essentially market based security fund, and of financial tools of the type that have recently received a very bad publicity, that (we hope to show) is mostly due to policy failures rather than to market failures.

5.3.2. Definitions

In the repeated surveys and interviews that we have conducted with stakeholders in the Fruit and vegetable sector, we have found that there is a lack of common understanding of terms such as “security”, “insurance”, “solidarity”, etc. Also, often terms such as “risk”, “damage”, “crisis” are used interchangeably. This makes quite difficult to conduct a debate on the issues at stake and therefore, before entering into more detail of the proposed tools, it might prove useful to give some definitions in order to avoid possible confusion among terms that are not universally known and to which various disciplines assign different meanings.

We shall start giving our working definitions of terms such as risk, crisis, and disaster. Then, we shall present the difference between security fund, mutual fund and solidarity fund. Finally, we shall clarify the meaning that we give to the terms hedging and speculating.

Risk, crisis, disaster

Risk has been defined in different ways in various contexts and by different disciplines. In the economic literature, risk is said to exist when we have random outcomes that can be characterized by a density function, which means that (a) all the possible outcomes can be listed with certainty (for example, the six possible outcomes from rolling a dice), and (b) a probability can be assigned to each outcome (1/6 to each of the outcome for the dice example). When either of these conditions is violated, we have Knightian “uncertainty” (Knight, 1928): that is, either we cannot list all potential outcomes or cannot assign probabilities to potential outcomes or both.
Although the economists’ definition of risk is instrumental to the development of utility-based models used for quantitative assessment of things such as parameters of risk-aversion, it has been often rightly criticized as possibly misleading, because, it includes as a component of “risk” also the possibility of positive outcomes. In other words, what economists have termed “risk-aversion” should be more properly termed “variability aversion”. This could be misleading, because, if not properly understood, it may convey the impression that economic agents dislike variability (either positive or negative).

Taken from a broader perspective it is clear that, what really causes discomfort and therefore what agents would like to avoid is the possibility that a negative outcome may occur, or what economists call “downside risk”, thus ignoring positive outcomes. In this sense, risk is neither synonymous with uncertainty nor with variability.\(^{40}\) We therefore prefer to talk of a risk when there is the possibility (not the certainty) that a specific negative outcome might occur. We shall use the broader term of uncertainty to refer to situations when one does not even know what kind of negative event might occur, and the substantially different term variability to indicate situations in which the outcome of an action may take different values.

To clarify, think of the case of an agricultural cooperative that markets apples: everybody will agree that the fact that the price of apples is variable during the season, but that is not to be taken, per se, as a “risk”. The relevant risk may be that the price, say, in the 40th week of the year, will be lower than it has been, on average in the preceding five years, or that it might fall below average production costs.

On the other hand, there might be uncertainty about the fact that something might happen - say, for example the spread of an infectious disease transmitted by an apple pest - that might affect the market for apples, but unless this generic uncertainty is qualified as a specific risk (i.e., the possibility that the price of apples falls below production costs), there is very little that can be said in terms of risk management.

One important point that we want to make is that we shall limit our discussion to negative outcomes in terms of financial losses. Any event that may be considered damaging, will be considered only to the extent that it causes a financial loss to the producer.

\(^{40}\) We are aware that our choice of defining risk in this way may cause some problems to professional economists, nevertheless, we feel that it better qualifies the sense of expression such as “public policies for risk reduction and risk management”. For the professional economist, no problem should arise if, every time we name “risk”, she interpret it as “down-side risk”.

On the other hand, the weakness of the economists’ definition of risk is known even within the profession, so that, to avoid confusion, some of the economic literature has felt the need to refer also to “loss-aversion” to qualify the widespread behaviour of those who are willing to make risky choices that they would not do if they were truly “risk” averse. (See Kahneman and Twersky)
In turn, this requires the possibility that the loss will eventually be quantified. Notice that this does not necessarily means that the financial loss must be quantified ex-ante. There might be uncertainty about the dimension of the loss, although it must be eventually possible to measure it if we are to express any judgment in terms of efficiency of the possible risk management tools.

In this study, we are particularly concerned with the issue of **market crises**. In the academic literature, in the specialized press and in general in the policy debate, there has been a wide variation in the meanings attached to the expression **market crisis**, which has sometimes made the discussion particularly difficult to follow. In general, we adopt the definition according to which a crisis is an **unanticipated event whose consequences are beyond the individual ability to control or to cope with**. The emphasis is therefore:

1. on the possibility to predict such an event at the moment in which planning decisions have been made and investment have been done, and

2. on the extent of the damages suffered because of the event.

Such a choice is guided by considerations linked to the justification for public intervention and on the forms that such intervention ought to take. Events that can be anticipated at the moment that planning decisions are made should be considered in the planning activity, and the risk involved should be considered as already taken into account so that, if it materializes, it could hardly be considered as a reason for public relief intervention. From this perspective, only events that cannot be reliably anticipated can be conducive to such crises that might call for the release of public money, lest the possibility that the reliance on public bail-out might induce excessive (from societal point of view) risk taking behaviour.

The second point to be highlighted is that, if the consequences of the event are not dramatic, in the sense that the average producer could easily cope with them, then it would not be proper to speak of a “crisis”. For example, the drop in the price of one product for a few days or weeks, is not necessarily to be characterized as a “market crisis” if producers diversify their production either in kind or in time.

Modern enterprise management ability includes the ability to properly manage what we might call “normal” risk, that is the risk that an entrepreneur must be willing to accept given the gains they enjoy from their enterprise. This is not to say that there are no legitimate roles for public intervention to help farmers better manage their normal enterprise risks, but only that they should not be justified as providing some social security, rather, they should be properly recognized as intended to improve the overall entrepreneurial ability within a sector such as agriculture.

Generalized event whose negative impact is so serious that it endangers the viability of the enterprise or of an entire sector will be termed “disasters” or “catastro-
A disaster is characterized by two properties: the damages are very large and the event affects many different agents at the same time.

In the financial risk management literature, risks that imply very large financial losses are referred to as "tail risks". The definition comes from the practice of "risk layering," which amounts at defining the probability distribution of the possible financial losses, which will usually be such that the larger is the loss, the lower is the associated probability (see Fig. 7). Very large losses will therefore be in the "tail" of the distribution.

If the risk is idiosyncratic, i.e., if it is peculiar to one agent, and does not involve many others agents at the same time, there may be the possibility of insuring it at reasonable rates. If instead it is systemic, then its management would require the immobilization of own capital, with a very high cost, which may not be justified if the chances of the loss occurring are very low.

Until recently, these events seemed to be unmanageable other than by public solidarity. Recent innovation in the theory and practice of finance has allowed for creative instruments to be developed that can contribute to greatly reduce the overall cost to the society imposed by the effort to recovery from these events, and some of the lessons learned can be profitably applied also to the management of market crises.
Security, mutual, solidarity... which fund?

Another source of ambiguity resides in the fact that often the expressions “solidarity fund” and “mutual fund” are confused and also that the expression “security fund” is not clearly perceived in its technical meaning. Let us therefore present the definitions that we shall adopt here.

Security funds

In modern finance, a security fund is a set of financial instruments intended to create actual or contingent money reserves (i.e., contracts that will make financial resources available in case some pre-specified conditions will materialize) whose main objective is to provide security, i.e., to enable the enterprise to confront risk in the sense that, if the risky event occurs, it would not lead to bankruptcy or insolvency.

Emphasis is put on the fact that it is a set of instruments, some of which may not require the upfront immobilization of financial reserves, that therefore need not to be subtracted from other investment needs of the enterprise. The optimal security fund, in fact, will always be made of many “layers” of funds, characterized by different degrees of liquidity and opportunity cost, whose relative size will depend on the kind of risk to be managed and on the level of risk tolerance by the enterprise.

Mutual fund

A mutual fund is created by contributions by all members of a group who share a common interests (i.e., risk sharing, risk pooling, hedging objectives, risk exposure, risk attitude, investment objectives, informational needs, reduction of transactions costs by pooling resources, tax considerations, etc), to be used to compensate some who suffer losses

The mechanics of a mutual fund is based on the principle of solidarity, and the conditions that determine its effectiveness are the same conditions that govern the functioning of insurance pools: the risk must be largely idiosyncratic, so that the probability that many would be hit at the same time is very low. In these conditions, the fund is capable, with small contributions by all, to provide the resources to compensate the large damage suffered by few. The attractiveness of mutual funds is that the cohesion existing within the group can greatly reduce the problem of strategic behaviour that might plague instead traditional insurance. Unless the risk is systemic, and/or the potential damage is very large compared to the overall capacity of the group members’ contribution, the mutual component may be an important one in an effective security fund.

The mutual character should be particularly attractive in managing price risk in cases where there already exists a strong cohesion among producers who share
the same interests, as it is the case for most Producer Organisation in the EU Fruit and Vegetable sector.

**Solidarity fund**

A solidarity fund is a built with contributions by a wider group of citizens, to be used in case of emergencies. Often the idea of a security fund is confused with that of a solidarity fund, perhaps because the reference is made to existing solidarity funds (such as for example in France and in Italy). A solidarity fund is usually set up and managed by a public entity and the cost is charged on a wide stratum of the population, given that the fund is either funded with mandatory contributions levied through specific taxes, or simply by charging the financing needs of the fund on the public budget, often by means of ad-hoc taxation and appropriations made after the event occurring.

While solidarity funds may represent the only hope for truly disastrous events, their efficiency is usually low, in that the costs of procuring the funds under the pressure of the emergency may be very high. Their use should therefore, in our view, be limited to the very extreme events that cannot be effectively managed otherwise. In an optimal security fund, solidarity should probably be left for the highest layer, the one intended to cover the extreme risks, those very unlikely but very serious, that do not justify immobilization of funds.

**5.3.3. Hedging vs. speculation. The bad repute of financial markets**

For an economic agent, hedging means to engage in a financial contract that has a payoff structure which is correlated with the expected returns from the main economic activity. Any economic agent facing a risky prospect, in fact, may be able to reduce the overall variability of the economic payoff of the main enterprise by engaging in other activities whose payoffs are correlated with that of the main activity.

Depending on the type of correlation, the hedger will take either a “short” or a “long” position so that the returns from the hedging activity will be negatively correlated with those of the main one. Modern derivative instruments, such as options and swaps, have greatly broadened the scope for hedging activities. In principle, derivative contracts could be written to hedge any risky economic activity, although, in practice, many conditions must be fulfilled in order for an active exchange for a specific derivative market to materialize.

Hedging is therefore a risk management activity, and potentially a very effective one. The extent to which a market for hedging instruments may develop depends on many factors, which are linked to the characteristics of the risk to be hedged.
A successful market is usually one where two types of operators act: hedgers and speculators. What distinguish hedgers from speculators is that hedgers have a direct exposure to the underlying risk (for example, a hedger might be the producer or end user of the commodity whose price is random), while speculators have no direct exposure to the underlying risk: they simply are betting on the direction of price movement.

The role of speculator is crucial to the smooth operation of a market for derivative instruments. In facts, hedging always requires a counterparty to assume the “opposite” side of a hedged position. Sometime the opposite side is taken by other hedgers, who have a corresponding opposite stake (for example the buyer of a commodity has exactly the opposite stake with respect to the price compared to the producer of the same commodity), but this need not to be always the case. The opposite position on a given hedge can be taken by speculators who may enter in the contract for speculation reasons.

Speculators therefore contribute to provide “liquidity” to the market. In addition, given that the activity of speculators may be justified on the grounds that they might be better informed about the direction of price movement for the given commodity, the presence of speculators serves an additional purpose, by improving the quality of information contained in quoted prices.

What is relevant for the discussion we are conducting here, is that the activity of pure speculators can be rather important for an active trade of financial derivatives to materialize, especially if the number of hedgers on both sides of the risk is not high. In this case, speculators provide liquidity to the market and, provided there is enough competition, they make sure that the cost of transferring risk through the derivative trade is low.

The major problem that has generated a growing concern about the use of financial derivatives recently, is not the mechanism of functioning of such markets per se, or the fact that on these markets there are many speculators. The actual problem may be linked to the fact that sometimes derivative markets have developed outside formally organized exchanges, in the so called over-the-counter market, where there may be high counterparty risk41 and many of the deals are held outside the balance sheet and are not accounted for correctly.

We shall probably need some time and a huge educational effort in order for the general opinion to regain trust in the benefits that can be obtained through the operation of the derivative markets, but nevertheless the benefits are there and it would not be wise to forego them, given that not all derivative markets are failing, and many are continuing to provide benefits to the operators.

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41 Counterparty risk is the risk that the contract partner may default its contractual obligations. In organized exchanges, there are always features that limit the risk linked to contract breaching.
5.3.4. Elements for a taxonomy of possible risk management tools

The moment in which obligations are made and cash flows are exchanged

Financial instruments whose payoff are tied to specific events will be referred to as Event Linked Securities (ELS). A useful classification of ELS divides them depending on the moments when obligations are settled, and when cash flows are exchanged.

There may be securities which requires only one financial transaction, and this always occurs after the event, or securities which requires both an up-front payment (which is therefore independent of the event) and a post-event transaction, or a hybrid that requires continuous exchange of payments pre and post event. Typical examples of this last type of security are insurance contracts and options, which have a mixed pre- and post-event financial structure: the option price or the premium is paid pre-event, while the option payoff or the indemnity is materialized post-event. Examples of the former are futures and forward contracts, and solidarity fund, all of which do not require an upfront payment, and for which the release of fund occur after the event.

Each contract type offers a different trade-off in terms of upfront costs and post event liquidity, and the choice of which contract or combination of contracts to use may depend largely on the financial structure of the enterprise and its degree of risk tolerance.

The economy in the per unit cost of risk transfer is usually paid for in terms of “depth” of coverage, so that contracts with an up-front payment usually guarantee a lower degree of actual coverage (there might be some form of residual basis risk which is not dealt with by the contract). An example related to the practice of insurance contracts may serve to clarify the point: everybody is familiar with the concept of the insurance premium, which is the up-front payment required to enter the contract, and of the deductible, that is a “layer” of risk which is deliberately left out of the guarantee. To illustrate the trade-off we are describing, one may think of a spectrum of contracts with deductibles going from 0% to 100%. An hypothetical insurance contract with a 100% deductible, of course, will provide no coverage at all, but then it will have a zero premium. On the contrary, a contract with 0% deductible will have the highest premium.

Apart from the paradox of a deductible reaching 100% of the damage, the point is that the optimal strategy for risk management should include a mix of instruments, putting together pre-financing and post-event payments, depending on the particular type of risk to be covered.
The conditions under which financial transactions occur

One other important element that contributes to the characteristic of the security is the conditions that determine the release of payment, what is usually termed the “trigger”. The possibility of objectively observing the trigger is crucial for the development of a derivative contract.

As opposed to traditional insurance, where the amount of the compensation can only be determined after the event, and usually with a high cost for loss adjustment and great scope for moral hazard, many options and other indexed contracts imply a much lower administrative cost, because there is no need for costly loss-adjustment procedures and no moral hazard or adverse selection costs.

This advantage however is partially offset by the fact that non perfect correlation between the index and the loss values will induce some “basis” risk, that is the risk that the coverage will not be full.

Dimensions relevant for assessment of the merits of the various risk management tools.

We have already mentioned in passing several aspects that may be taken into account to evaluate the merits of various risk management tools. The most important ones are probably: the possible presence of adverse selection and moral hazard, the presence of basis risk, problems related to solvency or liquidity, the implied overall cost of risk transfer, made of both actuarial and transaction cost, and, when public action is called for, the political feasibility and the administrative feasibility. We shall briefly comment on each on these aspect below, with explicit reference to the trade of financial instruments.\(^{42}\)

Adverse selection

Adverse selection arises from information asymmetry. This occurs when the security is not equally attractive for the potential hedgers, so that high risks hedgers may self-select to hedge their risks. Excessive self selection may lead to thinness of the market and to increase the equilibrium level of the premium (as for traditional insurance). Custom tailored contracts may reduce the distortion, but imply higher administrative costs and a difficulty for the development of a deep enough market. Adverse selection also leads to higher monitoring costs.

Moral hazard

Moral hazard occurs when there is the possibility for one of the party to engage in actions that may alter the payoff structure of the contract. The need to devise

\(^{42}\) For a more general presentation of some of these issues, see also section 1.2.
mechanisms for sanctioning such actions may lead to an increase in the administra-
tive costs. Other contractual mechanisms may limit the scope for moral hazard 
by making moral hazard less attractive for those who can potentially exercise it. 
Moral hazard also leads to higher monitoring costs.

**Basis risk**

Basis risk arises when the correlation between the traded hedging instrument (the 
index or standardized commodity) on which the contract is written and the agent's 
source of risk is imperfect. It is a common feature of futures and options contract, 
and of recent indexed insurance contracts. It does not exist for traditional or mutual 
insurance. One of the advantages of combining more than one instrument in a se-
curity fund reside precisely in the possibility of selecting the more appropriate tools 
for each “layer” of risk. An indexed contract such as an option, for example might 
allow a group of producers to hedge the systemic component of the market risk 
they face, while the resulting basis risk (idiosyncratic by construction) could be 
dealt with through a mutual fund.

The flexibility of forming hedging position by combining various instruments can 
help minimizing the effects of basis risk. When there is basis risk, in facts, one can 
form hedge position that minimizes the variance of basis risk (this is called the 
minimum variance hedge). Other objectives such as a mean-variance optimization 
are also possible, and the choice of which is the optimal hedging position must be 
carefully scrutinized on a case-by-case basis.

**Solvency/liquidity**

Anybody that commits to a payment in the future will need to have an adequate 
amount of reserves to fulfill the commitment. The solvency of a security fund refers 
to the ability of the fund to face all the needs, in a prompt and speedy manner, 
even when the worst possible event occurs. For securities such as bonds or op-
tions which are traded on the market, this relates to the liquidity of the market, 
which often requires that a large enough number of speculators participate in the 
trade to provide enough resources to guarantee that all the obligations are sold, or 
that the price of the options is close to its efficiency price. Lack of liquidity or lack of 
solvency of those involved in the contracts may be the major cause for derivative 
markets’ failure.

**Cost for transferring risk**

What we mean by the cost of transfer the risk is what usually is termed the “pre-
mium” in the insurance literature. In a perfect insurance market, with risk neutral in-
surers, the premium would be equal to the expected value of the indemnities paid, 
so that the fund will make, in the long run, neither gains nor losses. But this is the-
ory. The actual cost for transferring risk depends, in practice, on many factors. In
general, the wider and more varied is the pool over which the risk is distributed, the lower will the unit cost be.

The development of financial instruments has broadened considerably the scope for spreading financial risk over a wider group of investors, thus contributing to the reduction of the average cost of security. However, use of securities such as futures, options or bonds usually requires some fixed costs to set up the market or to achieve the desired level of liquidity, with the result that the average cost will be low only if a certain dimension of the market is achieved.

Transaction costs

A different component of the real cost of obtaining the transfer of risk (apart from the economies of scale to which we have just referred) is the presence of various forms of what economists call “transaction costs”. Such type of costs include, for example, commissions (direct and indirect), fees, the cost of loss adjustment to determine the amount of indemnities paid, the cost of the legal system required to make the contract enforceable in case of disputes, the opportunity cost of margins on futures, etc.

The amount of transaction costs depends on many factors, including the type of market organization (dealer versus broker markets, organized exchanges vs. over-the-counter markets, etc).

Two problems that could be conducive to high transaction costs relate to the lack of competition (presence of oligopolistic or monopolistic positions) and to the presence of asymmetric and incomplete information. In such cases, transaction costs might be so high to determine complete market failure.

Political feasibility

Any strategy that requires the involvement of the public authority, either directly or indirectly requires political acceptance. This may be related to the cost to the public budget, and to the efficiency of the expenditure with reference to the policy objective.

The efficiency of public expenditure may be particularly low for some types of intervention. One example is subsidized crop insurance. In some cases, it is maintained that public subsidy to the premiums is required to make insurance viable. However, if such a subsidy reaches levels as high as 50% of total premium, even under the assumption that insurance companies are making no profits, this means that the net public expenditure will be higher than the sum of net indemnities paid to farmers (that is, total indemnities minus the share of premiums paid by farmers themselves). The argument could be raised then that it might be more efficient if the system were run directly by the combination of mutual funds and the State, if the objective is that of providing insurance coverage to farmers.
Administrative feasibility

One other aspect to be taken into account when assessing the merits of a given strategy is its administrative feasibility. This may be depend on the existence and efficiency of the institutional, and legal infrastructure, including the tax system. Trade of financial derivatives, in fact, needs to be regulated for tax reasons. In facts, tax deferment and other form of subsidy to deserving groups might be one way to incentivize the use of these instruments for risk management purpose.

5.3.5. Six possible categories of financial instruments to be included in a comprehensive security fund

We are now ready to list what we consider six possible categories of instruments to be included in any ideal security fund. The attention is particularly devoted to the conditions of the fruits and vegetable producers, although the discussion is comprehensive and the instrument flexible enough to be applicable also to other sectors.

Self insurance and diversification

By self insurance we mean the use of own resources to limit either the exposure to risk or its consequences. Typical self-insurance mechanism is the use of reserves to cope with the consequences of a damaging event. If the potential loss is limited, the presence of various forms of transaction costs needed to activate other mechanisms, may suggest that self insurance could be the least cost solution. In this case, the transfer of risk would occur over time, and the only cost would be the opportunity cost of the immobilized reserves. The mechanism of self insurance will fail when the loss exceeds the amount of liquid reserves that the agent possesses.

One other form of risk protection that do not involve risk transfer is the diversification of the return generating activity. By mixing in a portfolio activities whose returns are not perfectly correlated, the variability of the overall portfolio return, and therefore the exposure to risk may be strongly reduced. The cost implied by diversification is linked to the foregoing of gains from specialization, which may be relevant if the main activity implies economies of scale.

Opening of a conditional line of credit

As an alternative to self insurance, access to credit for borrowing money will allow agents to face “excess” losses that occur beyond the level of precautionary capital placed in reserve under the self insurance scheme. The cost of borrowed money is usually higher than the opportunity cost of savings, because of the various forms of transaction costs that occur when accessing the market for credit. Among these
transaction costs are included so called “search” costs, due to the need to find a counterpart willing to lend money the moment one needs it.

One innovative way of reducing such transaction costs in accessing credit as a tool to manage crisis risk is the possibility of opening a conditional line of credit with a financial institution. The idea is that a banking institution would commit to release credit to those who are exposed to a defined crisis, in case it occurs.

This is an example of a pre event commitment with post-event payoff. The advantage would be that the cost of accessing credit to cope with the consequences of the event can be fixed and known in advance, and the premium over the market interest rate might be lower than the transaction costs needed to access credit in case of emergencies. Also, the public authority may participate either in providing back-up guarantees or by direct contribution to the payment of interests.

**Insurance**

As with diversification, transferring of risk may also occur over space. As with access to credit somebody may borrow money from other people to make up for lack of own savings, with insurance one may “borrow” protection to make up for lack of diversification in its own activities. With an insurance contract, in practice, an agent becomes part of a pool of spatially uncorrelated activities, so that the overall risk of losses for the entire pool is lower than that of each individual member of the insurance pool.

Insurance agreements can be obtained under many different forms. Traditional ones have included the creation of mutual insurance pools, in which a group of agents commit to provide insurance to each other, and so called commercial insurance, in which specialized insurance firms coordinate the operation of insurance pools. With commercial insurance there is the need to define a bilateral agreement in which one of the parties (the “insurer”) commits to provide compensation (the “indemnity”) in case a specified loss occurs to the other party (the “insured”) in exchange for the payment of a certain amount of money (the “premium”). Ideally, the activity of the insurer would be simply that of a facilitating the creation of insurance pools, and should not involve any systematic profits. As it often occurs, however, reality parts from the theoretical ideal settings, and insurance companies are, virtually everywhere, for-profit enterprises, which means that the pure cost of transferring risk with commercial insurance is higher than what would prevail in an ideal mutual fund, the difference being the rate of expected profits of the insurance companies.

Many deem the operation of commercial insurance as being superior to that of mutual insurance, because of the advantages that the former might have in the administration of the insurance pool. The claim may be true when transaction cost for the operation of mutual insurance might be too high, however, it is far from being universally valid, given that the administrative advantage of commercial insurance
should be compared with the implied rate of profit of the insurance companies if one wants to conclude for an advantage in terms of the effective cost for risk transfer to the insured.

Also, there may be various reasons why transaction costs that commercial insurance operations have to face are relevant, and potentially even higher than those of mutual insurance pool, as it occurs, for example, in controlling for self selection and moral hazard, where a mutual agreement might have an advantage compared to a commercial insurance pool.

In addition, there are characters of the risk that makes insurance particularly difficult, be it mutual or commercial. The most important one is the possible systemic nature of the risk, that is the fact that individual losses may be highly correlated, so that the insurance pool would not imply a gain in terms of reducing the burden of the individual loss. This is in fact the reasons why, for example, effective commercial insurance has developed in agriculture only for a limited number of specific risks (most notably hail and fire) which are, to a great extent, idiosyncratic, and not for such systemic risks as droughts or floods.

We must note here that price risk is typically systemic to all producers of a certain product. The possibility of creating a successful insurance pool therefore rests on the possibility of extending such a pool to a diversified enough set of products or to a large enough set of regions, such that the prices will be sufficiently uncorrelated to allow for risk spreading within the insurance pool.

**Derivatives**

The traditional mechanism for dealing with price risk has been that of use of forward and futures contracts. In practice, these contracts require that the two parties with an opposite symmetrical stand with respect to the price risk of a certain product find an agreement on the price at which the product will be exchanged in the future, well before the actual transaction occurs. Futures and forward contract will have the possibility for gains or losses, that is they imply both upside and downside risks.

In a forward contract, the two parties are the actual buyer and the actual seller of the product, given that the contract can be resolved only with the actual transaction. These contracts are not marked to market and only settled at maturity. They require no upfront payment. The delivery price is determined such that no money exchanges hand at the time of entering the contract. Forward contracts are also based on a specific commodity and therefore have no basis risks. The innovation that has come about with the futures contract is that the contract is written not with a trading partner (i.e. no need to search for a counterparty to assume the risk), but rather with an exchange, and that an open contract need not to be resolved with the actual trade, but rather it can be resolved by taking an equivalent opposite position (i.e., if I have an open “long” position, that is a commitment to buy a certain
amount of a product at a certain price, I can cancel that commitment by taking an
equivalent “short” position, that is to enter into another futures contract with the
same institution) so that no actual transaction in-goods needs to correspond to
each and every futures contract trades, but rather the positions are closed via cash
settlement. As a matter of fact, most futures contract are resolved without actual
transactions occurring, but through recourse to the “clearing house” in which “long”
and “short” positions are offset and only financial transactions occur to compensate
for the possible difference in price. This has proved to be well suited for specula-
tors who do not wish to assume a position in the physical commodity. The advan-
tage is that avoids storage costs and convenience yield factors)

There is a vast literature on the use of futures contracts as hedging mechanisms
that is beyond the scope of our review here. It will suffice to say that there are
some conditions that permit an effective futures trade to establish, and that may be
relevant for the case at hand of Fruits and Vegetables products. The most relevant
of such conditions is that the product needs to be clearly identified in its standard-
ized quality for a futures contract to be written in the first place. If there is any am-
biguity on the quality of the product, the enforcement of futures contracts may
prove unfeasible, and the market may fail (in this sense, the recent effort of the EC
in defining and setting qualitative standards for fruit and vegetable products may
prove particularly useful in the future).

As it should be clear, the fundamental idea behind futures trade is the possibility of
hedging. Futures are just one example of a derivative security, that is a financial in-
strument whose value depends on the values of other, more basic, underlying
variables (Hull 1997, p.1). The only requirement is that the risk is correlated with
the variable underlying the derivative.

The most direct way of obtaining such hedging, therefore, would be to write a de-
ivative, typically an option, based on the event that determine the loss. Originally
options were developed with tradable assets as the underlying, and the contract
would give the holder the right (but not the obligation) to buy (a “call” option) or to
sell (a “put” option) the underlying asset at a pre-specified price and a within a pre-
specified period of time. Later, options have been written also based on non trad-
able variables, called “indexes”, and in that cases the option would give the right to
enter into a specific financial transaction if the index on which the option is based
would reach a certain value.

In the feasibility study, this issue will be explored at more length, but it might be
useful to note here that there exist a wide variety of methods in which the risk of a
market crisis in the Fruit and Vegetable sector can be made “tradable” through ap-
propriate options. One such a possibility, as shown in the next section, would be for
those who are exposed to such risk to buy a “put” option on the crisis, that is to en-
ter into a contract that entitles them to receive a payment (i.e., to “sell” the crisis) in
case the crisis occur, provided the status of market crisis can be objectively deter-
mined by third party entities.
Purchasing of the put option will require an up-front payment to the writer or seller of the option, which could be an insurance company, a financial institution, or even a government, or another public agency which would thus act as an “insurer”. Apart from transaction costs and profits, the price of the option would be close to the average expected payment, where the expectation is formed based on the probability that the crisis occurs, so that, as in the case of efficient insurance pools, the amount of money collected (here in the form of revenue from the sales of the options rather than as premiums) should be, on average, equal to the amount to be paid, with zero expected profit.

**Event bonds**

With insurance pools, or via option trade, either the insurance fund or the issuer of the option holds the entire risk which is pooled together from the various individual agents that have bought the insurance contract or the put option. This may cause the risk to became very large, and, especially if the insured against risk is correlated, there is the possibility that the total amount of indemnities to be paid would exceed the amount of money collected. This would oblige the insurance company which have collected policies or the agency which has sold options, to maintain a large financial reserve in a liquid enough form that it can be mobilized in case of necessity. The opportunity cost of such immobilized reserves may be prohibitive. For this reason, insurers might want to obtain reinsurance of their exposure.

This may be done in several ways. One is to transfer part of the excess risk to other, larger institutions which acts as reinsurers, in exchange for the payment of a reinsurance premium. Alternatively, the insurer may be able to hedge the risk it faces by assuming positions in other correlated variables. One other alternative is to parcel the risk exposure into smaller pieces and pass it to investors whose portfolio return is uncorrelated with the underlying risk (hedge funds) or to reinsurance companies.

One recent innovation in the financial market that has greatly expanded the possibility of reinsurance coverage, even for catastrophic losses, is the possibility of collecting in advance the capital needed to face the catastrophe through the issue of special bonds, called CAT-bonds. The issuer of such a bond commits to reimburse the principal and to pay a dividend, unless a specified event occurs, in which case the investor would lose part or all of either the principal, or the coupon payments, or both.

In order for the bond to be attractive to investors, the returns must be higher than alternative investment opportunities, therefore the issuer of the CAT bond must pay an interest premium compared to the prevailing interest rates. Such a premium is the cost to be paid for transferring the risk.

The possibility of marketing such bonds resides in the fact that even a catastrophic loss, if divided in many small chunks, may become bearable for a limited risk pre-
mium. The wider and the more diversified is the financial market over which the CAT-bond can be traded, the lower might be the overall cost for transferring the catastrophic risk.

Issuing of event-linked bonds of the type of CAT bond may prove an effective way to finance any security fund administered for example by a public authority.

**Public solidarity**

For the uppermost layer of risks, that includes the less likely, highly unpredictable and potentially very dangerous events, probably the only suitable risk management strategy is to rely on the implicit insurance provided by tax payers: do nothing, and count on the mobilization of public solidarity. Nevertheless, with the appearance of financial innovations of the type described above, use of financial markets may become more and more popular by the governing authority in order to ex-ante mobilize the potentially needed resources and at a controlled cost.

5.4. **Summary and conclusion on the feasibility of security funds in the European Fruit and Vegetable sectors**

In this section we have presented the elements that would inform the definition of a possible security fund to be introduced in the Fruits and Vegetables sector.

What we envisage as a security fund is a combination of contracts and financial reserves built to the objective of guaranteeing that, in case it is needed, liquid capital is available to face the consequences of market crises.

The discussion has led us to identify six categories of instruments that might be included in such a fund, ranging from self-insurance to public solidarity.

Each of the instruments presents advantages and disadvantages whose measure depend on the kind of risks one is exposed to. One very general classification would list them along the two dimensions of probability of occurrence and entity of loss that define the risk layering of Fig. 7: on one extreme we would have frequent, but limited losses, for which self-insurance is the instrument of election, and on the other extreme we have tail risk, rare but potentially very large losses, for which the best option is often to count on solidarity from the general public (see Fig. 8).

**Fig. 8. Ordering of risk management tools**

<table>
<thead>
<tr>
<th>Probability</th>
<th>Self-insurance</th>
<th>Credit</th>
<th>Mutual funds</th>
<th>Commercial insurance</th>
<th>Options</th>
<th>Contingent bonds</th>
<th>Public solidarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entity of loss</td>
<td></td>
<td></td>
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</table>
An ideal security fund, therefore, would include up to all of the listed instruments, each to be directed at a specific layer of risk. The actual composition of the fund will depend on the actual profile of risk exposure of the enterprise. In order to provide an example of the kind of considerations to be made when defining such a composition, in Tab. 34 we provide a synthesis of the evaluation of the various instruments in terms of the 8 dimensions listed as relevant in section 5.3.4, elaborated having in mind the conditions of the European Fruits and Vegetable sector organization, as emerged from the analysis summarized in chapter 4.

**Tab. 34. Merits of the various elements of a security fund**

<table>
<thead>
<tr>
<th></th>
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<th>comm.</th>
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<tbody>
<tr>
<td>Adverse selection</td>
<td>☺☺☺</td>
<td>☺</td>
</tr>
<tr>
<td>Moral hazard</td>
<td>☺☺</td>
<td>☺</td>
</tr>
<tr>
<td>Basis risk</td>
<td>☺☺</td>
<td>☺</td>
</tr>
<tr>
<td>Solvency/liquidity</td>
<td>☺☺</td>
<td>☺</td>
</tr>
<tr>
<td>Risk transfer cost</td>
<td>☺</td>
<td>☺</td>
</tr>
<tr>
<td>Transaction cost</td>
<td>☺</td>
<td>☺</td>
</tr>
<tr>
<td>Political feasibility</td>
<td>☺</td>
<td>☺</td>
</tr>
<tr>
<td>Administrative feasibility</td>
<td>☺</td>
<td>☺</td>
</tr>
</tbody>
</table>

*Evaluation ranging from very positive ☺☺☺ to very negative ☺☺*

*Source: our elaboration*

The table lists all the tools and assigns a qualitative score (from very good ☺☺☺, through neutral ☺, to very bad ☺☺) to each of the 8 evaluation criteria. From the table, for example, we can observe that the major problem of self insurance is that of liquidity, given that this instrument is based on the own available financial reserves, whereas it does well in all other dimensions, perhaps excluded the risk transfer cost, which is linked to the opportunity cost of own savings and that may be high especially when precautionary savings are limited.

The problems with credit might be that of transaction costs, which, depending on the conditions under which one access to credit, could be very high, due, for example to search costs. Also, there may be issues of moral hazard that needs to be controlled in the sense of monitoring the borrower use of money not to be diverted from the intended use. Potentially, however, this option may guarantee the lowest risk transfer cost, as discussed above.

For insurance, we may refer to the experience of many countries where there is a tradition of crop insurance, to conclude that the major advantage would be the absence of basis risk, given that compensation is based on the actual damage suffered, provided such a damage can be objectively and easily measured. Unfortunately, this is rarely the case, and that is one of the reason why insurance is typically characterized by very high transactions costs. There are differences between
mutual insurance and commercial insurance in terms of the scope for adverse selection and moral hazard, easily controlled in the first case, potentially very serious in the second one. One thorny issue associated with insurance is the political feasibility of a public involvement in its support. The question is rather difficult to settle in generally valid terms, given that there seems to be Countries where the public support to crop insurance program is accepted and other where there is strong resistance.

Use of various forms of derivatives, once established, would guarantee benefits related to the reduction of informational problems and to the low level of risk transfer costs and transaction costs. There is still some question to be resolved in terms of the political feasibility of a possible public involvement in this field, given the bad press that has been hitting derivative markets in the recent past, but the potential in terms of reduction of costs and providing efficient risk transfer through innovative contracts is huge.

While the issuing of contingent bonds seems not to be feasible for single F&V producers, who rarely have an economic dimension such as to justify it, it is an attractive option when seen in combination with the presence of public solidarity. These two last options should be considered for the extreme risks, for which the prompt availability of capitals that a contingent bond would create might solve some of the problems related to the release of compensatory payments currently existing under various solidarity fund schemes.

In conclusion, the analysis we conducted has shown that there is ample flexibility in the possibility of creating security funds in the fruit and vegetable sector, which is to be considered therefore a very feasible objective. The abundance of different possible risk management tools makes it possible to define, in principle, a wide range of solutions that could be custom-tailored to the specific conditions of the enterprise, group of enterprises or other association that is to be charged with the function of managing the risk of market crisis. There are however a few pre-conditions that needs to be verified in order to proceed in the actual design of a security fund, and that may deserve specific attention.

First, the risk profile needs to be well understood. The combination of instruments to be used depend crucially on the ability of the risk manager to understand the causes and effects of various random events that contribute to determine the economic performance of the enterprise. With reference to the European Fruit and Vegetable sector and in particular for market risk, the natural dimension where this should be done seems to be that of Cooperatives and other forms of Producer Organizations, possibly of large dimensions.

Also, because the risk profile may be very different depending on whether one focuses on a single product, or on a group of products, on a single region or on many region, no general solution of the kind one-size-fits-all can be devised. In the attempt at an implementation study of next chapter, we shall therefore be forced to
select specific case-studies on which to conduct the analysis, and the French cauliflower market seems to be an ideal candidate, given also the availability of detailed data.

Second, many of the potentially most effective tools, such as conditional credit and various forms of derivative contract, will require that the monitoring of the market conditions and, in general, the information circulation, is high, effective and reliable, which points to the importance of the other element of this feasibility study, concerned on the feasibility of an effective market monitoring system, to which we move next.

6. Feasibility of a EU-wide Market Monitoring System in the F&V sector

6.1. Ex-ante analysis of the Market Monitoring System

The general advantages, which we defined as possible “general objectives”, of the present Market Monitoring System proposal are in particular to:

1. Prevent “long-term, structural crises” deriving from a shortage of information or from the inadequacy or lack of dissemination of information needed for the programming of production and/or marketing on a European scale.

2. Achieve a better overall market balance, by allowing the adaptation of production to demand conditions, by providing information on: (i) the evolution of EU fruit and vegetable consumption and of overall demand, both domestic and from exports; (ii) sanitary and phytosanitary (SPS) barriers in third countries (obstacles to EU exports);

3. Limit the effects of “short term crises” due to occasional market unbalances, deriving from exceptional atmospheric phenomena and from occasional events that have a bearing on the safety concerns of consumers, via the dissemination of data and agro-meteorological forecasts and of possible changes in demand levels.

In greater detail, this system should thus be aimed directly at POs and APOs, as well as to individual F&V producers, and should put them in a position to access information that can be used to help production plans match demand, in both qualitative and quantitative terms.

The preliminary analysis also highlighted the need to introduce, in addition to general objectives, some operative objectives for the proposed tool, constituting
therefore further specific advantages referring to the current context of the F&V sector, namely to:

1. Adopt a functional model for the generation and dissemination of information, having the necessary flexibility to adapt constantly to changing operative-commercial-technological conditions of the F&V sector (and of specific productions) and to different national realities in different MSs (in terms of the incidence of the productive organization –POs and APOs- and the national propensity to produce, market or consume specific F&V products)

2. Foster the development of networking, at EU-27 level, among the operators of F&V information, trading and production

3. Make the most of existing cognitive resources (structures, knowledge and databases) and encourage possible development in territories or F&V productions that are not currently covered

6.2. The proposed Market Monitoring System model

Analysis of the main strengths and weaknesses of both different operating models analysed as a case study (see annex A 3) has led us to focus our methodological proposal on the parallel creation of three tools that converge jointly on “bidirectional” communication, taken to mean systematic sharing and exchanges, among actors involved in data management on both the supply and demand side. Take as a whole, this system will become the place, both physical and virtual, for direct and continuous dialogue among actors involved in the generation or data and F&V producers (individuals or members) that require such data to make fundamental strategic choices (production and marketing). The model we propose consists of the simultaneous creation of:

- A web portal, organised by DG-AGRI, split up into theme areas for consultation, dedicated to the dissemination of information useful for the productive and marketing strategies of producers and supplied directly by information collected and processed by existing monitoring centres.
- Opportunities for the main actors of the system to meet and discuss, about technical and operational topics regarding the monitoring of the F&V market, activated and coordinated by DG-AGRI, in order to: (i) foster the development of networking initiatives among existing monitoring centres; (ii) develop/disseminate the knowledge of existing monitoring; (iii) foster meetings between operators that produce information and the users of that information.
• **Thematic forums** (by product), moderated by DG-AGR1, with a view to defining forecasts of a productive and trading scenario and monitoring in “hot” periods for each marketing campaign.

We schematize below, with an intervention logic diagram, the relations existing between proposed instruments and specific objectives, as well as between specific objectives and intermediate and global objectives.
Fig. 9. Intervention Logic Diagram of a Market Monitoring System

General objectives

- Prevent long-term "structural crises" in F&A sector

Intermediate objectives

- Improve the overall equilibrium of the F&A market
- Limit the effects of occasional market imbalances deriving from exceptional atmospheric conditions and occasional events
- Raise operators’ ability to predict market conditions, overcoming the scarcity or insufficiency of disseminated information
- Enable operators to improve the programming of production and/or marketing on an EU scale, providing for them the systematic observation of general F&A demand trends
- Implement and develop methodologies enabling specific long-term forecasts in the F&A sector

Operating objectives

- Adopt a functional model for the generation and dissemination of information
- Acquire the utmost transparency when disseminating information
- Raise the level of sharing of information among operators in the areas of F&A information, trading, production at EU-27 level
- Ensure timely information in the F&A sector (production and market)
- Make the most of existing cognitive resources and encourage possible developments

Tools

WEB PORTAL

NETWORKING

Meetings and debates among the main actors of the system

Special theme forums
The diagram below provides a schematisation of the flows of the proposed information system as a whole (portal, meetings and debates, forums):

Fig. 10. Market Monitoring System flowchart

The portal is the platform through which information is conveyed in the F&V sector. Access to the portal is granted to users, i.e. to all actors at various levels involved in the F&V chain and regarded as “stakeholders”. This represents the principal, direct flow of information within the system.

Information consultable via the portal also acts as a stimulus for the creation of thematic forums, demand for which can come from a) the users of the portal who are following output, market and consumption trends, and b) the outcomes of meetings and debates among the main actors in the system.

In the latter case, the circuit is mutual, with conclusions drawn from forums supporting portal activity and the fine-tuning of the information system as a whole.
which, as already mentioned, occurs chiefly through dialogue between the producers and users of information.

Such dialogue develops from both the output of the portal (in the form of information made available through this tool) and from input from the portal, i.e. information identifiable as indicators of the system’s functioning (gauging and interpreting users’ choices).

6.2.1. The main functional traits of the web portal

The hub of the system is the bringing together of information in a single website, the “DG-AGRI F&V Portal”, that can easily be consulted online. The value added of this solution, compared with the current availability of information in the F&V sector, is thus the concentration of available information at an EU 27 level and the process to raise the level of accessibility to such information to all operators involved in the Market Monitoring System.

An essential characteristic of this web solution will be that of the user remaining inside the portal while being able to consult the pages or sections of websites made available by various data generating subjects, fully knowing the primary source of data and the subject that has processed the information consulted. In this way the factors transparency and accessibility will be the motivation for data generating subjects (Info-producers) to be present in the portal with at least an “entry level” portion of the information they produce. Also, the possible simultaneous presence of more than one information source for the same data, and the consequent possibility for users to make a choice between sources, will help to gradually raise the qualitative and quantitative level of information currently available.

A characteristic element of our proposal, in terms of functionality over time, service operation costs and the possible qualitative and quantitative improvement of available information, is that the web portal can make available to users the databases and information that are managed, updated and residing with subjects that generate data (Info-producers). Basically, the portal will act as a navigation tool within the framework of information that is already available, and may enable the user to choose which information to consult among the same types of information offered by different Info-producers (when more than one subject processes the same information, e.g. the daily price of strawberries in market XY). The advantages of this technical solution are as follows:

1. Info-producers will be asked just once, on the occasion of the initial request to provide its data, to characterise data through the use of key information (indexing of information as per RSS or similar standards), such as: permanent web address where the data shown in the portal are updated, the primary source of data, the specific products and markets to which published data refer, frequency of processing, etc. In this way there will be no costly
procedures for the regular entering and quality checking of data in a database managed by DG-AGRI.

2. Users of the DG-AGRI web portal may access information by means of structured and facilitated navigation paths, such as the sequential presentation of various information path options leading only to those sections that actually contain relevant information. This path will of course only be followed within the DG-AGRI web portal, the end result being the availability of that specific information offered by possible info-producers. Users may thus choose autonomously which information to consult by opening the requested information box, i.e. a link to a single piece of information or to a database residing at the site of the Info-producer, consultable within a window of the DG-AGRI web portal. Indications that such information has been provided by a specific Info-producer will guarantee the latter a considerable return in commercial/institutional image the more the information it publishes proves to be useful to the user (i.e. timely and pertinent to the phenomenon measured). The possible presence of more than one Info-producer will encourage these subjects to participate voluntarily in the initiative and to autonomously seek to constantly raise the level of quality of information made available. In areas in which there may be a gap in information coverage, the DG-AGRI web portal would clearly highlight this shortcomings, and this would represent a possible opportunity for developing the operations of Info-producers, thus triggering an autonomous process for the quantitative development of information coverage.

3. The manager of the web portal (DG-AGRI) will be called upon to perform a rather modest set of tasks referring only to the operational coordination of the system, namely:

- The design and advertising of the web portal and definition of the protocol for the transmission of data or links with Info-producers;
- The initial checking of the subjective characteristics of actors entitled to publish information;
- The initial checking of the completeness and correspondence of information supplied for the encoding of the information to be published. Thereafter it will be necessary only to periodically check the compliance of the correspondence of published information in relation to its initial encoding.

The flexibility of the proposed web (portal) solution may easily lead to its subsequent growth and development into different information sections, such as: 1) Market monitoring; 2) Market Reports by selected products; 3) Technological innovation; 4) Logistics and transport; 5) F&V News; etc. Similar flexibility can be imagined for the introduction and quantitative evolution of information made avail-
able via the DG-AGRI web portal: initially the providing of information could be limited to some products or productive or commercial areas, before expanding as users and info-producers see the usefulness of this tool. Technological flexibility is also an aspect that should not be underestimated, in terms of constant adjustments as web tools evolve, something a web portal is able to do, unlike a system based on DG-AGRI Database management. A web portal can indeed support many communication standards, adapting flexibly to the various needs of users and Info-producers.

The **data categories** available on the portal, in the Market Monitoring section, may be numerous, as detailed in Tab. 35 below.

**Tab. 35. Type of data included in the Market Monitoring section of the portal**

<table>
<thead>
<tr>
<th>Data category</th>
<th>current values</th>
<th>time series</th>
<th>estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivated areas</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Output and harvests</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Traditional Distribution prices</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>(at three market levels)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Large-scale retail distribution prices</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>(at three market levels)</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Non-EU imports (quantities)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Non-EU exports (quantities)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Stocks</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Agro-meteorological phenomena</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

In order to **guarantee the relevance of information**, minimum criteria or requirements (subjective requirements) for the applying Info-producers will have to be chosen, as well as minimum parameters or references (objective information criteria) referring to each data category:

- **Subjective requirements** may include, for example, those currently specified in the EC Tender referring to the supply of studies and research or related services (Technical capacity and/or Execution of the service reserved to a particular profession)
- **Objective information criteria** shall include parameters or references such as to prevent the system from being difficult to consult owing to the presence of a wealth of information on phenomena or contexts that are rather insignificant. For example, the category “Traditional distribution prices – Wholesale Market prices” may be limited to the publication of prices obtained from reference markets as currently identified, for each of the main F&V products in the Annex to Commission Regulation
877/2004. The same reference to this regulation may be adopted for the selection of products and types/varieties\textsuperscript{43} for which the inclusion of prices is allowed.

The proposed information system does not therefore entail a preliminary evaluation of the quality of Info-producers or of information entering the portal. The logic underpinning the whole system is that the portal, destined to become “the information centre for the F&V sector” of the EU 27, will automatically attract subjects that produce and/or process data referring to the Market Monitoring System. On the other hand, the “supply structures will be selected equally automatically, as it will be the users of the portal that will express their satisfaction, in other words operators will be able to ascertain “in first person” the usefulness of the data made available.

Considering also that (i) all subjects, whether they concentrate their researches on a single market rather than many of them, or on a single product, or on some or the entire range of F&V products, are interested in acquiring visibility on the portal, and (ii) potential portal users may be interested in acquiring a very wide range of information, it is felt that criteria such as the number of products or varieties monitored, the geographic coverage of data collection, categories of data analysed, etc. should not be discriminants in gaining access to the system. Vice versa, and especially for the start-up phase of the system, operational agreements may be reached with Info-producers who, being co-financed with national and/or Community public funding, already collect, process or disseminate information pertinent to the Market Monitoring System.

Another point to reflect on is the precise identification of \textit{limits to the dissemination of information and/or forecasts} that might generate distortions to the free functioning of the market. In this sense some types of forecasts should not be published in the DG-AGRI portal, such as price forecasts.

The \textit{advertising of the portal} is undoubtedly an important stage in the construction of the new information system. A veritable advertising and promotional campaign will have to be undertaken, both involving and aimed at all stakeholders. The advertising of the portal shall be at a local, national and international level, disseminating knowledge of the new tool and the certainty of a policy of correct and transparent information on the part of the European Commission. To this end, producers’ Associations and respective Unions can be an excellent vehicle for promoting a knowledge of the portal among operators.

The portal constitutes the hub of the proposed information system for the F&V sector, but not the whole system. If the system was limited to disseminating data processed by Info-producers, it would be a useful service for users, especially in terms

\textsuperscript{43} The annex to Commission Regulation 877/2004 gives 32 main F&V products traded in Wholesale markets, and for each one indicates the main varieties. This list may be expanded with the significant production of New Member States.
of the practical consultation of information, but not all objectives identified in the logic diagram and pursued by the system would be achieved. In this sense, the portal, in an initial phase fundamental for guaranteeing the distribution, accessibility and transparency of information, would in the second stage of development of the information system be a “dialogue tool” to help with the matching of information supply and demand. This dialogue would make it possible to:

- raise the level of sharing of information among operators engaged in the information on, trading and production of F&V at an EU-27 level;
- share information for the purposes of conducting studies and making forecasts on the production and trading scenarios of products at the biggest risk of possible market crises;
- make the most of existing cognitive resources and stimulate possible developments.

In short, for the information system to become the “common table” for the fruit and vegetable sector in the European Union, but also open to the rest of Europe and the world, the structures that monitor the sector, purely for research purposes or to supply services to the F&V chain, and the actors of the same chain to develop networking capacity.

Only in this way can the information system function as a preferred meeting place for F&V operators, a place to transfer information and share strategies. In this way, the portal itself will receive feedback that is indispensable for its technical and operational efficiency (finetuning of technical side of the portal, rise in number of participants, etc.) and its contents (definition of new categories of information and/or products, other production and trading areas, etc).

The organisation of networking proposed by us is structured on two specific tools:

1. meetings and debates among the main actors of the system
2. thematic forums

6.2.2. Main traits of meetings and debates among main actors of the system

Initiatives centring on meetings and debates among the main actors of the system will be coordinated by DG-AGRI and organised on a regular basis (e.g. every six months).

The hypothesis is that, assuming as a model the forecasting groups formed by producers, traders and data processors that meet twice a year within DG-Agri for some products (citrus fruits, apples and pears, stone fruits, mainly peaches and
nectarines, tomatoes, potatoes), it might be possible to create a more complex system of initiatives centring on meetings and debates involving the coordinators of the portal, information producers and portal users.

These meetings, in which Info-producers will always be present, may extend beyond the “categories” of information available from the portal and thus jointly involve the representatives of production, the market at various levels, etc, or initiatives may focus on single categories and refer exclusively to producers, importers or wholesalers, and so on.

It is suggested that meetings be arranged on the basis of single products, starting with those for which forecasting groups already meet.

The portal, a “showcase” for information on F&V production and the relative market, will propose the topics to be discussed. As already mentioned, it will be the “tool” to foster dialogue between information supply and demand, providing two types of input:

1. “direct”, by means of the information made available through the portal;

2. “indirect”, making it possible to measure the “satisfaction index” regarding the information provided and, at the same time, to record the demand for new information. Simply by recording portal “hits”, for instance, but not just to record the number of hits, it will be possible to observe the “categories” of data that are consulted most often, the products and geographic areas of greatest interest, and so on.

The portal will thus act as a compass for orienting dialogue among portal actors taking part in meetings/debates.

The main aims of these meetings/debates are to:

- foster the development of networking initiatives among existing monitoring centres;
- develop/disseminate the knowledge of existing monitoring;
- encourage meetings between operators that produce information and portal users;
- implement the portal.

The implementation of the portal is undoubtedly the priority aim of these meetings, with a view to making this instrument more and more effective in combating “long term, structural crises” deriving from a scarcity of information, or from the inadequate dissemination of information, required for the programming of production and/or marketing on a European scale.
The success of the information system will depend not only on the ability to convey direct and indirect sources of information to the portal, but also and more importantly on the quality of collected data. The more the data made available to users are fine-tuned and timely, the more the portal will be able to assist the sector’s operators. And meetings among data producers will help to develop existing monitoring activity.

The following will be invited to take part in meetings/debates:

- the suppliers of information participating in the portal
- representatives of information users
- agencies, organisations, institutions that are potential providers of information currently lacking or inadequate (by geographic area, “links” in the chain or product)
- representatives of possible new categories of portal users that have expressed an interest or whose involvement is deemed to be useful
- the scientific community, external experts called upon to contribute to the discussion according to the chosen topic.

The topics to be debated in a systematic manner shall refer in particular to:

- aspects relating to contents
- aspects relating to communications and formal matters
- aspects relating to the technical and operational side of F&V market monitoring.

These meetings will thus be fundamental for fine-tuning the methodology, contents and semantics of the system, being opportunities to check practical operations involving the main actors of the programme: information users and information suppliers.

The participation of other actors (possible new suppliers and new portal users) will have the advantages of extending coverage in terms of geographic area and product types (aiding the objective of attaining a significant level of census) and of studying and defining ever more accurately the interests and needs of the F&V chain.

### 6.2.3. The main traits of thematic forums

Thematic forums represent another step towards the completion of the system. While the regular meetings among system actors will seek to improve and imple-
ment the system in terms of its main characteristics/functions, the forums seek to gather the detailed needs of economic institutional operators and of the extensive organisation of information: products or varieties not included; more select but significant areas; details of the chain not yet included in the range of information disseminated via the portal, on the basis of the specific needs of the F&V world. This may create development opportunities for Info-producers. We may say, using a metaphor, that if the results obtained in meetings among actors will help to improve the forest, the forums will serve to “treat” single trees.

Thematic forums are meetings focusing on specific topics, are not held regularly and are organised “on demand”, on the basis of precise sector needs:

- highlighted by particular production, market and consumption trends, or by the need to define and plan for specific productive or commercial scenarios (by product and by intra- and extra-EU area);
- expressed by a wide variety of stakeholders;
- deduced from the information disseminated through the portal.

Furthermore, from the meetings/debates, as described above, organised among portal participants, topics may emerge that can be tackled in the forums and subjected to a broader examination, the conclusions of which can be used to further enrich the portal and the system as a whole.

The thematic forums will also be defined, agreed upon and organised by DG – AGRI, which in its role as system coordinator assesses the importance and the urgency of tackling one issue rather than another.

Forums are an opportunity for the most important experiences in the sector to be heard; the main goals of forums are to come up with forecasts for productive and trading scenarios and above all to monitor scenarios in “hot” periods for single marketing years. A feature of the forum will be thus be to highlight and analyse the most topical issues, with one eye on the long-term situation and on possible developments. Forums could thus conclude with some considerations on trends and with a summary of the debates undertaken.

Some online forums may also be arranged, to be activated on an individual basis and on topics deemed to be of greatest interest. In this case a set of rules would have to be drawn up to define participation rules, so to speak, and to choose one or more moderators for the effective handling of the debate and of the forum.
Part III
Implementation Study
7. Implementation study of a Security Fund

Based on the result of the preliminary study, which focused on the analysis of the current status of the practice of agricultural market risk management in Europe and in the rest of the World, we can safely conclude that there are indeed significant short- and long term efficiency, equity, and stability gains that could arise from the introduction of financial instruments that can help farmers mitigate and manage risks that are inherent to agricultural enterprise. As we saw, this requires adopting the view that informs modern financial risk management, which revolves around the concept of a security fund as a set of financial instruments (contracts and actual financial reserves) assembled to the purpose of guaranteeing the availability of cash flows to maintain the enterprise viability even in the case potentially damaging events materialize.

In the previous chapter we analyzed the historic record of fruit and vegetable prices as it could be detected from available official data and discussed in general of the feasibility of various of this financial instruments in the conditions of the European Union.

In terms of the analysis of official data, unfortunately we had to conclude that there still is a considerable lack of public information available detailed enough to allow anybody to precisely assess the market risk profile of a typical Fruit and Vegetable producer or producers association in Europe (see section 5.2.5), something that points to the potential benefits of improving on the current market data collection and dissemination system, possibly along the lines of what we suggest in this study (see chapter 8 below).

In the meantime, and with the limits of the available information we have, what we deem useful is a preliminary attempt at evaluating the potential costs and benefits of two instruments – a conditional line of credit and a conditional put voucher-- that we believe hold significant potential for managing crisis resulting from low prices affecting the Fruit and Vegetable sector.

In order to make reference to a concrete example, we shall use French data (provided by the Service des Nouvelles de Marché) on prices of cauliflower as a basis for our discussions. These regional price indexes capture market conditions, as reflected in current and historical market prices and provide indications on the trade volumes on two markets considered as the major shipping points for cauliflowers in France. In addition, the French SNM has developed an indicator of market crisis
that may be used, as a first instance, as a possible trigger for conditional crisis management contracts. 44

7.1. General consideration on the implementations of any risk management financial tool

To set up the discussion, some general notation and preliminary considerations are needed.

In general terms, we say that a "crises period" occurs when the market prices falls below a well defined and objectively measurable index level. In order to be suitable as an index to define the conditions on which the functioning of the proposed tools is based, the index should be exogenous, that is, it should not be alterable by any of the interested parties, something we shall come back later.

For ease of exposition, and with reference to our example of the French cauliflower market, let \( P_t \) be the weekly price of cauliflower (an index created by averaging prices across all shipping points at time \( t \)) and let \( X_t \) be the historical moving average of \( P \) (an index created by averaging \( P \) over the past 5 years). The index, denoted as "exceptionally low price" threshold, is defined as \( cX_s \), where \( c \) is a constant, representing some margin of safety such as the average incidence of per unit production costs on prices (\( c = 0.75 \) in the reported example). These regional price indexes must be created by an independent agency in and objective and transparent in order to allow the potential effectiveness of the contracts we describe to be expressed.

A crisis period is then defined as a period when \( P_s < cX_s \).

Fig. 11 presents a graph of \( P \) (in blue), \( X \) (in green), and \( cX \) (in red) for the cauliflower example. As the figure show, within the eleven month period spanning 6/4/07 through 5/5/08, there were numerous crisis or near crisis episode, especially in the latest part of the season.

To facilitate a clear understanding of the risk management instruments proposed in this section, it will be useful to fix concepts and notations at this time. Let \( T_0 \) denote the time when the farmer is considering different risk management alternatives. \( T_0 \)

44 The market indicators created by the Service de Nouvelles de Marché of the French Minister of Agriculture, in accordance with the decree of May 2 2006, applying article L611-4 of the “rural code”, which responds to a request expressed by the institutions to have an instrument for governing the fruits and vegetables value chain and to identify and measure crisis situations. See also Error! Reference source not found. above. We thank Mr. Philippe Boyer Mr. Daniel André and Mr. Sébastien Raulo for the assistance provided. The data are used here only for the purpose of exposition and should not be taken as implying any position of the French Ministry of Agriculture or of the SNM concerning the feasibility of the proposed tools.
can be thought of as the start of a crop year. Let $T_1$ denote the harvest time, or more generally the end of the crop season. We will assume that $T_1$ corresponds with the maturity (expiry) of the crisis management instruments we propose below. Hence, we assume that the farmer is only concerned with managing risks during the current crop year.

**Fig. 11.** Market indicators for cauliflowers in France, 2007/08 season

![Price indicator graph](image)

*Source: Service des Nouvelles de Marché, 2008*

Let $T_c$ denote the time of crisis, where $T_0 < T_c < T_1$. Clearly, the timing of the crisis, $T_c$, is random and unknown as of $T_0$. In the cauliflower case, the timing, magnitude, and the duration of the crisis are calculated by independent agency that collects the price data and is outside the control of the farmer.

We now provide precise definitions to some key terms that will be used throughout this section.

- **The Pre-Crisis** period refers to $T_0$ to $T_s$, a length of time that is random in duration.
- **The Crisis Period** refers to the time when the cross sectional prices, $P$, fall below the moving average index ($cX$). The longer the crisis period,
the larger the magnitude of losses the farmer suffers. As Fig. 11 shows, several crisis periods of varying durations may occur within a crop year.

- The Post-Crisis period refers to period $T_5$ to $T_1$. More generally, the post crisis period refers to post harvest period when gains and losses are determined.

7.2. Cash Flow Characteristics and the Taxonomy of Potential Contracts

Generically speaking, the cash flows accruing to a fruit and vegetable farmer have the following characteristics. The farmer begins at $T_0$ with a given amount of assets. The farmer may choose to take no actions at this time to mitigate losses during the crisis period. Alternatively, the farmer may use part of its available assets to enter pre-crisis contracts that guarantee an infusion of capital once and if a crisis has occurred.

If risk is perceived as a problem, to manage it the farmer would need and should be willing to hedge production and market risks by allocating some of his initial capital to contractual agreements or to the purchase of financial securities (including insurance), whose payoff are linked to the different risks affecting the farm enterprise (primarily weather and environmental risks that bear on output, and marketing and price risks). The farmer will therefore exchange part of his assets at $T_0$ for cash flows tied to specified events such as shortfall in yield, prices, or both.

Once the specified crisis occurs at $T_5$, the farmer will experience a significant shock to his cash flow stream. A well planned and well executed risk management strategy will ensure that during the crisis window, as losses are realized, the farmer will receive cash infusion from his portfolio of crisis linked securities. Multitude of securities or contractual arrangements are possible. Each will offer its own advantages and associated costs.

It is now possible to discuss possible forms of risk transfer using this simple conceptual framework. The key point to emphasize is that crisis liked securities and other forms of risk transfer contracts simply enable the farmer to exchange pre-crisis cash flows for post-crisis payments.

We discuss two specific schemes that enable farmers to better cope with episodes of crisis, as defined above. These are the conditional line of credit (CLC) and the conditional put voucher. We propose these alternatives because of their advantages with respect to moral hazard, adverse selection, political feasibility, cost effectiveness, and other dimensions discussed below. In case it is needed, and based on the results of discussions among stakeholders, we can extend the analysis to other instruments too.
7.3. Conditional lines of credit (CLC)

A Conditional Lines of Credit, is a financial commitment by an agency (a bank or, in the case of developing countries, the government or international funding agencies such as the World Bank) to provide a line of credit to a farmer or to farmer producer organizations, in the wake of a pre-specified range of losses from a specified event, subject to farmer or producer organizations continued financial solvency.

A typical conditional line of credit line contract has the following characteristics. First, the contract specifies a maximum amount that the lending agency is committed to lend the farmer over a given period (T_0 to T_1). Typically, the farmer has the right to draw any amount up to the specified maximum. Second, the contract specifies an interest rate that will apply to the amount that may be borrowed. The specified interest rate may be fixed at T_0 or be set at a spread below some interest rate index, such as the London Interbank Offered Rate (LIBOR). Third, the contract specifies the fees associated with the contract, and usually the farmer may be charged some nominal fees for the right to access the CLC. The fees may include an upfront commitment fee, an annual fee levied on the total committed amount, and a usage fee levied annually on the unused portion of the commitment. Fourth, the contract may contain an escape clause, which allows the lending agency to deny funds if the farmer fails to undertake other risk mitigating actions.

There are several ways in which the government may assist farmers in using a tool like this one at a relatively low cost. For example, the government might provide a back-up guarantee for the loan repayment, or it might subsidies part of the fees associated to the contract, or even provide a subsidy on the interest rate paid on the debt.

Although subsidized credit in agriculture has a rather long tradition in many Countries, both developing and developed, it has rarely been properly seen as a risk management tool. More often, it has been considered as a form of support justified by the peculiar needs of agricultural production in terms of early capital anticipation and late returns. We, instead, propose it here that credit be seen as the least cost (in terms of transaction costs) form of risk management, particularly suited for risks which are frequent and of relatively limited impact. In other words, it should be the tool used to deal with the first “layer” of risk, and always considered in combination with other instruments (see below).

While the CLC has been rarely used to assist fruit and vegetable farmers to deal with crisis, we believe this form of contract hold significant advantages over other possible traditional government support schemes.

The most attractive feature of conditioning the release of credit to the occurrence of an objective market crisis is that, in this way, the instrument can mitigate the possible rising costs of debt financing created by the crisis itself (to search
for credit in a moment of stress might be more difficult) and provide needed liquidity during the crisis window.

The details of the implementation may be very diverse: for example, lines of credit may be irrevocable, revolving or simply a one-time arrangement, and may differ in terms of duration, fees, public involvement, etc. to cover a rather broad range of cases.

The complementarities of CLC with other financial risk management tools are another one of its strengths. In some cases, when, for example, there are other forms of post-crisis capital raising, the CLC might simply be used to pay for the transaction costs associated with raising capital post crisis (this is what is called “bridge financing” in the finance literature). In such instances, the key benefit of a conditional line of credit, if utilized, would be to gain access to capital until other income and/or financing methods are used to recapitalize the farmer.

Many improvement are possible to enhance the simple CLC described above. One interesting variation on the above CLC would provide a declining schedule of fees tied to preventive measures taken by the farmer or other forms of risk mitigating activities undertaken during the pre-crisis period. Another variation would provide an allowance for undertaking loss reduction activities during the crisis window.

It is important to note that the standard contingent line of credit commits the provider to extend a known loan amount at an agreed interest rate (or rate spread relative to a base rate) post crisis. The commitment fee associated with the line of credit is expected to be low, since with lines of credit no capital is committed at T₀. This exposes the farmer to lender's credit risk, where the line of credit may not be available during the crisis window. This risk can be fully removed if the provider of CLC is a government backed facility.

There are numerous other options and clauses that may be embedded into CLC to induce desired actions by the farmers or the producer organizations. These include, for example:

- Timing of the exchange of cash flows (“swaps”)
- Fixed or floating rate arrangements
- Payment deferral mechanisms
- Conversion features
- Maturity extension features (“roll over” contracts)
- Triggers (types and duration)
7.3.1. Advantages and Critical Issues on the Conditional Line of Credit:

It is important to assess the value of any proposed risk management tool for FV producers in terms of a common set of criteria. To this end we rely on the following key characteristics of contracts, as developed in the previous part of this report (see section 5.3.4):

- **The Trigger(s)** that activates a CLC must be objectively defined and outside the ability of any group to manipulate for personal gains. Unlike standard insurance contracts that are indemnified based on the insured actual losses, the CLC contract will compensate the farmer based on this index. The possibility of objectively observing the trigger is crucial for the efficient working of the CLC structure. A well designed index will also lower administrative costs, because there is no need for costly loss-adjustment procedures. This advantage is partially offset by the “basis risk” that is inherent to this type of security (see below).

- **Adverse selection** occurs when there is information asymmetry between the insured and the insurer. While the CLC contract will not remove the adverse selection problem completely, the trigger mechanism partially mitigates this problem while reducing administrative costs.

- **Moral hazard** occurs when the insured does not take the necessary steps to avert or avoid losses once the insurance policy is in place. The index based CLC mechanisms may limit the scope for moral hazard by making it less attractive for those who can potentially exercise it. Again,
the CLC contract will not eliminate moral hazard, but the trigger mechanism will partially mitigate this problem while it reduces the administrative costs.

- **Basis risk** arises when the risk underlying the insurance product (in this case the CLC contract) does not perfectly correlate with the risk faced by the farmer. This is also the case for standardized exchange traded futures and options contracts, as well as other indexed based insurance contracts. Still, so long as the index used highly correlates with the systematic part of the individual's farm risk, it will be a very useful risk management tool. Particularly since individual farmers can take steps (for example through their on farm production practices) to hedge their idiosyncratic risks.

- **Solvency and liquidity** risks arise when farmers' capital resources are exhausted by adverse outcomes (the crisis). The CLC contracts must release payments to farmers in a speedy manner once a crisis state has occurred. The CLC's success requires that the administrative structure to disburse funds during the specific crisis are in place and well functioning.

- **Transactions costs** arise due to commissions, fees, cost of gathering information, and costs of settling claims. The CLC administrative structures must be designed in such a way to minimize transaction costs. Moreover, the risk transfer costs – the “premium” – for the CLC contract must be determined by the appropriate actuarial and financial pricing models. This is clearly an area that deserves further investigation and future research.

- **Political and administrative feasibility** of the CLC contract are likely to be higher than equally effective farm support programs. This issue will need to be investigated for specific crops and locations. The CLC contract is likely to be very cost effective in terms of the administrative structures needed and its political feasibility.

The use of credit to cope with the consequences of short term market crisis could be the most effective means for producers that would be in need to face relatively small additional marketing costs due, for example, to the search for alternative outlets, to the need of faster or longer transportation of the products to more distant markets, and other activities which, by their nature, are exceptional, and only limited to the duration of the crisis. In such circumstances, as we already recalled, the risk is best dealt with through self-insurance, and the possibility of conditional lines of credit becomes attractive to the extent that the effective cost to access this type of credit does not exceed the opportunity cost of mobilizing own resources which may be available only in illiquid forms.
The nature of the contingent credit contract remains fully private between a producer – or a producer organization – and a lending institution, although various public measures might be imagined as ways to promote its use. Among these, there are of course the “traditional” participation of public bodies as providers of back-up guarantee for credit repayment, or the co-financing of the interest premium required to release the credit. Incidentally, some of the costs explicitly linked to these contracts may well be included among the expenses of operational programmes entitled to public subsidy, according to the current EC Regulations.

However, it is our opinion that the major role for the public to play in this field remains that of creating the conditions by which the information needed to define the trigger is made available and reliable.

To summarize, we believe that the conditional lines of credit offer many advantages, by reducing the cost associated with the provision of credit to cope with crisis, at interest rates that are low, and reduce the transaction costs needed to deliver credit in case of emergencies. Also, there are many ways in which the public authority may promote participation in these programs by either providing back-up guarantees or by direct contribution to the payment of interests.

7.4. Crisis “Put Voucher”

What we term here crisis “Put Voucher” is an option issued by a governmental agency and purchased by farmers or the producers organization, based on a publicly certified index of market crisis. The Option would be the instrument through which farmers hedge the extreme tail of the price risk. This voucher will be issued at T₀, entitling the holder to collect cash flows when a crisis occurs. The amount received may be the difference between current and historical prices [(cX)-P] or other function of current and historical prices. This voucher will be an Asian style options, whose payoff is based on the difference between two indexes (the cross sectional average price and the historical moving average). This option may be European (settled at T₁) or American (settled anytime between T_c and T₁) style.

Under this scheme, the farmer or producer organization will purchase voucher(s) at T₀. The voucher will indemnify the owner the max [(cXₛ)-Pₛ , 0]. The payment may be the sum of the shortfall in prices during all crisis periods within T₀ to T₁ or simply based on the largest shortfall from all crisis periods. The payments may be made during the crop year or at harvest time T₁.

Once again, at this stage it would be difficult to detail other features that nevertheless can be added to the contract specification that would induce desirable actions on the part of the farmers. We shall delay that to the moment in which detailed information on specific case studies will be available.
7.4.1. Advantages and critical issues related to the use of the Put Voucher mechanism

An indexed based put voucher will share many of the advantages of the CLC contract described above. This is particularly true when the underlying index is the same as that used for the CLC. Again, the following characteristics of put voucher are of paramount importance:

- **The Trigger(s)** that activate a put option must be objectively defined and outside the ability of any group to manipulate. The possibility of objectively observing the trigger is crucial for the efficient working of the option voucher. A well designed index will also lower administrative cost, because there is no need for costly loss-adjustment procedures. This advantage is partially offset by the “basis risk” that arises.
- **Adverse selection** will also occur with the option contract. However, the trigger mechanism will partially mitigate this problem while reducing administrative costs.
- **Moral hazard** will become a lesser problem under the option voucher and it may be entirely eliminated. Again, the option voucher will reduce the administrative and monitoring costs.
- **Basis risk** will continue to be an important shortcoming of this index based option voucher. However, so long as the index used highly correlates with the systematic part of the individual's farm risk, the option voucher will be a very useful risk management tool. Particularly since individual farmers can take other steps to hedge their idiosyncratic risks, for example through operation of mutual funds within their cooperatives or producer organizations.
- **Solvency and liquidity** risks associated with the option voucher can be fully removed by the prompt release of payments to farmers once a crisis has occurred. The success of the option structure requires that the administrative channels to disburse funds during the crisis are in place and well functioning.
- **Transactions costs** and the risk transfer costs associated with the option voucher can be made to be very low by the voucher's design and the creation of an efficient administrative structure. The design of institutions and delivery mechanisms for this type of index contracts deserves further investigation.
- **Political and administrative feasibility** of the option voucher program is likely to be higher than equally effective farm support programs. This issue will need to be investigated for specific crops and locations. The
option voucher is likely to be very cost effective in terms of the administrative structures needed and their political feasibility.

To summarize, we believe that the option voucher program offers many advantages by reducing the cost associated with the provision of liquidity to cope with crisis in a prompt and efficient manner. The challenge facing the public authority is the design of the voucher and the administration of the program. We believe these issues should be further investigated in detail. Nevertheless a few elements of such design can be already drafted as follows.

- The lack of correlation that is likely characteristics of the set of markets for various fresh fruits and vegetable products, suggests that there might be scope for integrating various individual market crisis options within a broader ‘compensation pool’, in which the risk of market crisis in some period of the year for certain producers might be spread over the entire season, among other producers and on the greater investor and speculators market.

- There are many other elements that makes the crisis “voucher” particularly attractive as a mechanism through which the public intervention could be channelled in the sector. Without the ambition on being exhaustive, we can mention:
  - The purchase of the option by insurers that have sold policies on risks that are correlated to the market crisis, a feature that might contribute to the effectiveness of revenue insurance in agriculture, where it already exists.
  - The possibility that the cost of the voucher be included in the operational fund of producer organizations, and therefore be entitled to the level of support currently provided for by the CMO.
  - The fact that purchasers of the option reveal some of their private information through an indirect indication of their willingness to pay for the type of coverage granted by the option. This may prove an effective mechanism to increase the quantity and quality of information available to the policy makers and the general public.

7.4.2. Comparison of the put voucher with other crisis management tools

To a certain extent, the intent of the mechanism based on the put voucher is similar – in principle – to the old mechanism that entitled F&V producers to receive a com-

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45 See section 5.2 above.
pensation for the product withdrawn from the market: with this mechanism, as with the old one, producers would have a means to reduce the cost they faced due to the occurrence of low prices due to causes mainly beyond their control. When compared with the withdrawal mechanism, however, the put voucher mechanisms presents a number of advantages linked to the following:

- the release of compensation does not require the destruction of product, with resulting benefits to consumers in terms of low prices;
- there is no need for costly monitoring activities for the correct implementation of the mechanisms: the right to the compensation, as well as the amount of compensation is set in advance, the moment in which the voucher is sold;
- the mechanism require an ex-ante evaluation of the cost of the exposure to the risk of market crisis by the producers, which will need to elect to participate in the system by purchasing the option; this would strongly limit the potential for strategic behaviour once the crisis hits;
- even though at the beginning we envisage the put voucher as being issued by a public authority, the mechanism may well evolve to become a fully private market based instrument. It is easy to imagine other agents, with opposite stakes with respect to fruit and vegetable prices, which might have an interest in taking the opposite position on the market for similar derivatives;
- depending on the way in which the voucher is sold, the mechanism may allow for the reveal of information on the actual economic cost of market risk exposure for fruit and vegetable producers. Auctioning out a set of vouchers, different in terms of payoff structure may self select buyers who, deciding to buy one type of voucher rather than the other, would reveal the degree of risk exposure they face.

As with the conditional line of credit, one essential precondition for a mechanism such as the put voucher – which is essentially a type of contingent claim contract – to function, is the possibility of observing an objective index which is highly correlated with the agents’ economic returns and which is not subject to possible manipulation by either of the two parties involved. In this sense, the potential for diffusion of this, as of similar derivative-based mechanisms is crucially dependent on the availability and transparency of market information. One advantage of the solution we propose, is that it only relies on information on prices formed on open markets, which should be relatively easy to certify.

Once the mechanism is in place, the effectiveness of its use as a risk management device on the part of producers will, of course, depend also on the availability of other information, that would allow agents on both side of the market to form reli-
able expectations on the prospect levels of prices, thus leaving to crisis put voucher the responsibility of dealing with truly unexpected variations. In a sector such as the F&V production sector, the role of the public authorities in this respect is particularly precious. In the markets for other agricultural products, the possibility of unbalances as well as the information on the prevailing conditions of demand and supply is indirectly revealed by the current prices, which reflect the possibility of arbitraging through storage. The latter, in turn, allows for the spontaneous development of hedging mechanisms such as futures contracts. For fruit and vegetables, as we have already noted in presenting the result of the survey of existing market risk management mechanisms (chapter 2,) the development and diffusion of standardized futures contracts is impeded by the highly perishable nature of the products and the corresponding prohibitive cost of storage, which enormously reduces the scope for arbitrage.

For this reason, we are left in this sector without a powerful information revealing mechanism. While a mechanism such as the described put voucher might assist producers in managing risk, there is still a very large social benefit to be generated by improving on the agents’ ability to form better expectations. It is for this reason that the public effort in improving the production, sharing and certification of market information, perhaps also along the lines of what has been put forth in this report, is therefore of paramount importance for the evolution and strengthening of a vital component of the European agriculture in the near future.

### 7.5. Other forms of pre-crisis risk transfer mechanisms

**Forwards, Futures, and Swaps** are other potential forms of pre-crisis contracts with post crisis payments that may be discussed. These forms of financing may lack the “capital on hand” feature resulting in counter party risk. Under these types of contract, money may only change hands at $T_0$, or $T_0$, or $T_1$, or a combination of these times. These types of contracts offer different flexibilities than CLC and voucher but these features come at a cost. Again, we shall need to discuss these based on the points identified in section 0.

### 7.6. Summary of the findings on the implementation study of a security fund

As already noticed, the major obstacle to a detailed implementation analysis of a security fund based on the combination of various financial instruments to hedge the market risk of fruit and vegetable producers has been the impossibility of using the available price data from official sources to characterize the detail of the risk profile in terms of the probability distribution of the potential losses.

Nevertheless, the discussion we have presented in the feasibility analysis has allowed to highlight the potential benefits of **pre-crisis hedging** to farmers, and has
not revealed any insurmountable obstacle to their implementation, provided a specific detailed preliminary study is conducted on the actual conditions that characterize a given group of producers or producer organizations sharing the same interests. Before concluding this section, and postponing such a detailed analysis to the identification of suitable case study for which the detailed data might be gathered, perhaps with the assistance of some Producers’ Organization, we would like to point to a set of major general benefits that may derive from developing an integrated approach to market risk management along the lines that we have defined in this report, compared with the status quo we summarized in section 4 above.

- **Diversification** of sources of protection. The definition of a security fund by itself requires diversification of sources of protection according to the diverse probability and characteristics of possible damage occurring. Market crises are not all alike, and therefore there would surely be gains from combining different mechanisms for protection within an integrated framework.

- **Additional capacity** for certain risks / geographic areas. Compared to the current status of the market functioning and of public intervention, the introduction of innovative financial mechanisms such as the conditional line of credit and various forms of derivatives will certainly increase the risk management capacity, by allowing the banking system, and possibly investors from other sectors and regions to provide additional liquidity and risk bearing capacity. This will definitely be an advantage if we consider that many farmers have denounced the lack of adequate protection in some areas and regions (see also section 2.4)

- **Prompt payment** following a crisis. The traditional mechanism for intervention following a crisis require lengthy procedures to reach the point when payments are made, either from insurance companies, solidarity funds or from other forms of compensations. The definition of contracts where the payment is contingent to the value of easily verifiable indexes will have the advantage of allowing for prompt release of payment following the crisis.

- **Clearly defined trigger** reduces disputes regarding extent of losses. One other advantage of indexed contracts is that there will be no scope for costly disputes on the right amount of compensation that often characterizes insurance claims.

- **Multi-year coverage** at a fixed cost may be possible. Once a security fund is defined and the contracts are designed on established indexes, it will be easy to confirm the contract for the following years. Also, multiyear commitments may be feasible possibly determining a further reduction of risk transfer costs.
• Perception among peers as an innovator and leader will lead to wider adoption among other farmers and cooperatives.

8. Implementation study on the Market Monitoring System

This part of the Study has been carried out focusing on the functioning specifications, requirements and needs, identified in the feasibility study as well as on the concrete data availability inventoried in the first part of the present Study.

As a logical result of the above mentioned analyses and conclusions our proposal of Market Monitoring System entails the concurrent creation of:

• A web portal, organised by DG-AGRI, split up into theme areas for consultation, dedicated to the dissemination of information useful for the productive and marketing strategies of producers and supplied directly by information collected and processed by existing monitoring centres (Info-producers).

• Initiatives for the main actors of the system to meet and discuss about technical and operational topics regarding the monitoring of the F&V market, activated and coordinated by DG-AGRI, in order to: (i) foster the development of networking initiatives among existing monitoring centres; (ii) develop/disseminate the knowledge of existing monitoring; (iii) foster meetings between operators that produce information and the users of that information.

• Thematic forums (by product), moderated by DG-AGRI, with a view to defining forecasts of a productive and trading scenario and monitoring in “hot” periods for each marketing year.

Generally speaking, this system will become the place, both physical and virtual, for direct dialogue and the regular sharing and exchange of data among actors on both the supply and demand side.

The system is therefore based on the gathering of information in the “DG-AGRI F&V Portal”, which can easily be consulted online. The value added of this solution, compared with the current availability of information in the F&V sector, which as we have seen is fragmented and not easy to access, is thus the concentration of available information at an EU 27 level and the process to raise the level of information accessibility for all operators interested in the Market Monitoring System.

The basic characteristic of this web solution will be that, by navigating inside the portal, it will be possible to consult information that clearly identifies the Info-
producer and the original data source. In this way the user will always be completely aware of the primary source of data and of the actor that has processed the information consulted.

The main reason that will induce Info-producers to join the portal is the fact that each producer will be guaranteed broad visibility through the portal itself, and thus a return in terms of enhancing its institutional image and, indirectly, commercial advantages. As described in more depth below, deciding to join the proposed system, making available some of the information at their disposal, will have the undeniable advantage for Info-producers, especially private entities, of becoming known to a very wide audience, made up of subjects that may be potential clients, and could become the purchasers of other services provided by them, whose results are not disseminated through the portal.

These benefits will be the greater the more the information regarding a given phenomenon (prices, cultivated land, etc) that Info-producers decide to disseminate through the portal is useful to users, i.e. timely and relevant. On the other hand, the more the information published is approximative, not up-to-date or even incorrect, the more the Info-producer will lose credibility in the eyes of portal users, who may seek other sources, since, as already mentioned, there may be more than one source for the same category of data.

Moreover, by virtue of the choice that the user will make, choosing from different sources for the same data, the information made available will undergo quantitative and qualitative increases. The possibility for several Info-producers to be present in the portal will stimulate the desire to participate in this initiative, and will encourage them to provide increasingly accurate information, in competition with other producers.

Info-producers that apply to publish their data or a part of them on the portal will also be involved in the other two tools of the described system, in particular meetings and debates.

The portal is the platform via which information on the F&V sector will be conveyed. Access will be guaranteed to all actors involved in the F&V chain as “stakeholders”.

The information that can be consulted via the portal will serve as impetus for the creation of thematic forums, for which demand may come from a) users who, through the portal, follow production, market and consumption trends, or b) from the results of meetings and debates among the portal’s main actors.

In the latter case, the circuit is mutual, since the indications emerging from the forums can support activities to implement the portal and to finely tune the information system as a whole, which, as already mentioned, occurs chiefly through the dialogue between information producers and users.
This dialogue is stimulated by portal output (i.e. the information made available) and by input from the portal itself, i.e. indications on how the system operates (analysing and interpreting users’ choices).

Finally, to introduce the Implementation study, we have to recall attention on two major elements of the discussions:

- **primary goals** of the Market Monitoring System for the F&V sector are:
  1. to prevent “long-term, structural crises” deriving from a shortage of information,
  2. to achieve a better overall market balance, by allowing the adaptation of production to demand conditions,
  3. to limit the effects of “short term crises”.

- Although F&V production is carried out in all 27 MS, if energies for the Project **start-up phase are focused on the top ten MS F&V producers**, there could easily be an extremely notable coverage of F&V EU-27 production as the following table shows.

| Tab. 36. Top ten Individual Member States shares in F&V production (% - 2006) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| **Fresh fruits** | 4.2  | 7.6  | 26.9 | 13.8 | 21.3 | 2.3  | 4   | 4.6  | 4.7  | 2.5  | 91.9%          |
| **Fresh vegetables** | 6.4  | 5.4  | 20.1 | 10.8 | 20.2 | 7.6  | 4.4 | 2.6  | 7.1  | 5.1  | 89.7%          |

*EU-27 = 100%*

*Source: DG-AGRI Statics - Individual Member States and Candidate Countries’ shares in agricultural production (2006)*

Most relevant specifications for the proposed market monitoring system are therefore analytically provided, in this study section, in terms of:

- Type of data to collect and sources.
- Data use and information flows.
- Information Technology solutions.
- Possible communication strategy on the Market Monitoring System.
- Management functions, for the Monitoring System, at the possible different levels: MS, UE, producer organisations.
- Needs for the functioning of the Monitoring System.
8.1. Type of data to collect and sources.

8.1.1. Data categories and type

The **data categories and type** available on the portal, as already discussed in Part II of the report, may refer to the elements listed in Tab. 35 on page 184.

The value added of the proposed system is that of collecting information made available by Info-producers via a simple connection to the DG-Agri portal.

The portal manager will **guarantee the relevance of information** disseminated through subjective (i.e. of info-producers) and objective (referring to each data category) minimum criteria and requirements, see “technology solutions” below, but **will not guarantee the uniformity** of information, either in terms of methodology adopted by the surveyor or the classification of data.

The aim of the system, indeed, is to make all circulating information as accessible and transparent as possible, rather than to standardise information, which could turn out to be counterproductive for the basic aim of observing the market: that of overcoming the scarcity or lack of dissemination of the numerous and varied existing sources of information. Nevertheless, it would be a good idea if, over time, a degree of uniformity was attained as regards the classification of data. For each category of data it would be useful to ensure some minimum contents, in terms of the way information is set out, in order to make data comparable and thus facilitating the analysis of scenarios and trends. To this end, it will be useful for portal actors to meet and discuss (through networking activities, to be commenced in tandem with the web portal) in order to identify actual needs and then appropriate technical solutions.

Both accessibility and transparency will be guaranteed by links to be established with Info-producers (in terms of both quantity of info-producers, and contents/data made available). Transparency will have to be accompanied by the clarity of information disseminated. Thus Info-producers wishing to take part in the portal will have to attach to the initial request for the publication of data a detailed glossary to facilitate an understanding of data presented.

In this sense, it would be useful for Info-producers to declare the survey methods used by them, although the lack of uniformity among the various methodologies is likely to persist. As specified below in greater detail, the proposed information system does not entail an evaluation of Info-producers or of the information provided either in advance or during the service. Accordingly, if certain methodologies are recommended or if, in an even more restrictive manner, it is decided that only data collected using a given method may be disseminated via the portal, there will inevitably be relative evaluations that have nothing to do with the idea of an “open system” for the proposed market monitoring system.
With regard to the type of data to be published on the portal, we limit our description here to what the empirical observation of analysed Info-producers suggests in terms of the most common breakdown of the various categories and the optimal characterisation to aim for.

**Cultivated land**

In most cases examined, for both fruits and vegetables, data on cultivated land are usually presented as follows.

**Tab. 37. Example of standard table for data on cultivated land by product**

<table>
<thead>
<tr>
<th>...</th>
<th>...</th>
<th>...</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Considering a specific region/area, for each type/species of product, data on cultivated land are usually given for two consecutive years, with the percentage variation. In practice, as interesting as this information may be, this value is a final figure that is useful but does not help the producer to make short-term and/or long-term choices.

On the other hand, with regard to cultivated land, more detailed information has been obtained, for fruit for instance, as part of the experience of the Centro Servizi Ortofrutticoli (CSO).

As the tables below show, the land cultivated on a certain date is given in relation to the age of the plantation and measured by fruit variety or ripening period.

**Tab. 38. Total cultivated areas (ha) by variety and age of plantation**

| Gala | ... | ... | ... |
| Red delicious | ... | ... | ... |
| Golden | ... | ... | ... |
| Granny Smith | ... | ... | ... |
| .... | ... | ... | ... |
| **Total Apples** | ... | ... | ... |
Tab. 39. Total cultivated areas (ha) by expected ripening and age of plantation

<table>
<thead>
<tr>
<th>Ripening Age</th>
<th>1-5 years</th>
<th>6+ years</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Medium</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Late</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td><strong>Total Apples</strong></td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

The information contained in these two tables, considerably more detailed than the first table, makes it possible to make projections for production potential (quantities and time frames). Thus when planning production, these tables are much more attractive to hypothetical users of the portal.

Accordingly, the above data is an optimal model for classifying data on land set aside for fruit growing, and is something that all Info-producers dealing with this aspect of F&V production should be aiming for.

This example refers to tree fruits. Clearly, information on cultivated land will depend on the crop/fruit considered. In another example, that of strawberries, data on cultivated land should be distributed by variety (or ripening period) and take into account not only the productive area but also the distinction between “field” and “greenhouse” production.

**Production and harvests**

On the subject of production of a given product, the portal should be organised so as to be able to acquire data on: i) the situation of the ongoing harvest, and ii) final harvest figures.

With regard to regular updates on harvests, for each product, broken down by type/variety and appearance/size, optimal information should take at least two elements into account:

- the production area (State, Region, other)
- the harvesting start date
- the percentage of production harvested at the date of survey

At the end of the marketing year, final figures will be expressed in absolute values, i.e. tons/year, and in terms of a percentage variation vis-à-vis the previous year.

This section of the portal could also include ratios, rather common among research centres, of production (in tons) and cultivated land (hectares). Obviously for these to be of relevance, this information should refer to the type/variety of product and to a specific growing area.
Prices

With regard to prices at the three market levels (farmgate, wholesale, retail), the analysis of the tools inventory, already conducted, generally showed that data accessibility depends on the structure in possession of the data: freely available in the case of institutional sources, on request and subject to given economic conditions in the case of private organisations. It was also observed that data tools are rather significant in terms of the large number of data surveyors. Among the data that should be observed through the portal, prices are for obvious reasons one of the elements most closely monitored at all levels of the commercial chain. With reference to territorial stratification, there is a prevalence of structures gathering data at a national level for farmgate, wholesale and retail prices.

Below are some examples of classifications of information on prices in the three market positions, taken from Info-producers examined in the sample, which could appear in the DG-Agri portal without requiring any changes, since although they are different they appear to be sufficiently clear for users.

Examples of farmgate prices:

Tab. 40. Classification of farmgate prices - example no. 1

<table>
<thead>
<tr>
<th>Price (euro/kg)</th>
<th>average</th>
<th>var.</th>
<th>min.</th>
<th>max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chateaurenard 23/04/08 (Production) unit: kg* qty: ton*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round South-east 57-67mm</td>
<td>1.25</td>
<td>+0.05</td>
<td>1.20</td>
<td>1.35</td>
</tr>
<tr>
<td>TOMATO round South-east 67-82mm</td>
<td>1.35</td>
<td>+0.07</td>
<td>1.25</td>
<td>1.40</td>
</tr>
<tr>
<td>TOMATO round South-east grape</td>
<td>1.50</td>
<td>+0.07</td>
<td>1.40</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Source: http://www.snm.agriculture.gouv.fr/

Tab. 41. Classification of farmgate prices - example no. 2

<table>
<thead>
<tr>
<th>Products Units Origin</th>
<th>Price (euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemon Kg</td>
<td>0.85</td>
</tr>
<tr>
<td>Golden apple Kg</td>
<td>0.5</td>
</tr>
<tr>
<td>Clementine Kg</td>
<td>-</td>
</tr>
<tr>
<td>Orange Kg</td>
<td>0.38</td>
</tr>
<tr>
<td>Sweet or blanquilla pears Kg</td>
<td>0.43</td>
</tr>
</tbody>
</table>

Source: http://www.mercasa.es/

Examples of wholesale prices:
### Tab. 42. Classification of wholesale prices - example no. 1

<table>
<thead>
<tr>
<th>Product</th>
<th>30-may</th>
<th>03-jun</th>
<th>30-may</th>
<th>03-jun</th>
<th>30-may</th>
<th>03-jun</th>
<th>30-may</th>
<th>03-jun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apricots</td>
<td>1,03</td>
<td>1,97</td>
<td>2,1</td>
<td>2</td>
<td>1,5</td>
<td>1,5</td>
<td>1,5</td>
<td>1,5</td>
</tr>
<tr>
<td>Cherries</td>
<td>2,17</td>
<td>2</td>
<td>2,6</td>
<td>2,8</td>
<td>2,3</td>
<td>2,25</td>
<td>1,5</td>
<td>1,5</td>
</tr>
<tr>
<td>Strawberries</td>
<td>0,79</td>
<td>1,21</td>
<td>1,3</td>
<td>1,2</td>
<td>1,4</td>
<td>1,6</td>
<td>0,9</td>
<td>0,9</td>
</tr>
<tr>
<td>Peaches (red)</td>
<td>1,8</td>
<td>1,5</td>
<td>-</td>
<td>1,6</td>
<td>1,1</td>
<td>-</td>
<td>-</td>
<td>0,9</td>
</tr>
<tr>
<td>Melon</td>
<td>1,25</td>
<td>1</td>
<td>1,1</td>
<td>1,1</td>
<td>0,8</td>
<td>1,1</td>
<td>0,8</td>
<td>0,8</td>
</tr>
<tr>
<td>Orange Valencia</td>
<td>0,8</td>
<td>0,8</td>
<td>0,84</td>
<td>0,84</td>
<td>0,75</td>
<td>0,45</td>
<td>0,8</td>
<td>0,8</td>
</tr>
</tbody>
</table>

Source: http://www.mercasa.es/

### Tab. 43. Classification of wholesale prices - example no. 2

<table>
<thead>
<tr>
<th>Wholesaler</th>
<th>PRODUCT</th>
<th>Week 21</th>
<th>Week 22</th>
<th>% variation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Golden apple</td>
<td>0,8</td>
<td>0,8</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Sweet or blanquilla pear</td>
<td>1,14</td>
<td>1,12</td>
<td>-1,75</td>
</tr>
<tr>
<td></td>
<td>Lemon</td>
<td>1,38</td>
<td>1,39</td>
<td>0,72</td>
</tr>
<tr>
<td></td>
<td>Clementine</td>
<td>0,69</td>
<td>0,65</td>
<td>-5,8</td>
</tr>
</tbody>
</table>

Source: http://www.mapa.es/

### Tab. 44. Classification of wholesale prices - example no. 3

<table>
<thead>
<tr>
<th>Product</th>
<th>Variety</th>
<th>Size</th>
<th>Presentation</th>
<th>Origin</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pears</td>
<td>abate</td>
<td>70-75</td>
<td>single layer 16 pcs</td>
<td>Emilia Romagna</td>
<td>1.35</td>
</tr>
<tr>
<td>Pears</td>
<td>conference</td>
<td>65-70</td>
<td>single layer 20 pcs</td>
<td>Emilia Romagna</td>
<td>1.15</td>
</tr>
<tr>
<td>Pears</td>
<td>decana</td>
<td>80-85</td>
<td>single layer 12 pcs</td>
<td>n.q.</td>
<td></td>
</tr>
<tr>
<td>Pears</td>
<td>kaiser</td>
<td>75-80</td>
<td>single layer 18 pcs</td>
<td>n.q.</td>
<td></td>
</tr>
<tr>
<td>Pears</td>
<td>william</td>
<td>70-75</td>
<td>multilayer 90 pcs</td>
<td>n.q.</td>
<td></td>
</tr>
<tr>
<td>Mandarins</td>
<td>late</td>
<td>58-69 (2)</td>
<td>multilayer</td>
<td>n.q.</td>
<td></td>
</tr>
<tr>
<td>Mandarins</td>
<td>late</td>
<td>63-74 (1x)</td>
<td>multilayer</td>
<td>n.q.</td>
<td></td>
</tr>
<tr>
<td>Lemons</td>
<td>primofiore</td>
<td>58-67 (4)</td>
<td>multilayer</td>
<td>Basilicata</td>
<td>1.22</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>cherry</td>
<td>small</td>
<td>multilayer</td>
<td>Sicily</td>
<td>2.1</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>ribbed, green</td>
<td>medium</td>
<td>multilayer</td>
<td>Sicily</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Source: http://www.infomercati.com
Tab. 45. Classification of wholesale prices\textsuperscript{46} - example no. 4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMATO cherry Netherlands grape cat.l pack 3kg (for 3kg)</td>
<td>8.00 +0.5  0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO ribbed Belgium cat.l 67-82mm pack 6kg (for 6kg)</td>
<td>10.50 -0.50 9.50 11.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO ribbed Belgium cat.l 67-82mm pack 7kg (for 7kg)</td>
<td>12.00 = 11.0 13.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO ribbed Netherlands cat.l 67-82mm pack 7kg (for 7kg)</td>
<td>13.15 = 12.5 13.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Germany cat.l 47-57mm pack 6kg (for 6kg)</td>
<td>10.25 = 10.0 10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Germany grape cat.l pack 5kg (for 5kg)</td>
<td>10.00 -0.40 9.20 10.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Belgium cat.l 57-67mm pack 6kg (for 6kg)</td>
<td>10.50 = 10.0 11.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Belgium grape cat.l pack 5kg (for 5kg)</td>
<td>8.15 = 7.00 8.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Canaries cat.l 47-57mm pack 6kg (for 6kg)</td>
<td>7.00 +1.0 6.00 8.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Canaries cat.l 57-67mm pack 6kg (for 6kg)</td>
<td>7.00 +1.0 6.00 8.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain cat.l 47-57mm pack 6kg (for 6kg)</td>
<td>6.25 +0.7 5.50 7.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain cat.l 57-67mm pack 6kg (for 6kg)</td>
<td>6.25 +0.7 5.50 7.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain grape cat.l 47-57mm pack 5kg (for 5kg)</td>
<td>6.15 +0.5 5.00 6.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round France grape cat.l 47-57mm pack 5kg (for 5kg)</td>
<td>8.25 = 7.50 9.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Italy grape cat.l</td>
<td>1.54 = 1.43 2.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco cat.l 47-57mm pack 6kg (for 6kg)</td>
<td>6.50 +0.7 6.00 7.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco cat.l 57-67mm pack 6kg (for 6kg)</td>
<td>6.50 +0.7 6.00 7.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{46} With the focus on prices, a column is inserted in the table referring to “quantities”, although in the case in point the latter is not surveyed.
Examples of retail prices:

Tab. 46. Classification of retail prices - example no. 1

<table>
<thead>
<tr>
<th>unit: kg</th>
<th>average</th>
<th>var.</th>
<th>min.</th>
<th>max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GARLIC white France 50-70 or 60-80mm net 500g</td>
<td>8.09</td>
<td>-0.08</td>
<td>5.00</td>
<td>9.00</td>
</tr>
<tr>
<td>GARLIC white not Fr. 50-70 or 60-80mm net 500g</td>
<td>8.47</td>
<td>+0.09</td>
<td>6.40</td>
<td>10.30</td>
</tr>
<tr>
<td>GARLIC white not Fr. biological</td>
<td>10.48</td>
<td>-0.55</td>
<td>9.20</td>
<td>12.40</td>
</tr>
<tr>
<td>GARLIC white bulk</td>
<td>6.23</td>
<td>=</td>
<td>5.30</td>
<td>8.30</td>
</tr>
<tr>
<td>ARTICHOKE Globe France (each)</td>
<td>1.13</td>
<td>-0.18</td>
<td>1.15</td>
<td>1.50</td>
</tr>
<tr>
<td>ARTICHAUT Globe not Fr. (each)</td>
<td>1.08</td>
<td>-0.11</td>
<td>1.09</td>
<td>1.50</td>
</tr>
<tr>
<td>ASPARAGUS other than green France 12-16mm bundle 1kg</td>
<td>5.42</td>
<td></td>
<td>4.30</td>
<td>7.35</td>
</tr>
<tr>
<td>ASPARAGUS other than green France 12-16mm bundle 500g</td>
<td>7.20</td>
<td>+0.49</td>
<td>6.10</td>
<td>8.30</td>
</tr>
<tr>
<td>ASPARAGUS other than green France 16-22mm bundle 1kg</td>
<td>7.28</td>
<td></td>
<td>6.39</td>
<td>8.00</td>
</tr>
<tr>
<td>ASPARAGUS other than green France 16-22mm bulk</td>
<td>7.07</td>
<td>-0.96</td>
<td>5.50</td>
<td>8.39</td>
</tr>
<tr>
<td>ASPARAGUS other than green hors Fr. 12-16mm bundle 500g</td>
<td>5.30</td>
<td>-0.61</td>
<td>3.00</td>
<td>7.10</td>
</tr>
<tr>
<td>ASPARAGUS green not Fr.</td>
<td>5.42</td>
<td>-0.47</td>
<td>4.38</td>
<td>7.12</td>
</tr>
<tr>
<td>POTATO preserved France cleaned 10 kg</td>
<td>0.42</td>
<td>+0.02</td>
<td>0.29</td>
<td>0.59</td>
</tr>
<tr>
<td>POTATO preserved France cleaned 5 kg</td>
<td>0.56</td>
<td>+0.01</td>
<td>0.36</td>
<td>1.20</td>
</tr>
<tr>
<td>POTATO preserved not Fr. biological</td>
<td>2.26</td>
<td>-0.18</td>
<td>2.20</td>
<td>3.20</td>
</tr>
<tr>
<td>POTATO oven, fried or purée, preserved France 2.5 kg</td>
<td>1.33</td>
<td>-0.03</td>
<td>1.00</td>
<td>1.18</td>
</tr>
<tr>
<td>POTATO steamed or browned preserved France 2.5 kg</td>
<td>1.37</td>
<td>-0.01</td>
<td>1.14</td>
<td>1.20</td>
</tr>
<tr>
<td>TOMATO cherry France tray 250g</td>
<td>8.25</td>
<td>+0.55</td>
<td>6.36</td>
<td>10.00</td>
</tr>
<tr>
<td>TOMATO cherry not Fr. tray 250g</td>
<td>5.20</td>
<td>+0.04</td>
<td>4.36</td>
<td>7.20</td>
</tr>
<tr>
<td>TOMATO cocktail France tray 500g</td>
<td>6.02</td>
<td>-0.10</td>
<td>5.30</td>
<td>6.40</td>
</tr>
<tr>
<td>TOMATO cocktail not Fr. tray 500g</td>
<td>5.28</td>
<td>-0.06</td>
<td>4.00</td>
<td>6.20</td>
</tr>
<tr>
<td>TOMATO not Fr. biological</td>
<td>4.10</td>
<td>-0.14</td>
<td>3.35</td>
<td>6.04</td>
</tr>
<tr>
<td>TOMATO round Spain 57-67mm bulk</td>
<td>2.14</td>
<td>+0.09</td>
<td>1.30</td>
<td>2.05</td>
</tr>
<tr>
<td>TOMATO round Spain grape bulk</td>
<td>2.25</td>
<td>-0.05</td>
<td>1.35</td>
<td>2.50</td>
</tr>
<tr>
<td>TOMATO round France 57-67mm bulk</td>
<td>2.15</td>
<td>+0.20</td>
<td>2.20</td>
<td>2.50</td>
</tr>
<tr>
<td>TOMATO round France 67-82mm bulk</td>
<td>2.47</td>
<td>+0.33</td>
<td>2.20</td>
<td>3.20</td>
</tr>
<tr>
<td>TOMATO round France 77-82 or 82-102mm bulk</td>
<td>3.22</td>
<td>-0.04</td>
<td>2.50</td>
<td>4.35</td>
</tr>
<tr>
<td>TOMATO round France grape bulk</td>
<td>2.47</td>
<td>+0.17</td>
<td>2.39</td>
<td>3.35</td>
</tr>
<tr>
<td>TOMATO round not Fr. net 1 kg</td>
<td>1.49</td>
<td>=</td>
<td>1.20</td>
<td>2.19</td>
</tr>
<tr>
<td>TOMATO round Morocco 57-67mm bulk</td>
<td>2.32</td>
<td>+0.13</td>
<td>1.50</td>
<td>2.30</td>
</tr>
</tbody>
</table>

Source: http://www.snm.agriculture.gouv.fr/

At all three market levels, the complete information that all Info-producers should be aiming for is that which includes all the following variables, and of course specifying the surveyed market:

- product
- variety/type
- origin
Empirical observation, as shown in the examples given, showed up quite a variety in the ways of characterising “prices”, some much more complete than others. This implies that at the present time the uniformity of data presentation is an aim to be pursued and certainly not a point of departure for the proposed information system.

**Stocks**

Observation of the sample showed that information pertaining to stored products at a certain date is usually broken down by product type/variety and refers to each production area in absolute values (tons stored) and in percentage terms, as a variation vis-à-vis the previous surveyed period (usually the previous month) and with reference to the same period of the previous year.

Accordingly, in the first phase of implementation of the portal, it is felt that the information published in the portal should chiefly be of this type.

More fine tuning of data would mean, for instance, that the part of the stored product that cannot be sold would be taken into account. This type of detail was not found in the sample analysed, with information generally referring to all the stored produce.

**Large-scale retailing**

With reference to quantities sold through large-scale retailing and prices recorded via this sales channel for each product, the information disseminated in the portal should specify: a) the data collecting period, b) the cities sampled, c) the sales points monitored. Bulletins would be even more interesting and useful if they con-
tained the variations in transactions over time. Prices, €/Kg, will obviously be average prices.

**Imports and exports**

**Volumes (tons) of extra-EU imports and exports** are mainly available at a national level, being surveyed by individual foreign trade Institutes. They are generally classified by:

- data gathering period (fortnightly, monthly, etc.)
- origin (non-EU country for imports or EU for exports)
- destination (EU country for imports of non-EU country for exports)

Complete information in the DG-Agri portal should include the following elements:

- reference market
- survey date
- prices €/Kg
- product, specified by:
  - type/variety
  - country of origin
  - category
  - size
  - presentation (packing)
- average price and absolute variation
- minimum price
- maximum price

With regard to import prices, below is a possible model for the dissemination of data, used by the *Services des Nouvelles des Marchés* (SNM). The table refers to the price of imported tomatoes in one of France’s main wholesale markets.
Tab. 47. Classification of import prices

<table>
<thead>
<tr>
<th>Product</th>
<th>Price (euro)</th>
<th>Q.ty</th>
<th>averag e</th>
<th>var.</th>
<th>min.</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMATO cherry Spain cat.I tray 250g</td>
<td>2.10 = 1.8</td>
<td>2.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO cherry Morocco cat.I tray 250g</td>
<td>1.80 = 1.6</td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain cat.I 57-67mm pack 6kg</td>
<td>0.75 = 0.7</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain cat.I 67-82mm pack 6kg</td>
<td>0.80 = 0.7</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain grape cat.I pack 6kg</td>
<td>0.85 = 0.8</td>
<td>0.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco cat.I 57-67mm pack 6kg</td>
<td>0.70 = 0.6</td>
<td>0.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco cat.I 67-82mm pack 6kg</td>
<td>0.75 +0.02</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco brand cat.I 57-67mm pack 6kg</td>
<td>0.78 = 0.7</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco brand cat.I 67-82mm pack 6kg</td>
<td>0.83 +0.03</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

source: http://www.snm.agriculture.gouv.fr/

Time series and forecasts

Until now, the analysis of the type of data to be disseminated through the portal has focused on current data. But the portal should also include an area for forecasts and time series, if available.

With regard to time series, as already indicated, for many data categories it is recommended that data for at least two consecutive periods (usually two years) be reported in order to make information more relevant.

The analysis conducted has shown that the most common time series are those regarding prices: in almost all cases examined it is possible to make comparisons for consecutive weeks and to go back in time, sometimes for years. This is so especially with reference to the structures that gather such information at an institutional level (the first level of implementation proposed could adequately cover this aspect).

With regard to the system of preparing and making available forecasts on the main production and market variables, for the main F&V, we have already observed that while they are currently limited in terms of the coverage of products and accessibility, the system has considerable potential in terms of the objective of preventing and managing market crises in the F&V sector.

It can easily be imagined here that the concept of interchange underpinning the portal could come into conflict with the widespread policy of data confidentiality.
adopted by both public and private entities in the sphere of forecasts. The sharing of forecasts in the possession of Info-producer appears to be unlikely or in any case difficult to achieve extensively.

Nevertheless, as demonstrated in the intervention logic diagram (see Fig. 9 on page 179,) the willingness to provide as much information as possible to operators is inherent in the proposed information system, because through the analysis and interpretation of data, operators will be able to see an increase in the ability to anticipate market conditions in the short and/or long run, making suitable forecasts.

The functionality of the system in this sense will not depend on the possibility of acquiring, *sic et simpliciter*, forecasts through the links of connected Info-producers. And the portal will not become less relevant if there is a shortage of estimates contained therein. The solution to this lack of information will be represented by the process of increasing and finetuning the data acquired through the portal, meetings and debates. The information disseminated over time will become varied and detailed, allowing users, both individual producers or experts in the sector, to autonomously elaborate the forecasts they most need.

Below are some examples of time series:

**Fig. 12. Example of average price time series (2006-2008): large scale retail prices for pears**

![Figure 12](http://csoservizi.com)
Fig. 13. Example of precipitation anomaly forecasts based on analogues technique (sea temperatures at surface level) For North Atlantic and Europe (a - b) and for Western Africa (c - d)

Source: Ibmet CNR
Fig. 14. Example of: (a) sea surface temp. anomaly (Aug. 2003 compared to 1979-2002) (b) forecasts of storm course anomalies for Aug. 2003 (c) observed storm course anomalies for Aug. 2003

Source: Ibmet CNR

8.1.2. Data sources

The specific analysis on the possible data sources, as available at present, has been conducted in the Part I – Inventory. In the present section we only highlight
two major elements concerning the data availability by of the 60 inventoried Info-producers: (i) data coverage by product, (ii) type of data processing.

The table below gives structures broken down by data type and variety of fruit and/or vegetable. Thus the table gives, for each product, the number of structures monitoring their trends.

**Tab. 48. Number of organisations by data and product**

<table>
<thead>
<tr>
<th>Product</th>
<th>Production Areas</th>
<th>Stocks</th>
<th>Output Prices</th>
<th>Wholesale Prices</th>
<th>Retail Prices</th>
<th>Price Forecasts</th>
<th>Quantity Forecasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>tomatoes</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>avocados</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>bananas</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>pineapples</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>asparagus</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>strawberries</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</table>

*Source: our elaboration*

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47 As already reported in Part. I - Par. 2.8 Summary of the inventoried sources of data
48 Our in-depth analysis was based on the Info-producer organizations that were seen to conduct surveys or process data were examined, namely:
- 10 institutions/associations (INS)
- 1 association dealing exclusively with marketing (INS)
- 4 institutions/associations dealing with marketing, among other things (MAR)
- 5 institutions/associations having in-house research centres or dedicated research offices (RES)
- 9 research institutes
Below is a summary of the characteristic research functions of each of the 29 structures we analysed in-depth. An important result to mention is the fact that while almost all structures generate statistical data, the drafting of forecasts, time series, comparisons and in general more sophisticated elaborations are entrusted to leading research centres, used – as already mentioned in the Inventory – by non-specialist organisations.

Tab. 49. Surveyed organisations by type of data processing

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Statistical data</th>
<th>Time series</th>
<th>Forecasts</th>
<th>Comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZMP - Zentrale Market und Preisberichtstelle GmbH</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CSO - Centro Studi Ortofrutticolo</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FRESHFEL - European Fresh Produce Association</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>AREFLH - Ass. Regioni EU Frutticole ed Orticole</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>INTERFEL - Interfel Profession de la filière des F&amp;L</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CEAFL - Comité de Bassin Rhône Méditerranée</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>SNM - Service des Nouvelles des Marchés</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CTIFL – Centre Technique Interprofessionnel des F&amp;L</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CIRAD - Centre de Coop. Intern. Recherche Agronomique</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>INH - Institut National d’Horticulture</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>VEGEPOLYS</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Brussels Export Ministère</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Consorzio Infomercati</td>
<td></td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>ITC - The International Trade Centre</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FPC - Fresh Produce Consortium</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Icec - Istituto Español de Comercio Exterior</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>INFOHORT of AAFC's Food Value Chain Bureau</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CMPE - Morocco Center for Export Promotion</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Observatorio de Precios Agroalimentarios M.A.P.A.</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>ISMEA - Istituto di Servizi per il Mercato Agricolo Alimentare</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>EFC - European Fruit Cooperation</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>GROUPE ESA - Scuola superiore di Agricoltura d'Angers</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FEPEX - Federación Española de Productores Exportadores</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Catalonia Qualitat - Ass. d’Org. de Productores de fruita</td>
<td></td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>C.NR-IBMET</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>C.M.P.A - Canadian Produce Marketing Association</td>
<td></td>
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<td>✔</td>
</tr>
<tr>
<td>CORPEI - Export and Investment Promotion Corporation</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Brisbane Markets</td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>CFFA- Chilean Fresh Fruit Association</td>
<td></td>
<td>✔</td>
<td>✔</td>
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</tr>
</tbody>
</table>

As already discussed in the Inventory section of the present study, the readiness to supply data is globally high although, at present, not all of the useful data are freely accessible.
8.2. Data use and information flows

8.2.1. Relevance of information: subjective and objective requirements

The proposed information system does not entail an evaluation of Info-producers or of published information. The portal will be at the disposal of the Info-producers that will expressly ask to put up in the portal the data in their possession. The responsibility for providing correct information, as well as for the validity of data gathering and/or processing systems used will accordingly lie with each data producer and clearly specified in the portal data outputs.

Considering that (i) all structures, both those focusing their researches on a single market rather than on several markets, or on a single product or on some or the whole F&V range, have an interest in participating in the portal, and (ii) potential users are interested in a broad range of information, it has been decided not to take as discriminating factors for access to the system criteria such as the number of products or varieties monitored, the geographic coverage of data gathering, data categories analysed, etc.

The biggest risk of the system proposed here, i.e. that of a portal that draws from the global panorama of available information, making it available on a vast scale, is that a multitude of data flows into it, making it difficult to manage, but above all difficult to consult. Another danger is that some information, useful to this or that actor in the F&V chain, is not very useful for the market monitoring system proposed here, which has the main aim of being an observatory of choice of the F&V sector, helping producers to prevent and manage crises.

It is thus necessary to guarantee the relevance of information. To this end it is necessary to draw up criteria to be met by Info-producers in order to access the portal (subjective requirements), and some parameters (objective requirements) referring to each category of data that will be published in the portal.

Subjective requirements

The existence of general requirements required to qualify for the portal (including, by way of example: registration with competent offices for performing the activity, the lack of fully ascertained breaches and/or serious errors in the performance of the activity, etc.) will be left to the self-certification of the applicant. At most, the portal manager (DG-Agri) will undertake regular checks on samples, the size and composition of which will be defined according to the number and type of structures qualified to publish on the portal. The portal manager will establish the documentation required for chosen structures to demonstrate the existence of the requirements declared in the qualification phase (also on the basis of legislation in place in the country to which the structure belongs).
It is also felt that specific aspects should not be evaluated, such as a) suitable economic and financial capacity (turnover, etc.), b) technical and organisational suitability (curriculum of applicant, experience), c) adequate availability of technical equipment, d) appropriate personnel. This would mean not only system implementation costs to be met by the manager but also costs when the system becomes operational, due to the time required to carry out the checks.

Once again recalling that every structure in possession of data is a potential implementer of the portal (users will choose the most reliable producers, in terms of accuracy and relevance of the information published), if one intended to introduce a filter for the dissemination of data on the portal, it could be possible to restrict the selection of Info-producers, adopting the criterion by which access is granted only to structures from the category “supply of studies and researches or similar services”, according to the classification referred to in the EC Tender (Technical capacity and/or Execution of the service reserved to a particular profession).

Less restrictively, as the main goal of the portal is to disseminate existing information as much as possible, based on the principle of clear-cut information, in the same way it is deemed fundamental that data sources, regardless of any classification or category, be known and recognisable to the user. The user will choose the Info-producer if he deems it suitable, on the basis of subjective characteristics and the reliability of the information.

An essential requirement, for an Info-producer to be able to access the system and supply its data, is that its database, or at least the parts of the database that it wishes to use in the EC platform, should meet the IT standards required for connecting to the portal (for further details see below the proposed IT solutions).

**Objective requirements**

As mentioned previously, information disseminated through the portal is likely to rise in quality. The dialogue that should be created among portal actors, i.e. between the providers and the users of information, will certainly be a considerable boost in this sense. It will however be necessary, when the system starts up, to identify objective criteria that can guarantee the relevance of information.

The F&V sector is very extensive. If all the products that form part of the sector were to come under the proposed observatory, there would be a fragmentation and dispersion of information. Accordingly, borrowing from Community regulations for the communication of fresh F&V prices on the part of member States, it is pro-
posed that the portal focus on the products, types and varieties already classified as “representative”\(^{49}\).

This does not mean that all other products will necessarily be excluded: it will be the information system as a whole (portal + meetings/debates + forums) that picks up the need for additions and/or changes to the portal set-up and suggests how to broaden the range of observed products, with reference to trends in the F&V sector.

In the same way, another criterion will centre on markets, especially for the price category. It is not conceivable, and moreover it would not be useful for our purpose, that all existing markets should have their data disseminated on a regular basis. In this case too, the focus will be on relevant markets for EU transactions. In Regulation 877/04 these markets are expressly indicated for each of the thirty-two selected products. And again the output that this system will give will make it possible to review the initial set-up, eliminating markets that might become less relevant and adding new ones.

With regard to data on imports and/or exports, a possible criterion is that of firstly identifying the main countries of origin and destination for the various products, so as to admit for publication exclusively or on a priority basis (i.e. without evading all others) those structures that possess relative information. Purely by way of example, for pears and lemons it may be possible to favour sources that have data on quantities from Argentina (the main country from which Europe imports); the same goes for apples, with the addition of Chile, South Africa and New Zealand. On the other hand, for citrus fruits and tomatoes, in terms of exports within and outside the EU, priority should be given to the observation of Spanish production.

With special reference to the “data categories” cited on numerous occasions in this study, it is proposed that Info-producers have at least one specific and minimum set of information for each of them.

Below are two examples for the main categories of data proposed through the portal.

With reference to “cultivated land” and to “production”, applicant Info-producers must have information regarding:

- at least one of the thirty-two products listed in attachment 877/04;
- at least one specific variety/type of a given product (where specified in the same attachment);

\(^{49}\) The annex to Commission Regulation 877/2004 gives the 32 main F&V products traded in Wholesale markets, giving the main varieties for each one. This list could be expanded with possible significant productions of New Member States.
• at least data at NUTS 2 level, in terms of geographic coverage;
• the availability of at least three years of standardised data.

With reference to “prices”, information must pertain to:

• at least one of the thirty-two products listed in attachment 877/04;
• at least one specific variety/type of a given product (where specified in the same attachment);
• at least one of the markets specified in the same regulation for each product/type/variety;
• the availability of at least three years of standardised data.

8.2.2. Logical navigation/consultation path

The logical consultation path described below obviously holds only for the data categories proposed in the present study for the portal. The user of the DG-Agri web portal may access information by means of a structured and facilitated navigation path. The user will select the “type of information” of interest and from there, through a guided process, choosing from the various options presented, will be able to view all the information made available by the portal, corresponding to the data pertinent to the choices made. This path is of course taken only inside the DG-Agri web portal, and the end result is the availability of that specific information offered by possible Info-producers. The user may thus freely choose which information to consult and whether to choose one or more possible info-producers that make available that specific information. Basically, the system will consist of a supply of information made available by specific and well identified Info-producers, which may be consulted in a structured manner inside the DG-Agri web portal.

Each user will have the possibility of saving his own “favourite” search path right from the first access in order to return there automatically, whenever desired, and of saving customised reports and/or datasheets. For further specifications see below the section: IT solutions.

Procedures will also be drawn up to conduct researches through the portal, starting from the product type/variety or from the geographic area/market of interest.

For each of the 9 “information categories” in Annex A 4 we give an example of a navigation path, noting that, where the next level contains more than one possible choice (i.e. the existence of more than one piece of information with that characteristic), it could be possible to adopt a selection tool (e.g. pull-down menu) proposing
only possible choices leading to an actually available piece of data. This makes "surfing" easier and avoids futile searches with negative returns when using the portal.

8.2.3. Interactions between the web portal and the networking

As already discussed in the previous Part II – Feasibility Study, the web portal is the platform with which information is conveyed to the F&V sector. Access to the portal is granted to users, i.e. to all actors at various levels involved in the F&V chain and regarded as “stakeholders”. This represents the principal, direct flow of information within the system.

As already discussed, information consultable via the portal also acts as a stimulus for the creation of thematic forums, demand for which can come from a) the users of the portal who are following output, market and consumption trends, and b) the outcomes of meetings and debates among the main actors in the system.

In the latter case, the circuit is mutual, with conclusions drawn from forums supporting portal activity and the fine-tuning of the information system as a whole which, as already mentioned, occurs chiefly through dialogue between the producers and users of information.

Such dialogue develops from both the output of the portal (in the form of information made available through this tool) and from input from the portal, i.e. information identifiable as indicators of the system’s functioning (gauging and interpreting users’ choices).

8.2.4. Specifications for implementing the contents of the web portal

Referring to section 8.2.5 below with regard to the ways Info-producers can join the system, and reiterating that the portal will be based on the information that they will voluntarily make available, their participation, especially in the start-up period, will of course have to be “solicited” by the system manager. This will require the communication and promotion actions as set forth in section 8.4 below. Once the system manager (DG-AGRI) has set up the web portal from a technical and functional point of view, it will be implemented gradually, with the introduction of Info-producers and of consultable data.

The analysis conducted on the sample examined for the Inventory of tools showed up the existence of structures that already allow direct access to all or a portion of their data, which are published directly on their respective websites. Findings also clearly showed that up until the present time, data that can be used directly and
free of charge are mainly those gathered and published by institutional agencies, mostly under the control of Ministries, or by the Ministries themselves.

Such structures, partly because of the relationship between the EU and member States, will be the first to become involved in the information system, and particularly in the implementation of the portal (first level of implementation). It is clear indeed that at no extra cost (apart from the possible need to standardise information present in the respective databases to make it compatible with the EC’s portal language), and no extra “energy” (time spent, human resources, etc.), these organisations would have the opportunity of (i) broadening the usefulness of their service, and spreading results over a larger area, (ii) gaining in visibility, and above all (iii) making their operations more transparent.

In practical terms, the above situation means that the publicising of the portal on the part of the system manager, in the ways described, will have to be aimed chiefly towards this category of info-producer.

The involvement in the system of Info-producers who, at this moment in time, do not communicate directly to outside parties the information in their possession, but who make access dependent on a particular request, issue of a password, subscription, etc., will be achieved not only by communication measures but also by the “competition” effect that the portal will produce (second level of implementation). These Info-producers will gradually be encouraged to join the system, even if it is only to provide “basic” information (entry level), joining so with other info-producers that are already present, in order to get themselves and their services known to users, and seeking the returns, including commercial returns, that such a “showcase” can provide.

Another consideration which led us to propose that it is the DG-Agri responsible for management of the Market Monitoring system is that this will certainly increase the availability of the data. As opposed to when having to deal with private organizations, in facts, MSs, POs or any institution would share their data more easily with the Commission under predetermined and uniform conditions. The same data exchange between private and public organisations would certainly be more problematic.

Going beyond the mechanism triggered by the portal for the supply of information, especially during the system start-up phase, the manager of the web portal (DG-Agri) may also seek the creation of agreements among Info-producers who, being co-financed by national and/or Community public funds, are already gathering, processing or disseminating information pertaining to the Market Monitoring System. These agreements should be based on the reciprocity of relations produced by portal interchanges among implementing parties. In greater detail, when a structure decides to offer items of information to the EC information system for free, it knows that in exchange it will obtain, from other participants, information of another
type, which it would otherwise have had to acquire or produce itself, at an extra cost.

Returning to the implementing mechanism described here, this should not be considered as a process of hierarchical affiliation (first public and then private Info-producers) or temporal affiliation (there are no phases over time, rather levels). This mechanism derives from an analysis of results gleaned from the study conducted, and does not rule out the possibility of the system, and in particular the portal, becoming fully operational through the parallel creation of the two levels.

Purely by way of example, by applying in practice the process illustrated above to one of the products (tomatoes) and to the relative markets indicated in Reg. 877/2004 and for a single category of data (prices, at three levels), it can be demonstrated that, through the two levels illustrated, there is a rise in the number of Info-producers and consequently in the quantity of data that can actually be disseminated through the portal.

The precondition of this example is that in both the first phase (first of the following tables) and the second phase (second table) Info-producers have voluntarily joined the system, having grasped all the direct and indirect advantages described above.

With regard to the Info-producers cited in the example, the reference is exclusively to those identified in the sample examined in the preliminary part of the present study, described in Part I - Inventory and analysis of existing tools and proposals: Market monitoring, notably in the conclusions. It is thus necessary to reiterate previous observations, namely:

- the observed sample was unable to identify the subject institutionally responsible for gathering and processing information on the F&V sector for all States expressly involved in the study;
- in the same way, research centres specifically focusing on the sector were not identified for all States. On the other hand, some of the centres examined appear to be able to offer quite a broad range of information in terms of product and scope of observation.

The tables below consider, indistinctly, both direct producers and producers that re-process primary data supplied by other subjects.
Tab. 50. Tomato price data availability by info-producers at a first level of implementation

<table>
<thead>
<tr>
<th>Tomatoes</th>
<th>Farmgate</th>
<th>Wholesale</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wien</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Flandre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Praha</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Lasithi</td>
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</tr>
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<td>S.N.M.</td>
<td>S.N.M.</td>
</tr>
<tr>
<td>grape</td>
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Key:  
SNM - Service des Nouvelles des Marchés, France  
M.A.P.A. - Price Observatory of Ministerio de Agricultura, Pesca y Alimentación, Spain  
MERCASA – Impresa nazionale, Spain  
ISMEA – Istituto di Servizi per il Mercato Agricolo Alimentare, Italy  
Infomercati - Consorzio Infomercati, Italy
Tab. 51. Tomato price data availability by info-producers at a second level of implementation

<table>
<thead>
<tr>
<th>Product Type/variety</th>
<th>Markets</th>
<th>wholesale</th>
<th>retail</th>
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<tr>
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<td>farmgate</td>
<td>wholesale</td>
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<td>Komarno</td>
<td>ZMP, CIRAD</td>
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Key: SNM - Service des Nouvelles des Marchés, France  
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ISMEA– Istituto di Servizi per il Mercato Agricolo Alimentare, Italy  
Infomercati - Consorzio Infomercati, Italy  
ZMP- Zentrale Market und Preisberichtstelle GmbH, Germany  
CSO – Centro Servizi Ortofruttilcoli, Italy  
CIRAD - Centre de coopération internationale en recherche agronomique pour le développement, France

The example clearly shows that, through the two levels of implementation described, the information that can be disseminated via the portal rises exponentially.
This is due to the combination of structures which, institutionally and publicly, monitor the F&V sector with those operating on a private basis.

The case examined reinforces the belief that the information system and the portal in particular should be promoted by referring chiefly to the underlying “showcase” concept. The basic logic of the entire system is that with time it will come to be viewed as “the centre of observation of the F&V sector” for the EU-27. As they are unable to run the risk of being excluded from this privileged “gallery”, actors that produce and/or process data pertaining to Market Monitoring will voluntarily join the portal, which constitutes the doorway to the whole information system proposed here.

Obviously the decision to voluntarily join the system does not necessarily mean that all the information possessed by research centres operating in the private sector will suddenly be made available to everyone. But assuming that each of the many structures that can be potentially involved in the system might make public only one category of data in its possession, the level of accessibility to information, which we have seen is rather modest, would gradually begin to rise.

In evaluating the concreteness of the proposed setting up phase of the monitoring system we finally emphasize that system’s aims are to prevent or limit the effects, on producers income, of possible relevant market crisis situations. As already reported in this specific sector (F&V) the:

- “top five” producing MS\(^{50}\) account for almost 74% of EU-27 fresh fruit production share, and 64% of fresh vegetables\(^{51}\),
- the second group of MS included in the “top ten” producing MS\(^{52}\) account for almost 18% of EU-27 fresh fruit production share, and 26% of fresh vegetables.

These figures allow us concluding that by focusing the start-up efforts on a restrict number of MS monitoring centres it could easily lead to a notable production coverage and therefore also of a great part of the system’s objectives.

\(^{50}\) Top five F&V producing MS, in 2006, were: Spain, Italy, France, Greece, Romania
\(^{51}\) Source: DG-Agri Statistical report - 2007
\(^{52}\) The top ten F&V producing MS in 2006, were the “top five” producing MS plus: Germany, United Kingdom, Poland, Netherlands, Portugal
8.2.5. Functional management: portal access and its management

The entity managing the web portal (DG-Agri) will be called upon to perform a relatively limited as strategic set of tasks, referring chiefly to the operational coordination of the system. In particular, it will coordinate:

- the design/planning of the web portal and definition of the data transmission or connection protocol with Info-producers;
- the publicising of the portal;
- the management of access to the portal on the part of Info-producers and users.

Referring readers to the IT specifications paragraph, and to the section on publicising actions, we now analyse the aspects as per point 3 of the above list, namely those relating to access to the portal.

Access to portal on the part of Info-producers

With regard to the coordination of portal access on the part of Info-producers, the manager will be expected to:

- accept applications to be able to publish data on the portal;
- undertake preliminary checks to see that minimum criteria for the information that each supplier intends to publish are met;
- undertake spot checks on the subjective characteristics of structures publishing data;
- regularly check the consistency and uniformity of published information in relation to their cataloguing.

In order to facilitate the process of forwarding and acquiring publication applications, the portal’s operating rules (including IT specifications to be met by Info-producers for the publication of respective data on the portal) will always be available for display or download from the portal itself. And in general, instructions will always be available regarding the information system as a whole and operating procedures (participation, frequency, etc.), with regard to its operations (news on meetings-debates, convening of meetings, agendas and results of forums, etc.).

The essential condition for an Info-producer to be able to publish its data on the DG-Agri portal is that such data be indexed according to the adopted IT standards. Accordingly, for the application to publish data to be accepted, the applicant must adapt its database to ensure that this condition is met, if not already satisfied.
Should this be necessary, it would be the only additional cost for Info-producers beyond their usual business activity. Thus there will be no costly procedures for the periodical input and checking of data in a database managed by DG-Agri.

Info-producers interested in joining the system may be asked to fill in a simple application form, directly available from the portal, such as the one given below:

**Fig. 15. Example of application form asking for data to be published on the portal**

![Application Form Example](image)

All fields in the form should be compulsory. The “declared activity” will be requested only if a more restrictive method is adopted to select structures. Otherwise the field will be omitted, or included for information ends only.

The portal manager (DG-Agri) will check from the application whether the information the provider intends to publish meets minimum relevance characteristics (objective requirements) with reference to the category it refers to (cf. para. 8.2.1). If checks are positive, the applicant will be entitled to publish data, after having
signed a commitment to maintain data/information standards and self-certification pertaining to subjective characteristics (if deemed necessary). The checking of objective requirements on the part of the manager will be repeated in relation to the same supplier, even if it is already qualified to publish data, whenever it decides to publish other types of data.

In the qualifying phase, in order to foster clarity as highlighted above, the applicant will have to declare exactly the data sources referred to (direct source or indication of the original source), and how it will characterise the information it intends to publish, i.e. which variables will make up the “table” it contains. Thus for example, if it wished to publish data on “wholesale prices” for a specific product, it will have to state which elements will be characterised among those listed in section 8.1 for said category (not all information of course will be compulsory):

- characterisation of product (variety/type, origin, size, category, presentation, packing),
- production area,
- frequency of data gathering,
- average price (€/Kg) and relative total quantity traded,
- variation vis-à-vis previous survey,
- min. price (€/Kg) and relative quantity traded,
- max. price (€/Kg) and relative quantity traded,
- frequency with which data are updated or its frequency.

Actual compliance of what is published with the characterisation of the data and the frequency of updates will be checked regularly by the portal manager and will bring about, if criteria are not met, the possible permanent exclusion of the provider from publishing data for that specific type of information on the part of the specific Info-producer.

With regard to info-producers, with the exception of spot checks in relation to self-certification, periodical checks are not envisaged. It is believed indeed that if a qualified structure stopped producing the market monitoring services that enabled its participation in the information system, it would autonomously stop updating (and thus making available) the information published through the portal.

The periodical check (monthly at least, especially in peak periods of the marketing year for each crop) on the conformity and completeness of data vis-à-vis the declared characterisation will show up changes and bring about the exclusion from the portal, with the possible cancellation of the link. The control enacted by the por-
Access to the portal on the part of users

With reference to users, the rules for using the published data will have to be expressly made clear and always be visible on the portal. In practice, the undertaking that the portal manager will seek from users is that they comply with the rules on the use of data expressly demanded by the respective Info-producers. The portal gives out information provided by third party structures that resides on its database: obviously, authorisations and prohibitions, for instance on the use of documents (e.g. information, files, graphs, statistics) available on the portal, will only come from the Info-producer that has requested/authorised the publication of data and retains the ownership thereof. This will have the undoubted advantage for the portal manager of declining any and all responsibility for published data or for the non-updating of data, even though it will have to control these aspects which, as already mentioned, may lead to the Info-producer’s (or the particular data’s) exclusion from the portal.

Users’ navigation of the portal will be totally free of charge. However, the consultation of data may be i) totally unrestricted, or ii) allowed by means of a password.

If the issue of a password is required, a user accreditation system will be required, possibly by compiling and sending a form (a model for which is proposed below). It should be specified that registration should not lead to any charges for users, but should only allow access to information disseminated for free by producers taking part in the system. It should also be made clear that possible additional services not present on the DG-Agri portal may be provided only by the info-producer chosen by the user, in accordance with normal commercial agreements to be reached between the user and the info-producer.

From the point of view of the portal manager, this registration system makes it necessary to plan for an automatic password issue mechanism, but it will also have the undoubted advantage of monitoring accesses, and also of knowing the type of user using the portal. This information will also be useful for making possible corrections and/or additions to the portal and the information system as a whole. It should not be forgotten indeed that DG-Agri will have the task of coordinating not only the portal but also meetings, debates and forums. For meetings in particular, which will involve chiefly portal actors, an in-depth knowledge of portal users will make the management of dialogue opportunities more productive and targeted.

Again with reference to user monitoring, an “hit” counter will be adopted, as well as a system that will generate reports on user consultation details, i.e. type of information most requested, product and/or market under observation, frequency of con-
sultation, etc. These reports, crossed with the identity of the user (producer, trader, etc.), will provide an even more detailed analysis on the demand for information in the F&V sector.

This option will, in conclusion, be a very useful tool for evaluating the portal, its operation and its efficacy in relation to the goals pursued.

**Fig. 16. Example of new user free registration format (*)**

![New user free registration format](image)

(*)Where required, with reference to single States, national privacy laws must be expressly specified.

8.2.6. Specifications for networking initiatives

Meetings and debates

The organisation of meetings and debates among the main actors of the system will be coordinated by DG-AGRI and arranged on a regular basis (e.g. every six months).

Taking as a model the forecasting groups formed by producers, traders and processors that meet twice a year within DG Agri for some products (citrus fruits, apples and pears, stone fruits, mainly peaches and nectarines, tomatoes, potatoes), we propose a system of initiatives centring on meetings and discussions among (i) those coordinating the portal, (ii) those generating information and (iii) users.

These meetings may be organised in two different ways. They may be:

- **“across-board”** in relation to the categories of information available on the portal (production, prices, sales volumes, etc.);
• “specific” for single categories (production or prices or imports, etc.), regarding exclusively producers or importers or wholesalers or retailers, and so on.

In the first case, meetings will involve the representatives of production, the market at various levels, imports/exports, in short all actors in the chain, if necessary by single product or for more than one or for a category (citrus fruits, soft fruit, etc.) or again for a geographic area, etc. We suggest that meetings be based on single products of interest, starting with those for which forecasting groups already meet. In the second case only actors involved in the specific phase of the chain under discussion will participate. In any case, these meetings will necessarily be attended by Info-producers publishing data on the portal.

With regard to specific topics to be discussed in meetings, the portal, a “showcase” for information on F&V production and the relative market, will propose the topics to be discussed. Thus the portal, an essential tool for the circulation of information, will become in this market monitoring phase an instrument at the service of dialogue between the information supply and demand side, providing two types of input:

• “direct”, through the set of published information;
• “indirect”, with the measurement of the degree of “satisfaction” in relation to the information published and, at the same time, the recording of new information needs. If for example it was decided, from the various suggested options, to record portal “hits”, and not only to measure the number of hits, it would be possible to observe the “categories” of data consulted most often, the products and geographic areas of greatest and least interest, and so on.

The main aim of these meetings/debates is indeed to:

• foster the development of networking initiatives among existing monitoring centres;
• develop/disseminate knowledge of existing monitoring;
• help match operators that produce information with relative users;
• ensure the constant growth of the portal.

The development of the portal is undoubtedly the main aim of these meetings, with a view to making this tool increasingly effective in combating “long term, structural crises” deriving from a scarcity of information, or from the inadequacy or lack of dissemination of information needed for the planning of production and/or marketing on a European level.
The success of the information system will depend not only on the ability to convey both direct and indirect sources of information into the portal but also and above all on the quality of collected data. The more data made available are finetuned and up-to-date, the more the portal will be able to support operators in the sector. The growth in monitoring activities will be helped by meetings among data producers.

The following will be invited to take part in meetings/debates:

- the suppliers of information published on the portal;
- the representatives of information users;
- agencies, organisations, institutions that are potential suppliers of information that is currently scarce or even missing (by geographic area, level in the chain or product);
- the representatives of possible new categories of portal users that have expressed an interest, or whose involvement is deemed to be useful by DG-Agri;
- the scientific community, external experts called upon to make a contribution to the discussion according to the topic tackled.

The meetings and debates, staged on a regular basis, will refer in particular to:

- contents, with a view to interpreting the information disseminated by the portal and to analyse trends in the F&V sector;
- communication and formal aspects relating to the portal;
- technical and operational aspects of F&V market monitoring.

In short, these meetings will be fundamental for finetuning the methodology, contents and semantics of the system, as they will be opportunities for the main actors – suppliers and information users – to verify practical aspects.

The participation of third parties (possible new suppliers and new users of the portal) will have the additional advantage of extending geographic coverage and the range of products (also furthering the goal of attaining a significant level of surveying), and also of studying in greater depth and defining more clearly the interests and needs of the F&V chain.

**Thematic forums**

Thematic forums are another step towards the start-up of the proposed information system. While meetings/debates among portal actors will tend to improve the system and implement its main characteristics and functions, the forums will seek to
achieve two separate goals, essential for the vitality and relevance of the portal and crucial for the strategic choices of operators:

- come up with forecasts for productive and trading scenarios and above all monitor scenarios in “hot” periods for single marketing years.
- gather, directly and in a detailed manner, the information needs of economic and institutional operators.

A specific feature of the forum will be thus to highlight and analyse the most topical issues, with one eye on the long-term situation and on possible developments. Forums could thus conclude with some considerations on trends and with a summary of the debates undertaken. The “real time” publication of these results and scenarios would make it possible to achieve the first of the above goals.

The forums furthermore may also permit an extensive network of information, favouring through the results obtained in the forums the inclusion in the original setup of the portal of (i) products or varieties not initially contemplated, (ii) more restricted but significant areas, (iii) additional relevant markets, (iv) F&V chain details not yet included in the range of information already disseminated with the portal. Metaphorically, and as already mentioned, we might say that while the results obtained in the meetings among actors will make it possible to improve the forest, the forums will take care of single trees. Furthermore, these meetings/debates may uncover topics that can be tackled, or examined in greater depth, in the forums. The conclusions reached will serve to make further improvements to the portal and to the system as a whole.

In conclusion, the forums will have two basic aims as regards the proposed information system. On the one hand they will get the structures that observe the sector and produce information to continually seek new answers to information needs. More generally, the forums will make it possible to uncover and analyse the most topical issues in the sector, also with a view to long term developments. In this way, through the forums representatives of the F&V chain (portal users) will be able to share their views and adjust their respective positions.

The forums will necessarily conclude with a summary of the resulting discussion and, possibly, with some conclusions, from which all parties may obtain the information of greatest use for their own particular activities. The utmost coverage should in any case be given to their findings. At the conclusion of each forum a final report, for example, may be drafted, to be disseminated through all possible channels. Obviously the main channel will be the portal itself. Alternatively, if these reports are not published directly, a system may be employed for the automatic sending of documents at the request of users through the portal.

The forums are thus the ideal platform for the wide-ranging discussion of topics regarding the various segments of the F&V sector. Some topics for discussion may
already be proposed, going beyond the portal’s information “categories”, and in-  
cluding: traceability, certification, entry barriers for third country markets, EU export  
policies, phytosanitary aspects, legislation on the subject of pesticides, food secu-  
rity. For these topics and for many more, the forums may make a contribution by  
reflecting the point of view of operators in the sector.

Forums will naturally be based on specific themes, they will not have a fixed time-

able and will be “convened” further to precise needs of the sector. These needs  
may be:

• highlighted by particular commercial or production trends;
• raised by main stakeholders in the F&V sector;
• shown up by information disseminated through the portal.

DG-AGRI, in its role as coordinator of the whole system, will consequently be  
called upon to evaluate the priorities and the urgency of one theme over another.  
With regard to their staging, DG-Agri, which will also be the “moderator”, may de-  
cide whether they are “open”, with registration up to a certain number of partici-

pants, or “invitational”, with DG-Agri making the invitations.

By way of example, below are some categories of actors that may be involved in  
the forums:

• Agencies and enterprises acting as Info-producers
• Producers’ associations
• Traders’ associations and large-scale retailing representatives
• Import/export associations
• Associations and representatives of the F&V processing industry
• Consumer associations
• Representatives of Community and national institutions that already be-

long to the various advisory and/or management bodies of the EC, spe-

cific to the F&V sector
• Representatives of third countries that export F&V to the EU
• Experts in legislation pertaining to the sector
• Representatives of various sectors of the scientific community
The cost of participating in the forums will be met by participants. Apart from the undeniable factor of attraction represented by the influential nature of the entity convening the forums (DG-Agri), stakeholders will want to participate because of the benefits and opportunities associated with involvement in a forum bringing together representatives of the F&V sector at the EU level. Networking gives these actors the opportunity to exchange views and participate in the development of possible common stances and to appreciate the “hot” topics of the moment and relative orientations within the sector.

It is proposed, in the initial phase at least, to focus forum discussions on the thematic macro-areas that at the time are considered to be vital for the sector. Then, within single macro-areas, the most urgent topics to be discussed will be identified.

If necessary, in order to reinforce dialogue with economic and social associations and consult citizens and associations set up to defend interests in the F&V sector, there may also be online forums, which may be arranged from time to time to discuss themes felt to be of greatest interest.

The possibility of taking part in an online forum represents the highest allowed level of “democratic” participation in the proposed information system. In order to be able to use this function, which may be made available by the portal manager, the user will have to register with the portal and enter, in an ad hoc section, a username, a password and a valid email address. Alternatively, it may be possible to limit the range of participants allowed to discuss in the forum to portal users already registered and having access to data.

The conclusions drawn from online forum discussions will take the form of recommendations, not edicts. The online Forum will be updated in real time and managed by a competent moderator for “formal” questions and for the orderly handling of the participatory process.

8.3. Information Technology solutions.

The application design process has been focused to guarantee reliability, availability and serviceability of the developed software platform.

The analysis methodology was based on standard waterfall model; the following work items will be described:

1. Application domain analysis
2. Process workflow analysis
3. Application architecture and technology platform
4. Portal application
The application design is based on Web paradigm, interaction between information supplier and consumers is carried on the global Internet network and accessed with standard Web browsers.

### 8.3.1. Application domain

Scope of the application is to provide a middleware implementing a number of tools and instruments to manage data information on F&V market.

The application domain is following described:

**Fig. 17. Application domain**

- **Information provider**: (Info-producer in other sections of the present Study) is the main actor involved in the application process. It provides the data information, related to F&V market, collected by the Market Monitoring System.

- **Standard User**: it’s the main consumer of data information. It’s figured out by a standard web surfer and it’s able to access to the basic information.

- **Qualified user**: it’s an advanced user. It provides credential to the Market Monitoring System to access complex information, and participate to provided social network features (forum, mailing list etc.)

- **Administrator**: it’s involved in the administration of software platform.

The Market Monitoring System provides a number of software interfaces for data publishing. The main scope is to standardize the access method and to collect information data independently by used method. The received data are formatted and stored in a common way and supplied to the Web Portal application.
8.3.2. Application process workflow

In this section the main use cases of the Monitoring System applications are shown.

The main actor of the software is the application provider. The first step required is the creation of its profile on the software platform by filling a specific web form. Received data are validated, by platform administrator, and communication channel is allocated for the new provider. The provider is now able to send data to the platform, and participate to application network activities.

Fig. 18. Application use cases

As described before, two types of application users are supported:

1. Standard user: it’s a not qualified web user able to show basic F&V market data
2. Qualified user: it’s an advanced web user, it requires a profile creation before accessing more complex information.

The software platform provides two advanced features to qualified user:

- Profile personalization: the user can choose between provided information defining a personal navigation path, on web portal application, and defining specific highlights on product or market;
- Info-subscribing: the application provide a mechanism o publishing / subscribe features. The user can subscribe to specific event and receive automatically e-mails about news, price change on specific product or market. Publish/subscribe is an asynchronous messaging paradigm where publishers are not programmed to send their messages to specific
receivers. Rather, published information are characterized into classes. Subscribers express interest in one or more classes or publisher, and only receive messages that are of interest. This decoupling of publishers and subscribers can allow for greater scalability and a more dynamic network topology.

8.3.3. Application architecture and technology platform

The application features, as well as technology platform of the EC web portal, have to be related to the multifaceted IT system at present functioning by EC services, and to the ongoing IT development projects (eg: ISAMM project could lead to possible specific architectural or technological implementation choices), thus we refrain in the present study to develop a specific proposal on the IT features of the system.

On the other hand, a focal point of the Monitoring System application is the content provisioning carried on by info-producers. In order to standardize the activity of publishing three types of interface are provided by the software platform. Following a short description on used interface is given:

1. Really Simple Syndacation (RSS 2.0): it’s a family of web information standards where a content provider can publish its own information using a standardized XML file. From info-producers point of view, it’s the most suitable interface due to the fact they can produce automatically an information file on event change, without administration impact. From Monitoring System point of view, it’s require a previous analysis activity to describe the most complete XML file format, and the realization on the aggregation software component. No activities are required from administration point of view, with exception for changing in RSS file definition.

2. Web Services: is defined as W3C standards for interaction over a network, it’s used as a service oriented interface where well know application services are provided by Monitoring System application to info-producers. It’s often referred as “message-oriented” interface, the main activity required to Monitoring System application is the definition of the “service contract” as a list of services and data. From info-producers point of view, it’s required the realization of software client component to interact with provided services on event change.

3. HTTP / POST: it’s a standard web interface for data publishing. A number of web form must be provided by Monitoring System application to supply basic functions of data provisioning. It’s the most complex interface from info-producers point of view because it requires administration activities for information publishing. It’s suitable for organization providing a small amount of daily information which would have direct control on content publishing.
Tab. 52 summarizes the activity distribution for each network interface.

Tab. 52. Activity distribution for each network interface

<table>
<thead>
<tr>
<th>Network / doer</th>
<th>Activity/level</th>
<th>Analysis</th>
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<th>Administration</th>
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</tr>
<tr>
<td>Web Services Network</td>
<td>Monitoring System Application</td>
<td>High</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Info-Producer</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Web Form Network</td>
<td>Monitoring System Application</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Info-Producer</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

8.3.4. Portal Application

The Monitoring System application is developed as a standard web portal. A public area is provided to supply information about organization, scope of involved companies and communities and basic F&V data. In public area all organization, provider of portal contents and data, can publish their own presentation and news. In order to access to more complex functions, a web user must complete a request form and obtain the access credentials. Screenshots of possible examples of the various webpages are reported below.

Fig. 19. Example of web page - Market Monitoring System portal - Home-page
Feasibility Study on Introducing a Security Fund in the Fruit and Vegetables Sector

Fig. 20. Example of web page – Output 1st level

Fig. 21. Example of web page – Output 2nd level
8.4. Possible communication strategy on the Market Monitoring System

The publicising of the portal is an essential stage for the construction of the new information system. This will happen at a local, national and international level (outside the EU and in the World), spreading the word about the new tool and building an awareness of the European Commission’s commitment to the widespread and transparent circulation of information.

To facilitate the publicising of the portal by its manager, below is a proposed communication plan, taken to mean a set of informational and advertising actions regarding the initiatives undertaken. The communication plan must not be reduced to a simple list of Community actions that an organisation will have to perform, but should be viewed in an implementing dimension. This process is broken down into three distinct phases:

- planning and drafting of the plan;
- implementation of the plan (concrete realisation and management);
- evaluation of the plan (checking results obtained, the impact and effects generated on the internal and external context and discrepancies between effects and set goals).

In the phase for the planning of portal advertising actions, it is believed that a good strategy must be integrated, i.e. it must satisfy both external and internal communication needs.

Firstly, therefore, there is the strategic need to help the manager to implement the portal (external communication). Secondly, there is the goal of converging with other structures through the initiative; these structures may, directly or indirectly, support the portal manager with policies and/or initiatives as the system becomes operational (internal communication). By way of example, such structures may be other Community directorates involved in varying ways in the management of the F&V sector. In this sense the communication plan is a way of coordinating all actors, strategies and actions that can be performed to help achieve market monitoring objectives.

DG-Agri, the portal manager and “administrator” of the whole information system of the F&V sector, is responsible for the communication plan. The general aim of communication will be to inform the general public about the creation of the portal for the observation of the F&V sector and its inclusion within the broader market monitoring system.
The specific goal will be to encourage i) the implementation of the portal on the part of info producers, and ii) consultations with potential users, in particular operators in the F&V chain.

The elements on which it is suggested that the communication campaign be based relate to the concept of reciprocity. Specifically, it is necessary to focus on the fact that the portal forms the basis for the construction of bidirectional relations between info producers and the reference public, and that such relations are knowing and constant over time, not random or occasional, since they are designed to co-produce a mutual usefulness through the exchange of communication: just as the portal is indispensable for the consumer seeking information, it is also useful for the business that wants to get itself known.

With regard to the implementation of the portal on the part of info producers, in keeping with what has been established for the two levels of portal implementation it is suggested that one should equally address structures that already allow direct access to their data and to those who impose passwords, subscriptions, etc. As mentioned, the levels of implementation should not be viewed as logically and/or temporally consecutive. Nevertheless, in order to guarantee the presence of considerable data and avoid the publication of a portal that is practically devoid of information, informational actions should first be addressed to those structures that in all likelihood will have no hesitation in joining the system and in publishing on the portal what they already disseminate on their own, thus guaranteeing an information base when the portal is launched.

In addition to being responsible, DG-Agri is also the main entity carrying out communication actions. But it is not the only actor, especially if we take into consideration the publicising of the portal to the public of potential users. Although the EC must take the most initiative and make the biggest efforts, communication should also move from the Community level to the national and local scale. This will be possible with the collaboration of competent national bodies (ministries of agriculture, State agencies, etc.), which will have to be invited to publicise the new market monitoring initiative. In this way, ministries, or in any case the central bodies of member States, are to be considered as the objective of the manager’s external communication (already being in possession of the data to be published) and, as part of the integrated strategy mentioned above, one of the components of the target of external communication: they may help the DG-Agri to implement the system and to ensure that the system becomes operational (spreading knowledge among users, use among producers, etc.). Then, if one considers that the administrative machine of single member States proceeds in most cases in a “descending” manner (central to regional to local), the impact that information released at each territorial level by the specific competent authority will have may be imagined, in terms of dissemination.

If this path is feasible practically everywhere, the move from the institutional aspect of communication to the “operative” phase (i.e. how to get to the producer directly)
will be more complicated. In this case, we will be helped by producers’ organisations and/or by its members. This mediation will undoubtedly be feasible in States where the presence and role of POs are most consolidated, but less so in States where production remains fragmented, like in some new member States. Were POs to become an advertising vehicle, the financial burden of the advertising campaign could also be shared, through the resources of respective programmes.

Two sorts of considerations should actually be made for single or united producers, producers’ Organisations (POs), their Associations (APOs) and Unions. These organisations, in some regards, including information on quantities produced and output forecasts, directly gather information from their members, while for other types of information, such as imports and exports, they acquire information from official sources and reprocess it to support their members with their activities. In this sense, POs themselves could become possible implementers of the portal, without prejudice to all the considerations made above about the type of data in their possession. On the other hand, the reform of the F&V CMO has entrusted to producers’ Organisations (POs) the main role of preventing and managing crises, to the extent that the inclusion of prevention measures in the Operational Programmes of POs is encouraged, in the belief that this may help to reinforce their role of attraction towards producers. It appears evident here that Producers have to be considered as the main users of the market monitoring system that will be proposed here.

With regard to specific actions that can be performed, below are some of the most technical measures, with official communications reserved for the usual channels of communication.

A peculiarity of the network is the fact that information and communications can be sent in real time all over the world to anyone wishing to acquire them and whenever they need to. This aspect of obtaining information right when one needs to makes for an extremely effective means of advertising. In the launch period, or to obtain certain visibility, it is possible to promote the portal through veritable online advertising campaigns. On the Web for example there are numerous advertisers thanks to which sites can be sponsored via brief ads or advertising banners published on general-purpose or vertical portals. In the case in point, as the site is a portal, links will have to be created with other existing sites and portals in the same sector. This will make it possible to raise its visibility. One possible form of connection is the new way of advertising via the Web, so-called “article marketing”, which enables a structure to release press releases and newsletters by means of specially prepared channels. The manager may send information to portals operating in the same sector, promoting its services and products and, at the same time, keeping potential users (stakeholders) constantly updated about events and the results of networking, among other things.

Even more simply, and without additional costs, the portal may be advertised using ad hoc links on sites pertaining to the sector. In order to contact as many sites as possible that can advertise the portal, an “email marketing” campaign could be un-
dertaken by means of an organised list of recipients (one possibility, for instance, is that of obtaining the recipients and the respective addresses from the catalogue of one of the many trade fairs of the F&V sector).

With reference to the timetable for the communication plan, it is believed that already in the planning phase of the portal, and before its publication on the web, at least the structures institutionally involved in the sector must be informed of the initiative being planned, in order to make the proposed system quickly familiar to them, especially the concept of “reciprocity” on which it is based, which will ensure its correct functioning.

Finally, with regard to the evaluation of the plan, i.e. in the phase in which results obtained and goals achieved are gauged, the simplest way of monitoring the effectiveness of the advertising campaign will be to check the number of “hits” on the part of implementers and the public, providing results that are as objective as possible. We do not believe that further evaluation criteria should be listed at this time, since the choices of the manager, including those on the subject of communication, will basically be steered by the other two tools of the proposed monitoring system: meetings/debates, and forums.

8.5. Management functions, for the Market Monitoring System, at the possible different levels: EU, MS, producer organisations.

As described in previous paragraphs, the proposed Market Monitoring System is based on a possible aggregation in a EC web portal of the various information as published at present by the existing monitoring centres at national level (“status quo”). Therefore no needs of scheme or management functions is requested at MS or POs level.

On the other hand considering the setting up and functioning of the Market Monitoring System (web portal and networking activities) as a possible new “Project” for the EC, there will be the need for the following management functions at EU level:

- **Project management**: overall coordination of the Project start-up and implementation of the wide activities range (web portal, networking, communication). A specific management task should concern the communication strategy due to its fundamental role in the Project start-up.

- **Functional management of the web portal**: coordination of the data publishing and of relationships with the Info-producers and Users. Specific tasks for this role are specified in Par. 8.2.5

- **Technical management (IT) of the web portal**: coordination of the hardware and software implementations and their upgrading, which will
need to be defined as to be compatible with the existing IT infrastructure of the implementing agency.

- **Networking activities management**: coordination of the “meetings and debates” and of the “special theme forums”. Specific functions for this role are specified in Par. 0

### 8.6. Needs for the functioning of the Market Monitoring System.

In this section we provide a first hypothesis on investments and on labour needs for both development tasks: the **setting-up of the system**, the **ordinary functioning**. Obviously all of our hypothesis consider the possible incremental costs/investments in respect to the status quo of EC facilities.

To develop such financial and labour hypothesis we had to assume some parameters which could vary in function of possible different operative choices. Therefore for each assumption we provide the estimated quantity and the unit cost adopted.

For the labour cost estimates we adopted, for all services, the prices listed in Tab. 53

**Tab. 53. Estimated unit labour cost**

<table>
<thead>
<tr>
<th>Fees for professional staff</th>
<th>Category</th>
<th>Years of experience</th>
<th>work-days</th>
<th>Price (euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>15</td>
<td>work-days</td>
<td>700.00</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>10</td>
<td>work-days</td>
<td>500.00</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>5</td>
<td>work-days</td>
<td>400.00</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>Junior</td>
<td>work-days</td>
<td>200.00</td>
<td></td>
</tr>
</tbody>
</table>

| Missions                    | Travel   | Trip                | 600.00    |
|                            | Daily subsistence allowance | Days | 250.00    |

### 8.6.1. Investments for the setting up of the system

The complete setting-up of the system could be carried out in a 5 to 8 months time span. Therefore we estimated the possible costs, for the setting up activity, on the basis of a global 8 months lag time and we indicate our estimates on lag time for each task.

As described in the previous parts of this study, most relevant activities/investments for the setting up of the system are related to the following four Project tasks:

- **A- Setting-up of the IT platform**
- **B - Setting-up of the portal contents and relationships with Info-producers**
C - Communication activities for the Project start-up

D - Project Management of the start-up phase

In the following tables we summarize the total labour needs and cost estimates for the complete setting up phase exception made for the IT platform setting-up costs. As already reported, the application features, as well as technology platform of the web portal, have to be related to the multifaceted IT system at present functioning by EC services, and to the ongoing IT development projects (eg: ISAMM project could lead to possible specific architectural or technological implementation choices), thus we refrain in the present study to develop a specific proposal on the IT features of the system and consequently a budget for the IT platform setting-up.

Tab. 54. Labour needs for the setting up phase (working days)

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>A- Setting-up of the IT platform</td>
<td>NO ESTIMATES</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B - Setting-up of the portal contents and relationships with Info-producers</td>
<td>30</td>
<td>100</td>
<td>0</td>
<td>160</td>
</tr>
<tr>
<td>C - Communication activities for the Project start-up</td>
<td>20</td>
<td>50</td>
<td>100</td>
<td>160</td>
</tr>
<tr>
<td>D - Project Management of the start-up phase</td>
<td>60</td>
<td>80</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total labour need</strong></td>
<td><strong>110</strong></td>
<td><strong>230</strong></td>
<td><strong>100</strong></td>
<td><strong>320</strong></td>
</tr>
</tbody>
</table>

Tab. 55. Budget for the setting up phase, by cost category (thousand Euro)

<table>
<thead>
<tr>
<th></th>
<th>Human resources</th>
<th>Mission expenses</th>
<th>Other expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>A- Setting-up of the IT platform</td>
<td>NO ESTIMATES</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>B - Setting-up of the portal contents and relationships with Info-producers</td>
<td>103.0</td>
<td>29.7</td>
<td>132.7</td>
</tr>
<tr>
<td>C - Communication activities for the Project start-up</td>
<td>111.0</td>
<td>29.7</td>
<td>50.0</td>
</tr>
<tr>
<td>D - Project Management of the start-up phase</td>
<td>82.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>296.0</strong></td>
<td><strong>59.4</strong></td>
<td><strong>50.0</strong></td>
</tr>
</tbody>
</table>

A breakdown for each of the four tasks is provided hereunder.

**A. Setting-up of the Information Technology platform**

For the above mentioned reasons we refrain in the present study to develop a specific proposal on the IT features of the system and consequently a budget for the IT platform setting-up. The following table is thus reported only for completeness of the economic budget.
Tab. 56. Summary of costs for setting up the IT platform

<table>
<thead>
<tr>
<th>A.1</th>
<th>Human resources</th>
<th>NO ESTIMATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.2</td>
<td>Software tools</td>
<td>NO ESTIMATES</td>
</tr>
<tr>
<td>A.3</td>
<td>Hardware</td>
<td>NO ESTIMATES</td>
</tr>
</tbody>
</table>

**SUB-TOTAL - A** 0

**B. Setting-up of the portal contents and relationships with Info-producers**

This investment covers all the costs for the analysis and development of the contents of the portal, as well the costs for the concrete establishment of the necessary operative relationships with Info-producers. Therefore we inserted in the budget a 2 days mission for each EU-27 Member State in order to foster possible operative meetings.

This task covers also the analysis of data publishing applications sent in by Info-producers during the first months of project’s start-up.

The following table shows our estimates of possible labour needs and mission costs for this task.

Tab. 57. Summary of costs for setting up the portal contents

<table>
<thead>
<tr>
<th>B.1</th>
<th>Human resources</th>
<th>103,000.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Category</td>
<td>Years of prof.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category I</td>
<td>15</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category II</td>
<td>10</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category III</td>
<td>5</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category IV</td>
<td>junior</td>
<td>w.d.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B.2</th>
<th>Mission Expenses</th>
<th>16,200.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trip</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>600.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16,200.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B.3</th>
<th>Daily subsistence allowances</th>
<th>13,500.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Days</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>250.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13,500.00</td>
<td></td>
</tr>
</tbody>
</table>

**SUB-TOTAL - B** 132,700.00

**C. Communication activities for the Project start-up**

These costs cover the communication launching phase. Therefore we estimated a forfeit cost for advertising and other typical communicational expenses. We also included in the budget a 2 days mission for each MS for a possible participation to F&V sector events at national level.

The following table shows our estimates of possible labour needs and other costs for this task.
Tab. 58. Summary of costs for communication activities and project start-up

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of units</th>
<th>Unit price</th>
<th>Total by item</th>
<th>Total amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.1 Human resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category I 15 w.d.</td>
<td>20</td>
<td>700.00</td>
<td>14,000.00</td>
<td></td>
</tr>
<tr>
<td>Category II 10 w.d.</td>
<td>50</td>
<td>500.00</td>
<td>25,000.00</td>
<td></td>
</tr>
<tr>
<td>Category III 5 w.d.</td>
<td>100</td>
<td>400.00</td>
<td>40,000.00</td>
<td></td>
</tr>
<tr>
<td>Category IV junior w.d.</td>
<td>160</td>
<td>200.00</td>
<td>32,000.00</td>
<td></td>
</tr>
<tr>
<td>Mission Expenses trip</td>
<td>27</td>
<td>600.00</td>
<td>16,200.00</td>
<td>16,200.00</td>
</tr>
<tr>
<td>Daily subsistence allowances days</td>
<td>54</td>
<td>250.00</td>
<td>13,500.00</td>
<td>13,500.00</td>
</tr>
<tr>
<td>Advert. &amp; other communic. expenses</td>
<td></td>
<td></td>
<td></td>
<td>50,000.00</td>
</tr>
<tr>
<td>SUB-TOTAL - C</td>
<td></td>
<td></td>
<td></td>
<td>190,700.00</td>
</tr>
</tbody>
</table>

D. Project Management of the start-up phase

These costs cover the overall project management during the estimated setting up lag time of 8 months. The following table shows our estimates of possible labour needs and costs for this task.

Tab. 59. Summary of costs for project management in the start-up phase

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of units</th>
<th>Unit price</th>
<th>Total by item</th>
<th>Total amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.1 Human resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category I 15 w.d.</td>
<td>60</td>
<td>700.00</td>
<td>42,000.00</td>
<td></td>
</tr>
<tr>
<td>Category II 10 w.d.</td>
<td>80</td>
<td>500.00</td>
<td>40,000.00</td>
<td></td>
</tr>
<tr>
<td>Category III 5 w.d.</td>
<td>400.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV junior w.d.</td>
<td>200.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUB-TOTAL - D</td>
<td></td>
<td></td>
<td></td>
<td>82,000.00</td>
</tr>
</tbody>
</table>

8.6.2. Labour and facilities, for the ordinary functioning of the system

As described in the previous parts of this study, most relevant activities for the ordinary functioning of the proposed market monitoring system are related to the following four tasks:

A) Ordinary maintenance and upgrading of the IT platform
B) Ordinary management of the portal contents
C) Communication and networking activities
D) Overall market monitoring system management
In the following tables we summarize the total labour needs and cost estimates for the ordinary functioning of the proposed Market Monitoring System.

For the reasons mentioned in the previous paragraph we refrain in the present study from developing a specific proposal on the IT features of the system and consequently a budget for the hardware and software specific maintenance. Our estimates for the ordinary functioning of the IT platform are therefore based on an "ordinary technical maintenance" of a structured web portal.

**Tab. 60. Labour needs for the ordinary functioning (working days)**

<table>
<thead>
<tr>
<th>Professional Category</th>
<th>Cat. I</th>
<th>Cat. II</th>
<th>Cat. III</th>
<th>Cat. IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Ordinary maintenance and upgrading of the IT platform</td>
<td>10</td>
<td>30</td>
<td>25</td>
<td>30</td>
<td>95</td>
</tr>
<tr>
<td>B - Ordinary management of the portal contents</td>
<td>0</td>
<td>30</td>
<td>60</td>
<td>220</td>
<td>310</td>
</tr>
<tr>
<td>C - Communication and networking activities</td>
<td>30</td>
<td>110</td>
<td>220</td>
<td>220</td>
<td>580</td>
</tr>
<tr>
<td>D - Overall market monitoring system management</td>
<td>60</td>
<td>0</td>
<td>110</td>
<td>0</td>
<td>170</td>
</tr>
<tr>
<td><strong>Total labour need</strong></td>
<td><strong>100</strong></td>
<td><strong>170</strong></td>
<td><strong>415</strong></td>
<td><strong>470</strong></td>
<td><strong>1155</strong></td>
</tr>
</tbody>
</table>

**Tab. 61. Budget for the ordinary functioning, by cost category (thousand Euro)**

<table>
<thead>
<tr>
<th>Costs by Category</th>
<th>Human resource</th>
<th>Mission expenses</th>
<th>Other expenses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - Ordinary maintenance and upgrading of the IT platform</td>
<td>38.0</td>
<td>-</td>
<td>No estimate</td>
<td>38.0</td>
</tr>
<tr>
<td>B - Ordinary management of the portal contents</td>
<td>83.0</td>
<td>11.0</td>
<td>-</td>
<td>94.0</td>
</tr>
<tr>
<td>C - Communication and networking activities</td>
<td>208.0</td>
<td>22.0</td>
<td>40.0</td>
<td>270.0</td>
</tr>
<tr>
<td>D - Overall market monitoring system management</td>
<td>86.0</td>
<td>-</td>
<td>-</td>
<td>86.0</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>415.0</strong></td>
<td><strong>33.0</strong></td>
<td><strong>40.0</strong></td>
<td><strong>488.0</strong></td>
</tr>
</tbody>
</table>

A breakdown for each of the four tasks is provided hereunder.

**A. Ordinary maintenance and upgrading of the IT platform**

Our estimates cover all the ordinary costs for the normal maintenance of a structured web portal as the one proposed.

Human resources needs are estimated on the basis of a rather wide annual implementation of the web application. This to satisfy a predictable adaptation need of the portal, particularly in the first three/four functioning years.

As concerns the HW-SW maintenance costs, for the reasons above mentioned we refrain to estimate a possible value of yearly depreciation allowance or of other possible HW-SW maintenance costs.

The following table shows our estimates for possible labour needs and HW-SW costs for this task.
Tab. 62. Summary of costs for ordinary management and upgrading of the IT platform

<table>
<thead>
<tr>
<th>A.1</th>
<th>Human resources</th>
<th>38,000.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Years of profess.</td>
<td>Exp.</td>
</tr>
<tr>
<td>Category I</td>
<td>15</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category II</td>
<td>10</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category III</td>
<td>5</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category IV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV</td>
<td>junior</td>
<td>w.d.</td>
</tr>
</tbody>
</table>

A.2 Software tools | NO ESTIMATES | 0 |
A.3 Hardware | NO ESTIMATES | 0 |
SUB-TOTAL - A | 38,000.00 |

Ordinary management of the portal contents

The labour needs for this task are mostly focused on both relevant management activities: i) coherence analysis of the data published by Info-producers (systematic check of information index in respect to their actual content), and ii) periodical analysis of the portal functioning (gauging and interpreting users’ choices) in order to identify possible system’s functioning upgrading needs.

We also estimated the costs to keep up ordinary and necessary operative relationships with the Info-producers. Therefore we inserted in the budget 10 missions for participating to operative meetings at national level.

The following table shows our estimates for possible labour needs and mission costs for this task.

Tab. 63. Summary of costs for ordinary management of the portal content

<table>
<thead>
<tr>
<th>B.1</th>
<th>Human resources</th>
<th>83,000.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Years of profess.</td>
<td>Exp.</td>
</tr>
<tr>
<td>Category I</td>
<td>15</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category II</td>
<td>10</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category III</td>
<td>5</td>
<td>w.d.</td>
</tr>
<tr>
<td>Category IV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category IV</td>
<td>junior</td>
<td>w.d.</td>
</tr>
</tbody>
</table>
B.2 Mission Expenses | trip | 10 | 600.00 | 6,000.00 | 6,000.00 |
B.3 Daily subsistence allowances | days | 20 | 250.00 | 5,000.00 | 5,000.00 |
SUB-TOTAL - B | 94,000.00 |
Communication and networking activities

These costs cover both “external activities”: the communication and dissemination activity, the networking initiatives. Therefore we estimated yearly labour needs and possible direct costs related to:

- participation of EC officials to 20 events at national level (2 days missions each event for communication and dissemination activities)
- organization at EU level (in EC offices) of about 20 “meeting and debates”
- organization at EU level (in EC offices) of about 40 “thematic forums”

Considering the facilities of DG-Agri offices, as at present, and stakeholders participation on a volunteer basis, we estimated limited costs for the meetings organization at EC level.

The following table shows our estimates for possible labour needs and other costs for this task.

**Tab. 64. Summary of costs for the communication and networking activities**

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit price</th>
<th>Total amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.1 Human resources</td>
<td></td>
<td>208,000.00</td>
</tr>
<tr>
<td>Category Years of profess.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category I 15 w.d.</td>
<td>700.00</td>
<td>21,000.00</td>
</tr>
<tr>
<td>Category II 10 w.d.</td>
<td>500.00</td>
<td>55,000.00</td>
</tr>
<tr>
<td>Category III 5 w.d.</td>
<td>400.00</td>
<td>88,000.00</td>
</tr>
<tr>
<td>Category IV junior w.d.</td>
<td>200.00</td>
<td>44,000.00</td>
</tr>
<tr>
<td>C.2 Mission Expenses trip</td>
<td>600.00</td>
<td>12,000.00</td>
</tr>
<tr>
<td>C.3 Daily subsistence allowances days</td>
<td>250.00</td>
<td>10,000.00</td>
</tr>
<tr>
<td>C.4 Advert. &amp; other communic. expenses forfeit estimate</td>
<td>30,000.00</td>
<td>30,000.00</td>
</tr>
<tr>
<td>C.5 Forums and debates expenses forfeit estimate</td>
<td>40,000.00</td>
<td>40,000.00</td>
</tr>
<tr>
<td><strong>SUB-TOTAL - C</strong></td>
<td></td>
<td><strong>300,000.00</strong></td>
</tr>
</tbody>
</table>

Overall market monitoring system management

The following table shows our estimates for possible labour needs and costs for this task.
Tab. 65. Summary of costs for the overall market monitoring system management

<table>
<thead>
<tr>
<th>Category</th>
<th>Years of profess.</th>
<th>Exp.</th>
<th>N° of units</th>
<th>Unit price</th>
<th>Total by item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category I</td>
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<td>w.d.</td>
<td>60</td>
<td>700.00</td>
<td>42,000.00</td>
</tr>
<tr>
<td>Category II</td>
<td>10</td>
<td>w.d.</td>
<td>0</td>
<td>500.00</td>
<td>-</td>
</tr>
<tr>
<td>Category III</td>
<td>5</td>
<td>w.d.</td>
<td>110</td>
<td>400.00</td>
<td>44,000.00</td>
</tr>
<tr>
<td>Category IV</td>
<td>junior</td>
<td>w.d.</td>
<td>0</td>
<td>200.00</td>
<td>-</td>
</tr>
<tr>
<td><strong>SUB-TOTAL - D</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>86,000.00</strong></td>
</tr>
</tbody>
</table>

8.7. Complementarity of the web portal with the networking tools

As already discussed in Par. 8.2.3, the web portal is the platform with which information is conveyed in the F&V sector. The portal “bidirectional flow”\(^{53}\) represents the principal direct flow of information within the system.

Information consultable via the portal also promotes the creation of thematic forums, demand for which can come from a) the users of the portal (choices expressed within the portal application), and b) the outcomes of meetings and debates among the main actors in the system. In both cases there is a strong and direct complementarity between the web portal and the networking tools, and notably for the latter, outcomes of meetings and debates, the circuit is mutual, with conclusions drawn from forums supporting portal activity and the fine-tuning of the information system as a whole.

9. Final summary and conclusions

9.1. Background

This study originates from the debate that preceded and accompanied the reform of the F&V CMO, in which a special attention has been given to the need to support the sector’s operators in managing crisis (in particular, short-term ones) which are the result of a combination of several factors, including:

- the highly perishable nature of the products, which prevents storage, thus eliminating one of the major tool for revenue smoothing;

\(^{53}\) Information flow from Info-producer to users; information identifiable as indicators of the system’s functioning (gauging and interpreting users’ choices)
• the sensitivity of both F&V production and consumption to the climatic conditions, which makes them particularly responsive to meteorological conditions, with short term variations which are difficult to anticipate;

• the low price-elasticity of demand, with the consequence that even small supply surplus may have dramatic consequences on prices;

• the difficulties of production coordination, in view of the high fragmentation of the production sector.

In such a context, two aspects appear to have been not sufficiently explored in the past, leading to corresponding research needs emerged as especially relevant. These are:

• the role of and the scope for initiatives for information generation and sharing, and

• the potential for innovative short-term risk management tools.

The study we have conducted and whose results are presented in this report aimed at exploring the two issues, which are intimately connected to each other, in the conditions of the European Fruits and Vegetable sector.

The extent of the analysis and the content of the proposals we advance have been conditioned by the fact that, shortly before the study was launched, the European Commission had emanated the new Regulations that re-defines the F&V CMO. In the Regulations, new provisions have been included as possible means to increase the sector ability to manage short-term crisis, in substitution for the old withdrawal system. This has obliged us to take into due consideration the presence of these new measures, and to try and explore for additional opportunities which were not in contrast with those included in the Regulation.

9.2. The “state of the art”. Results of the survey of existing initiatives and proposals

The actual feasibility and implementation study of new instruments and actions has been preceded by a preliminary study (covering chapters 0,3 and 2 of this report) which have both set the theoretical stage for the analysis of short-term market risk management and explored in detail the current status in terms of market monitoring systems and income stabilisation tools available in Europe and worldwide.
9.2.1. Risk management and income stabilization tools

The survey of existing risk management and income stabilization tools in agriculture, which has been extended beyond the European F&V sector, by analyzing initiatives existing both in other sectors and in other countries, has revealed a general limited diffusion of direct risk management tools among agricultural producers, and among F&V producers in particular.

When discussing of risk management in agriculture, until the very recent past most of the attention seems to have been focus on traditional insurance, that is, a contractual arrangement where one party (the insurer) commits to pay to the other party (the insured) an indemnity whose amount depends on the actual damage suffered by the insured and when such damage can be directly imputed to the occurrence of a pre-specified event, in exchange for a fixed premium, which can be taken as the price producers pay in order to transfer the risk. Unfortunately, traditional insurance has been repeatedly shown to present several drawbacks that make its use particularly difficult for events that cause correlated damages, that is, damages that occur simultaneously to a wide group of agents, and for damages which cannot be traced back to what analysts call “pure risk” or “acts-of-God”. The existence of these problems has been confirmed by the fact that, despite the non-negligible effort of some Member States Governments (most notably, Italy and Spain) in trying to promote the diffusion of insurance in agriculture, the bulk of the contracts remains focused on a limited number of events (hail, fire) and crucially dependent on public subsidies on the premium paid to insurance companies that, in most cases, exceed levels of 50% of the total rate.

Market and price risk (including short term market crises) are typically systemic within the group of producers of a certain product and only to a limited extent attributable to pure risk, and – as such – particularly problematic with respect to traditional insurance. Although seasonal excess of production might be due to particularly favorable weather conditions, the fact that these events (which would be considered as a “blessing,” not a “curse,” by the layman person) become conducive to short term market crises of the kind F&V producers lament the existence, is the result of a series of concurrent causes, many of which are under direct control of producer themselves, traders, retailers and consumers (such as for example, production planning, strategic marketing decisions, etc.) In technical terms, this means that insurance intended to cover market risk might be plagued by excessive moral hazard to be viable. Moral hazard relates to the possibility that the insured might deliberately affect either the probability of occurrence of the insured event, the extent of damages and therefore of indemnity to be paid, or both. Under such circumstances, the insurance market notoriously fail, when the incidence of transaction costs needed to monitor insurer behavior in order to prevent moral hazard causes to price of insurance coverage become too high to be convenient for the average producer. Notice that the release of public subsidies to the premium, in-
tended to nevertheless promote the use of insurance will likely be ineffective, under such circumstances.

Much less attention has objectively been devoted to the possibility of alternative contractual agreements whose purpose is the transfer of market risk from one agent to the other. In the simplest possible case, in which a single producer would sell its product directly to a single buyer, it would be the price setting mechanism in itself that would play the role of a risk transfer mechanism. During the bargaining phase, the two agents, depending on their relative bargaining power, might be capable of including risk consideration in the setting of price, and in principle there would be no scope for either public intervention or third party mediation. The reason for such a conclusion is that, in such an arrangement, a high price would be, at once, beneficial to the producer and unfavorable to the buyer; the opposite being true for a low price. When the conditions occur that the price might tend to be set too high or too low, there would automatically be two parties with opposite interests in the conditions to bargain, and there would be no reason to imply that the result of the bargaining process be inefficient or socially unacceptable.

Of course, many transactions occur, in the real world, in conditions that are far different from the ideal of a two-person direct bargain, and therefore the question of whether the price formation process would lead to a socially optimal outcome or not, and whether it embeds risk transfer mechanism or not are legitimate questions. The most common departures from the ideal two-person bargain, under which unfettered transactions are proven to be socially optimal, are those that imply the presence of some form of “market power”, that is, the possibility to enjoy higher bargaining power than the transaction counterpart, because of lack of competition. In the conditions of the European F&V sector, this has been long recognized as a problem for producers facing an increasingly concentrated distribution and retailing sector, with the rise of supermarkets’ share in the sales of fresh fruit and vegetables. For that reason, since the previous reform of the F&V CMO in 1996, special recognition has been given to Producer Organizations as the keystone on which to build a competitive sector, based on the consideration that in this way producers might reach a better bargaining position within the value chain.

This type of industrial organization evolution would obviously have consequences also on the aspects related to market risk management: ideally, if a Producer Organization manages to achieve sufficient capacity of coordinating production and marketing in an efficient way, it should also be able to minimize the probability of market crises or of their consequences, thus greatly limiting the scope for further public intervention specifically directed at market risk management. However, this is only true in theory and in an ideal situation. There are many factors that may compromise the achievement of such a result. As history teaches us, after twelve years of operation of the reformed CMO and despite great successes of a number of measures intended to promote the diffusion of POs, the depth and breadth of
penetration is still varied across sectors and Member States, which means that we are far from an homogeneous situation in terms of the capacity of F&V to prevent, manage and cope with the consequences of market crises.

While agreeing with the continued promotion of the establishment and efficiency of Producer Organization as the major means to guarantee competitiveness and viability of the European F&V production sector, we have asked ourselves whether there could be other means and complementary activities that could assist F&V producers in their risk management tasks, which has led to our proposal for the promotion of a comprehensive security fund, intended as a set of mainly private financial and contractual arrangements, through which producers might be able to ex-ante hedge great part of their market risk, as we have detailed in the core feasibility and implementation study.

9.2.2. Market monitoring systems

By confirming one of the elements emerged in the debate that has accompanied the process of CMO reform, our survey confirmed that one of the causes of the limited ability of F&V operators to prevent and manage short term market crises is **limited extent of information sharing and the lack of transparency of information** on EU agricultural markets, in general and, in particular, of the F&V market.

According to our surveying of the “status quo” of information circulation in the F&V sector, there is a rather common perception among operators in the F&V sector that, despite the existence of data gathering, processing and dissemination activities, both at the EU level and in individual Member States, conducted by a number of agents, the information promptly and reliably available to operators is in fact rather limited, often fragmented and in general insufficient to ensure the systematic monitoring of the market.

The inventory we carried out (chapter 3) confirmed the existence of an extended and varied quantity of information on the F&V sector, prepared by a large number of data gathering and/or processing centres operating nationally, regionally and locally. The most common are:

1. **Research and service centres** which, through both direct and secondary data collection, constantly observe F&V sector trends within a range that extends well beyond the State in which they reside and operate. These are, for instance, the Centro Servizi Ortofrutticoli (CSO), the Zentrale Markt – und Preisberichtstelle (ZMP) and the Istituto di Biometeorologia of the Consiglio Nazionale delle Ricerche (CNR-IBMET).

2. **Institutional agencies**, mostly falling under the supervision of national Ministries, which gather and disseminate statistical data on the sector, usually at national levels, including for example: ISMEA and the Consorzio Infomercati.
in Italy, the Service des Nouvelles des Marchés (SNM) and the Centre de coopération internationale en recherche agronomique pour le développement (CIRAD) in France, the Observatorio de precios of the Ministerio de Agricultura, Pesca y Alimentación and the MERCASA in Spain (for prices only), Foreign Trade Ministry in Belgium (only for imports/exports), Brisbane Markets in Australia (only for wholesale prices), CMPE – Foreign Trade Institute of Morocco, ICEX – Foreign Trade Institute of Spain.

3. Producers’ Organisations (POs), their Associations (APOs) and Unions which, on one hand, directly collect information from their members and, on the other, acquire and re-process information from official sources to support their activities of their members.

The inventory on the existing information panorama in the F&V sector has been carried out using three indicators: availability – accessibility – functionality of the information available. In relation to some elements of the sector, these indicators have made it possible to assess the presence or absence of monitoring data, their degree of usability and their relevance in relation to the objective of contributing to the prevention of market crises in the F&V sector.

Our analysis showed the existence of a vast information panorama, very diversified in terms of typology, quantity and quality. There also emerged different degrees of accessibility, dictated chiefly by the public or private nature of the source and, finally, a disparate functionality of available information in relation to the need to increase (through a more extensive and shared knowledge of the sector) the ability of operators in the value-chain to plan their activities in order to prevent crises, or at least to manage the consequences of unpredicted events to the best of their possibilities. The functionality of available information has been classified according to four degrees of relevance: high, medium high, medium low and low, through the joint analysis of different variables, such as the number of sources, the subject of data gathering, the type and level of dissemination, coverage of the territory, breakdown of information, etc. The results of this preliminary analysis clearly show that, at this time:

1. directly usable data are those gathered and published by institutional agencies, mostly under the supervision of Ministries, or by Ministries themselves;

2. if one moves beyond the possibility of directly accessing data, it may be noted that the range of information is broader, at least in terms of data gatherers and surveyed categories;

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54 Sector elements utilised: production and output estimates; prices (at three levels); the market (traditional and new channels, such as large-scale retailing); imports and exports; meteorological phenomena.
3. in relation to the geographic coverage of collected information, for all data categories, the concentration of information was rather high for some countries, such as France, Spain and Italy;

4. finally, with regard to the type of data gathering, we saw the alternation of direct and indirect sources.

The inventory also highlighted the limited extent of interactions, at the EU level, among centres that gather, process and disseminate market information. In general, the inventory showed a significant fragmentation of information and a frequent duplication and overlapping of similar data.

There have however been quite significant recent actions to coordinate data management activities in terms of geographic scope and economic representativeness within the F&V market: one such example is the A.R.E.F.L.H. (Assemblée des Régions Européennes Fruitières, Légumières et Horticole), the association of major F&V regions in France, Spain, Italy and Portugal.

Aiming to analyse the most relevant functioning elements of existing different monitoring centres, and to define their strengths in order to reveal possible hints for the setting up of a Market monitoring system at national and/or at EU level, two different operating models of monitoring centres have been chosen as “case studies”:

1. Centro Servizi Ortofrutticoli - CSO (Italy): a private, market-oriented organization, providing monitoring services for a limited number of F&V products and mainly to the POs members of CSO.

2. Services des Nouvelles des Marchés - SNM (France): a 50 year old public institution, providing public monitoring services for the greater part of agricultural products marketed in France (and a greater part of F&V products).

As a result of this inventory task and case study, we concluded that:

1. The operating models analysed could be homogenously implemented only for those MS in which: production is characterized by a high level of organization (high percentage of production marketed by POs and APOs), and operators are available to contribute to the creation of monitoring centres, or there is already a national organization characterized by a strong and direct relationship with producers, or at least a relevant part of them. It is to be stressed that both circumstances are at present (or even in short-term) mostly absent in mostEU-27 MSs. This leads us to conclude that a monitoring system, at national level, based on a specific operating model (such as the ones analysed) would have little chance of concrete implementation at least in a short-time span.
2. **Adopting the SNM operating model as a benchmark** to set up a monitoring centre at national and EU level (thus resulting in an organization with a functioning model similar to EUROSTAT) will likely be problematic in terms of the relevant objectives of: (i) providing timely information, (ii) concrete implementation in a short-time reference. Furthermore it would notably increase, vis-à-vis the status quo, the management and operating costs of the market monitoring system at both national and EU level. This is not to underestimate the value of such a system where it exists, which remains high in its ability to provide reliable and certified information on the actual evolution of F&V markets, something that may prove precious for analyses and the development of hedging tools, as we shall see when discussion of the security fund.

Without underscoring the importance of production and diffusion of new information, there nevertheless is a concrete opportunity of benefiting from the existing information, even though heterogeneous in type, quality and accessibility. To achieve this goal the proposed monitoring system should:

1. guarantee the concrete availability of information,
2. ensure an upgrading/evolving path, in quantitative and qualitative terms, for technical and content characteristics,
3. facilitate the optimization of costly monitoring tasks (data gathering) by possible activity sharing between the organizations which at present have to repeat tasks each time raw data are needed.

### 9.3. What’s ahead? Proposals for new tools and initiatives

With the results from the preliminary study as a guide, we have advanced two sets of proposals for a market monitoring system and a security fund, respectively. The second part of the study has included the analysis of feasibility and potential implementation of the two sets of proposals, which we would like to briefly summarize here.

#### 9.3.1. A comprehensive Security Fund

The entry point for the definition of our proposal in terms of the build-up of a comprehensive security fund in the F&V sector has been the consideration that, given complete elimination of market crises by preventative measures is unlikely to be either possible or even desirable, attention should be given to the possibility of ex-ante hedging the exposure to relevant market risk by F&V producers. The challenge has been to find mechanisms which allow such a transfer of risk with low transaction costs and avoiding the creation of distorted incentives.
Also, we mainly focused on measures intended to promote the transfer of economic risk from producers to agents outside the value chain, namely to the investor community through operation of financial mechanisms and the banking system. This decision is justified by the belief that the engagement in marketing agreements within the value chain, where the risk is shared between producers, traders and retailers, remains the elective road to be taken to effectively increase the competitiveness of the sector. Of course, engagement in such marketing contracts is going to be more effective and more protective of producers’ interests, the more producers are organized in associations and capable of coordinating their production planning, in accordance with the established fundamental criteria inspiring the current set of Community Regulations. Nevertheless, even just the potential possibility for transferring part of their marketing risk outside the supply chain at a reasonable cost, might be of great value to producers who, for various reasons, are not in the position of bargaining from a vantage position within the chain.

The two instruments on which we have focussed our attention are:

- Conditional lines of credit, and
- Crisis “Put-vouchers”

A conditional line of credit is an agreement between an agent who anticipates the possible need for liquid capital to face particular uncertain contingencies, and a banking or other lending institution. The difference with normal credit contracts and the meaning of the attribute “conditional” is that the lender commits to release credit at pre-specified conditions, in case a particular event (the “trigger”) materialize. The advantages of this type of arrangement stem from the commonly observed problems that economic agents face when they search for short term financing during an emergency situation. In such situations, in facts, potential borrowers may find themselves in a weak bargaining position, facing problems of credit rationing, due to competition by other borrowers, in moments in which the timely availability of funds may be crucial.

With a conditional line of credit, the transaction costs associated with the search for lenders is reduced and, most importantly, known in advance, given that it becomes part of the agreed upon contractual clauses.

We suggest here that lines of credit could be conditioned to the occurrence of short term market crises in a given sector, as determined by the level of official price, as recorded on one or a set of representative markets, along the lines of what the French Service des Nouvelles des Marches currently does to declare the status of market crisis (see section A 3.2 above.)

The use of credit to cope with the consequences of short term market crisis could be the most effective means for producers that would be in need to face relatively small additional marketing costs due, for example, to the search for alternative out-
lets, to the need of faster or longer transportation of the products to more distant markets, and other activities which, by their nature, are exceptional, and only limited to the duration of the crisis. In such circumstances, it is known that the risk is best dealt with through self-insurance, and the possibility of conditional lines of credit becomes attractive to the extent that the effective cost to access this type of credit does not exceed the opportunity cost of mobilizing own resources which may be available only in illiquid forms.

The nature of the contingent credit contract remains fully private between a producer – or a producer organization – and a lending institution, although various public measures might be imagined as ways to promote its use. Among these, there are of course the “traditional” participation of public bodies as providers of back-up guarantee for credit repayment, or the co-financing of the interest premium required to release the credit. Incidentally, some of the costs explicitly linked to these contracts may well be included among the expenses of operational programmes entitled to public subsidy, according to the current EC Regulations.

However, it is our opinion that the major role for the public to play in this field remains that of creating the conditions by which the information needed to define the trigger is made available and reliable.

The second tool on which our feasibility study has focussed is what we have named a crisis put-voucher, that is an option issued by a public agency and purchased by producers which entitles the holder to receive a compensation in case an index of market crisis reaches a pre-specified level.

Various technical aspects related to the actual design of the option will contribute in determining both the structure of incentives and the amount and distribution of costs and benefits created by the mechanism. All of these aspects are highly case-specific and will need to be explored in greater detail of what allowed by the present general study. In short, they relate to the definition of the trigger and the pay-off structure of the option, and the pricing and possibly selective sale, as detailed in section 7.4 above.

To a certain extent, the intent of the put option is similar – in principle – to the old mechanism that entitled F&V producers to receive a compensation for the product withdrawn from the market: with this mechanism, as with the old one, producers would have a means to reduce the cost they faced due to the occurrence of low prices due to causes mainly beyond their control. When compared with the withdrawal mechanism, however, the put voucher mechanisms presents a number of advantages linked to the following:

- the release of compensation does not require the destruction of product, with resulting benefits to consumers in terms of low prices;
• there is no need for costly monitoring activities for the correct implementation of the mechanisms: the right to the compensation, as well as the amount of compensation is set in advance, the moment in which the voucher is sold;

• the mechanism require an ex-ante evaluation of the cost of the exposure to the risk of market crisis by the producers, which will need to elect to participate in the system by purchasing the option; this would strongly limit the potential for strategic behaviour once the crisis hits;

• even though at the beginning we envisage the put voucher as being issued by a public authority, the mechanism may well evolve to become a fully private market based instrument. It is easy to imagine other agents, with opposite stakes with respect to fruit and vegetable prices, which might have an interest in taking the opposite position on the market for similar derivatives;

• depending on the way in which the voucher is sold, the mechanism may allow for the reveal of information on the actual economic cost of market risk exposure for fruit and vegetable producers. Auctioning out a set of vouchers, different in terms of payoff structure may self select buyers who, deciding to buy one type of voucher rather than the other, would reveal the degree of risk exposure they face.

As with the conditional line of credit, one essential precondition for a mechanism such as the put voucher – which is essentially a type of contingent claim contract – to function, is the possibility of observing an objective index which is highly correlated with the agents’ economic returns and which is not subject to possible manipulation by either of the two parties involved. In this sense, the potential for diffusion of this, as of similar derivative-based mechanisms is crucially dependent on the availability and transparency of market information.

9.3.2. Market Monitoring System

In view of the main aims of the present study, the widely felt needs of operators and the findings of the inventory, our proposal for a Market Monitoring System (Part II, Feasibility study, chapter 6) has been based on an intervention logic diagram (see Fig. 9, page 179) which outlines the following operational objectives:

• To adopt a functional model for the generation and dissemination of information that has the flexibility needed to adapt constantly to changing operational, commercial and technological conditions in the F&V sector (and for specific productions) and to different existing national contexts in
MSs (in terms of the incidence of the productive set-up and the national propensity to produce, market or consume specific F&V produce)

- **To foster the development of networking, at EU-27 level**, among the operators of F&V information, trading and production

- **To make the most of existing cognitive resources** (structures, knowledge and databases) and **encourage possible development** in territories or F&V productions that are not currently covered.

As a logical result of the above mentioned analyses and conclusions our proposal of Market Monitoring System is based on the following three, closely interconnected elements:

- a web portal
- meetings and debates among actors that publish data on the portal and data users
- thematic forums

A flowchart showing the possible interactions of the three elements of the proposed system is represented in Fig. 10 on page 181.

The **portal**, managed by DG Agri, is the platform via which information on the F&V sector is conveyed and disseminated. It can be accessed by users, i.e. all actors involved to varying extents in the “F&V chain” as “stakeholders”. An essential characteristic of the portal is the possibility of consulting databases or parts of databases made available by different actors that monitor market trends. From the portal web-pages the origin of data is always evident, in terms of both the primary source and the subject re-processing and disseminating the information. Info-producers, publishing on the portal all or a part of the information at their disposal, will join the portal because of the broad visibility deriving from being present on the portal, in both institutional and, indirectly, commercial terms.

The information that can be consulted through the portal leads to the activation of **meetings/debates**, which may be requested: (i) by users who, through the portal, follow output, market and consumption trends; (ii) following the results of meetings and debates among portal actors chiefly responsible for fine-tuning the information systems as a whole. The priority aims of meetings/debates are to:

- encourage the development of networking initiatives among existing monitoring centres;
- develop/spread a knowledge of existing monitoring;
- facilitate the matching of operators that produce information with users;
implement the portal.

The forums, on the other hand, have two basic aims. One is to get subjects that observe the sector and produce information to constantly seek new responses to information needs. More generally, the very nature of forums will make it possible to highlight and analyse the most topical issues, with one eye on the long-term situation and on possible developments. In this way, representatives of the various phases of the F&V chain (i.e. portal users) may share their views and modify their respective positions. Forums may allow the diffused organisation of information, so as to facilitate through their results the inclusion in the original set-up of the portal of:

- products or varieties not originally envisaged,
- more selected, but significant, areas,
- additional relevant markets,
- F&V chain details not yet included in the range of information already disseminated with the portal.

The application design process should be focused on guaranteeing reliability, availability and serviceability of the developed software platform. The application design is therefore based on Web paradigms, interaction between information supplier and consumers is via the global Internet network accessed with standard Web browsers.

In detailing technical and information technology aspects (section 8.3) for the functioning of the proposed system, the utmost care has been taken to the need to facilitate access to the portal for subjects implementing it, publishing the information in their possession, and for potential users. For the former, standard and widely used portal communication protocols have been prepared:

1. **Really Simple Syndication (RSS 2.0)**: a family of web information standards where a content provider can publish its own information using a standardized XML file.

2. **Web Services (W3C standards)**: used as a service oriented interface where well known application services are provided. From info-producers’ point of view, software client components to interact with provided services on event change are required.

3. **HTTP / POST (standard web interface for data publishing)**: the most complex interface from info-producers’ point of view because it requires administration activities for information publishing. Suitable for organizations
providing a small amount of daily information which would have direct control on content publishing.

The application features, as well as technology platform of the web portal, have to be related to the multifaceted IT system currently operated by EC services, and to the ongoing IT development project (eg: ISAMM project could lead to possible specific architectural or technological implementation choices), thus we refrain in the present study to develop a specific proposal on the IT features of the system.

The user of the DG-Agrì web portal may access information by means of a structured and facilitated navigation path. The user will select the “type of information” of interest and from there, through a guided process, choosing from the various options presented, will be able to view all the information made available by the portal, corresponding to the data pertinent to the choices made. This path is of course taken only inside the DG-Agrì web portal, and the end result is the availability of that specific information offered by possible Info-producers. Basically, the system will consist of a supply of information made available by specific and well identified Info-producers, which may be consulted in a structured manner inside the DG-Agrì web portal.

The portal manager (DG-Agrì), as detailed in section 8.2, will ensure the relevance of information disseminated through a control mechanism founded on minimum criteria and requirements: subjective (i.e. of info-producer) and objective (referring to each data category), but will not ensure uniform, or standardised, information, in terms of both methodology used by the data gatherer and classification of data.

The aim of the system is indeed to make the information in circulation as accessible and transparent as possible, not to standardise data. Both accessibility and transparency will be guaranteed by the links that can be established (both numerically and in terms of content). Transparency will be helped by the clarity of disseminated information, which while not being uniform, will have to be read in an unambiguous manner.

The entity managing the web portal (DG-Agrì) will be called upon to perform a relatively limited strategic set of tasks, referring chiefly to the operational coordination of the system. In particular, it will coordinate:

- the design/planning of the web portal and definition of the data transmission or connection protocol with Info-producers;
- the publicising of the portal;
- the management of access to the portal on the part of Info-producers and users.
Specific management functions at EU level, for the proposed Market Monitoring System, will be the following:

1. **Project management**: overall coordination of the Project start-up and implementation of the wide activities range (web portal, networking, communication). A specific management task should concern the communication strategy due to its fundamental role in the Project start-up.

2. **Functional management of the web portal**: coordination of the data publishing and of relationships with the Info-producers and Users.

3. **Technical management (IT) of the web portal**: coordination of the hardware and software implementations and their upgrading.

4. **Networking activities management**: coordination of the “meetings and debates” and of the “special theme forums”.

Estimates of investments and labour needs for both development tasks, the setting-up of the system and ordinary functioning (section 8.6) entails relatively **modest initial investments and yearly operating costs**, in terms of human and economic resources.

It is to be stressed that the complete “setting-up of the system” task could be carried out in a 5 to 8 months time span.

As illustrated in detail in chapter 8, the heart of the system is that of gathering together information in the “DG-AGRI F&V Portal”. The value added of this solution, compared with the current availability of information in the F&V sector, is thus the **concentration of available information** at an EU 27 level and the process to **raise the level of accessibility to such information** to all operators potentially involved.

The proposed system is not a theoretical model but a system founded on the findings of observations on the current state of information in the sector. The proposed system seeks not to ignore but to **make use of the various experiences acquired monitoring the F&V market at various levels**, including the experiences surveyed in the inventory and the two experiences analysed in detail in the case study. This case study highlighted that even experiences that work well in specific contexts cannot all be replicated with the same ease.

This problem has led to reflection on the likelihood of success of a single, centralised monitoring system working in the same way in all member States and outside the EU. Local contexts are so different that even if all possible flexibility measures were adopted, such a system would be difficult to manage and would not offer any guarantees of success. But if one starts by acknowledging the existence of many different market observation centres, their different ways of functioning and their different levels of effectiveness, the result is the proposal of **a system that re-**
presents the results of activities performed by each one of them, leaving users free to choose the information most of use to them, i.e. most useful for programming production and/or the sale of their products. In this way, every centre may remain independent with regard to the data gathering and/or processing system, the categories of information monitored, the reference area and the products of interest.

At the same time, the system, through meetings and debates, will offer subjects monitoring the F&V sector and joining the portal the possibility of discussing relevant aspects of their activity, both formal aspects and specific contents. These debates among the main actors of the portal will be introduced into the system chiefly to improve its functioning, with special reference to portal contents. Over time, indirectly, they will also help to rationalise produced and disseminated information. The fact that the portal contains similar data, but from different experiences, will shift the attention of data gathering centres towards particular types of data not only depending on demand but also in view of the presence or absence of subjects capable of providing the same information. The competitive effect of the portal will produce, on the one hand, a rise in quality of published data, in terms of accuracy, pertinence and promptness of information produced, and on the other a process of specialisation of info-producers. In this way it will be possible to avoid the duplication of data and the overlapping of similar functions among centres: each subject will have the possibility of specialising in a given category of data, leaving others to specialise in other areas.

This is made possible by the concepts of reciprocity and exchange, underpinning the operation of the system. In greater detail, the portal forms the base for the construction of bidirectional relations between info producers and the reference public: the portal is indispensable for consumers seeking information and useful for firms wanting to become known. Thus, interacting with others through the portal, each info-producer has the possibility of gaining easier access to information that it would otherwise have to produce on its own or acquire from others.

In light of the above, it is evident that the other fundamental and qualifying element of the proposed system is the fact that for its implementation it needs dialogue among info-producers and between these and the users of information. This overcomes the other shortcoming detected during the inventory, i.e. the absence of relations among F&V information, trading and production operators.

The proposed information dissemination system thus has the capacity to have a bearing on the generation of information while preserving the flexibility needed to constantly adapt to changing operative-commercial-technological conditions in the F&V sector (and specific productions) and to different national contexts in different MSs (this does not imply a single data gathering system). Likewise, it has the merit of favouring the development of networking, at an EU-27 level, among actors engaged in the F&V chain and of valorising existing cognitive re-
sources (structures, knowledge and databases), stimulating possible developments in territorial areas or for F&V production not currently covered.

This latter aspect should not be a cause for concern: (i) info-producers will join the portal due to the fact they will be guaranteed broad visibility through the portal, thus obtaining a return in terms of institutional image and, indirectly, commercial advantages, (ii) in order to ensure a significant degree of coverage of the F&V productive and commercial panorama at an EU level, only a few implementing subjects are actually needed. Although F&V production is carried out in all 27 MSs, if energies for the Project start-up phase are focused on the top ten MS F&V producers, there could easily be an extremely notable coverage of F&V EU-27 production (see Tab. 36 on page 209.)

The advantages of the proposed monitoring system vis-à-vis the current situation are summarised in the table below.

**Tab. 66. Advantages of the proposed Market Monitoring System vis-à-vis the current situation**

<table>
<thead>
<tr>
<th>Fragmentation of the supply of information (numerous sources with consequent dispersion of data)</th>
<th>Concentration of the supply of information (sources and data conveyed to a single platform)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited transparency of supply of information</td>
<td>Greater transparency of information supply (clarity as to origin of data and data gathering methods)</td>
</tr>
<tr>
<td>Difficult to access data</td>
<td>Easy to access data (consultable directly and simply)</td>
</tr>
<tr>
<td>Lack of interaction among subjects performing market monitoring</td>
<td>Creation and expansion of the network of subjects performing market monitoring</td>
</tr>
<tr>
<td>Poor links between the supply and demand sides of information</td>
<td>Constant and regular dialogue between users of monitoring data and subjects possessing and disseminating these data</td>
</tr>
<tr>
<td>Consolidated experiences of dialogue among subjects involved in the chain (forecasting groups)</td>
<td>More debate among operators in the F&amp;V chain</td>
</tr>
</tbody>
</table>

In short, the objectives to be pursued with the proposed market monitoring system, inclusive of the networking system (in relation to fine-tuning the operations of the market monitoring system itself and to raising the quality and quantity of gathered and disseminated information) are basically the **concentration, accessibility and transparency of information**. Achievable objectives are given in greater detail, in the following figures, with reference to each of the system’s operational elements (portal and networking).
The proposed system will also help to achieve “indirect” aims, the most significant of which are:

1. raising the quality and quantity of data;

2. specialising data gathering structures and, as a result, reducing the overlapping of sources and duplication of similar data.

**Raising the quality and quantity of data** will be achieved indirectly as a consequence of the choice made by users, choosing from the various sources available from the portal those that offer the most reliable, precise and timely data. The fact that several Info-producers are present in the portal will not only favour their progressive and greater voluntary participation in the portal, but will also encourage them to gather more, increasingly precise data, capable of competing with other producers, trying to get users to choose them. Even if Info-producers do not make available through the portal all the data in their possession, the amount of information about the F&V sector will in any case go up.

**The specialisation of data gathering structures**, due to their progressive focus on specific topics, products and/or areas, is in turn a consequence of networking.
among info-producers and between the latter and portal users. The network becomes a special observatory for understanding what best to focus on when gathering data, due to the absence or simply the shortage of a certain type of data, and by virtue of particular trends that need to be detected, in part through the Market Monitoring System. As centres become more specialised, not only will data sources have less possibility of overlapping, but there will also be fewer cases of similar data being duplicated.

In addition to the advantages over the current situation and the specific objectives of the proposed system, the system will be more effective in responding to the problems tackled in the present study, as schematized in Fig. 9 on page 179.

Finally, two aspects need to be stressed among the advantages of the proposed system: the role of the EU Commission and of DG–Agri in coordinating the whole system; and the role of Info-producers in implementing the portal.

**DG-Agri has an absolutely central role in the Market Monitoring System:** it will be entrusted with the task of managing the whole proposed system. This management will entail modest costs (in terms of finance and the deployment of professional resources) and, above all, will not involve any evaluation of the information disseminated or the subjects supplying the information. The role of DG-Agri is that of being an impartial subject: it will provide a service to operators in the F&V chain, allowing dialogue between them and info-producers, as well as among the latter actors, in order to improve the general ability to govern the F&V sector, and contributing to possible actions to prevent crises.

On the other hand, the participation of info-producers in the system is completely voluntary. The basic logic behind the whole system is that over time it will become “the observatory of choice of the F&V sector” at an EU-27 level. As they cannot run the risk of being left out of this privileged “gallery”, actors that produce and/or process data pertaining to Market Monitoring will voluntarily join the portal, which constitutes a doorway to the whole information system proposed here. Also with regard to the potential implementing subjects of the portal, their participation in the initiative will not entail a great rise in costs, whereas there will be clear advantages, such as greater visibility in relations with the sector’s operators, which are their specific target, leading to possible commercial openings.

9.4. **Concluding remarks**

The conclusion that we derive from the analysis of the proposed solutions for market monitoring systems and for elements of a comprehensive security fund within the Fruits and Vegetable sector is that we can confidently hold an optimistic view on the prospect that, with limited but carefully targeted initiatives, the capacity of F&V producers to manage the consequences of short term market crises.
If nothing else, the content of this report should contribute to feed the discussion among stakeholders and policy makers with new elements, that hopefully will be conducive to a broader view of the problem of risk management in agriculture than the one that narrowly focuses the attention on subsidized insurance and on various forms of ex-post public compensation mechanisms, both extremely costly and rather ineffective in facing the challenging of a rapidly evolving sector embedded in an equally rapidly changing global economic environment.

The consideration derived from modern information science, finance theory and economic analysis, that have been presented in the report should suffice in demonstrating that there is a still largely unexploited potential that could contribute to the modernization and the increased competitiveness of one of the most important sectors of the European agriculture.

Let us conclude now by stressing once more the importance in this respect of market information. After all, we can safely say that risk management is nothing more than the efficient and rational processing of all available information, in order to balance the uncertainty that surrounds any economic activity with the expectation of making a profit.

In a sector such as the F&V production sector, the role of the public authorities in this respect is particularly precious. In the markets for other agricultural products, the possibility of unbalances as well as the information on the prevailing conditions of demand and supply is indirectly revealed by the possibility of arbitraging through storage, which, in turn, allows for the spontaneous development of hedging mechanisms such as futures contracts. For fruit and vegetables, as we have already noted in presenting the result of the survey of existing market risk management mechanisms (chapter 2,) the development and diffusion of standardized futures contracts is impeded by the highly perishable nature of the products and the corresponding prohibitive cost of storage, which enormously reduces the scope for arbitrage. For this reason, we are left in this sector without a powerful information revealing mechanism.

The public effort in improving the production, sharing and certification of market information, perhaps also along the lines of what has been put forth in this report, is therefore of paramount importance for the evolution and strengthening of a vital component of the European agriculture in the near future.

Research initiatives such the one that has lead to the production of the present report are therefore potentially very valuable, and for this the farsightedness of the DG-Agri needs to be duly recognized and appreciated.

Portici, March 5, 2009
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Commission Regulation No. 877/2004


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Sexton, R., Zhang M., Chalfant J. (2005), “Grocery Retailer Behavior in Perishable Fresh Produce Procurement”, *Journal of Agricultural and Food Industrial Organization* 3(1,6).


A 1. Examples of agro-meteorological services

A 1.1. The Regional Agricultural Agencies operating in Italy

In Italy a meteorological service can be found at the Agenzie Regionali per l'Agricoltura (Regional Agricultural Agencies). However, phone interviews carried out allowed us to discover that the privileged information source is SIAN's (Sistema Informativo Agricolo Nazionale) Agrometeorological Service that, through “DALAM ver. 3.0” (limited area meteorological model) allows to obtain meteorological forecasts for up to six days on Western Europe (this model has been developed and fine-tuned within a joint project between the Italian Ministry for Agricultural and Forestry Policies, CRA-UCEA, CNR’s Istituto di Scienza dell'Atmosfera e del Clima, ISAC-CNR and Agrisian, the company that manages the Sistema Informativo Agricolo Nazionale).

The Agro-meteorological Service produces a monthly National Agro-meteorological Bulletin and a bulletin of meteorological anomalies every ten days. These services are available online and allow to freely and gratuitously access agro-meteorological data and statistics in the National Agro-meteorological Data Bank (BDAN, Banca Dati Agrometeorologica Nazionale) of the Ministry for Agricultural and Forestry Policies (MiPAF).

The Osservatorio Agroclimatico, a SIAN project co-ordinated by UCEA-CRA, is a tool used to analyse and monitor the trends of main agrometeorological events that influence cultivations and more generally agricultural activities at a national level. Temperature, rainfall and evapotranspiration values, as well as deviations from climate values (1961-1990 period) shown in tables and maps have been calculated on the basis of daily data collected by RAN (National agrometeorological network) stations and from the military aviation meteorological service stations.

Data is available in map format showing territorial coverage and in table format, showing:

- monthly average values for minimum and maximum temperatures, total rainfall and evapotranspiration average values recorded in the previous year and in the last twelve months, compared to relative deviations from climate data;
- annual values recorded in the last ten years, compared with relative deviations from climate data. Data is aggregated by geographical area and at a national level.
A 1.2. The ECMWF (European Centre for Medium-Range Weather Forecasts) operating at an international level

The Agrometeorological Service, that also provides data and statistics, acquires on a daily basis data distributed by the ECMWF, the European Centre for Medium-Range Weather Forecasts. It is an independent international body supported by thirty member states: Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Norway, Austria, Portugal, Switzerland, Finland, Sweden, Turkey, United Kingdom.

ECMWF has recently reached co-operation agreements with the Czech Republic, Montenegro, Estonia, Iceland, Croatia, Lithuania, Hungary, Morocco, Romania, Serbia, Slovenia and Slovakia and with the following centres and institutions:

- World Meteorological Organisation (WMO)
- European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
- African Centre of Meteorological Applications for Development (ACMAD)
- Joint Research Centre (JRC)
- Preparatory Commission for the Comprehensive Nuclear Test-Ban Treaty Organisation (CTBTO)
- Executive Body of the Convention on Long-Range Transboundary Air Pollution (CLRTAP)
- European Space Agency (ESA).

The Centre carries out medium/long-range forecasts greatly benefiting European governments and the civil and economic society. Such benefits will increase in time thanks to the project of intensive co-operation throughout Europe with national Meteorological services that will thus assume a greater role.

A 1.3. The IPCC (Intergovermental Panel on Climate Change) operating at a supernational level

A very significant experience at a global level is also that of IPCC - Intergovermental Panel on Climate Change, a scientific centre founded by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP). Since 1990, IPCC publishes regular reports on climate change that have become an indispensable point of reference for all national and supernational policies, mainly in the agricultural field.
A 2. 

Detailed analysis on “Contributions obtained through the public consultation concerning the F&V CMO reform. - SEC(2007) 74 of 24.01.2007”

As analytically reported below, an overall positive opinion in developing market monitoring centres or observatories (to collect and analyse data) has resulted by the analysis of the different contributions received by the EC. Although none of the reactions can be considered as a structured proposal providing for a possible further development of the procedures or instruments for the F&V market monitoring management, it is of specific interest in this study context to take into account the general reaction expressed by MS, Administrations and Stakeholders. The reactions have been divided in the following three sections:

A) Joint memorandum produced by 7 Ministers of Agriculture ES, IT, FR, CY, EL, PT, HU (Joint memorandum of 11.01.2006) concerning the F&V CMO reform

No specific position or contribution on the theme “Inter professional: observatory” emerged on the 7 MS memorandum.

B) Other reactions from Member States & Administrations concerning the F&V CMO reform - SEC(2007) 74 of 24.01.2007 - (total of 31 reactions)

The following Member States & Administrations have expressed a positive opinion in developing market monitoring centres or observatories:

2. Autonomous communities of Andalucia, Aragon, Extremadura, Cataluna, Valenciana and Murcia, Spain (Joint position): “To develop market monitoring centres. To establish a European authority to guarantee transparency on trade. To develop a European Data system for fruit trees.”


6. Consejeria de Agricultura y Medio Ambiente Junta de Extremadura, Spain: “Inter professional: Observatory to create.”

9. Generalitat de Catalunya, Spain: “observatory of prices (European authority for transparency)”

10. Comunidad Valenciana, Spain: “regional observatory is the preferred option; – Control for price fixing system imposed by wholesalers and retailers in distribution.”

19. Junta de Andalucia, Spain: “Observatory to create;”
21. Ministry Agriculture & Rural Development, Poland: “Inter professional relations and organisation to be supported as well as the observatory (on prices)”

23. Ministry of Agriculture, Latvia: “an observatory following prices and market practises is supported”

26. EUROSTAT: “EUROSTAT suggest using the reform of CMO to update statistical basis and collection of data. For fruit trees such a system is in place (EC 2001/109). For vegetables such a system is non existing. There is need for data on consumption, production methods, production potential etc. In order to keep administrative burden as low as possible, a coherent information requirements system must be defined, comprising statistical -, administrative -, and data for the information of the Management Committee. Eurostat requests the mandate to re-examine the statistical legislation in relation to the needs coming from the new CMO”

27. Ministry of Agriculture, Hungary: “Inter professional Status quo to be completed with the observatory.”

28. Government of Turkey: “An observatory to follow market regulation and prices through the supply chain is considered useful.”

29. Government of Greece: “creation of the observatory as a crisis management instrument”

30. Ministère de l’Agriculture, France: “Inter professional observatory for prices is an interesting option, and could be broadened with inventory of volumes produced, and/or put on the market and with data on consumption”

The following Member States & Administrations have expressed a negative opinion in developing market monitoring centres or observatories:

4. Ministry of Agriculture Belgium (Vlaanderen), “Opposed to Observatory: is of no use as prices are more and more negotiated directly with retailers and not on a ‘public market’.”

C) Other reactions from Stakeholders concerning the F&V CMO reform - SEC(2007) 74 of 24.01.2007 - (total of 84 reactions)

The following stakeholders organisations have expressed a positive opinion in developing market monitoring centres or observatories:

3. COPA-COGECA

6. Confederación de Cooperativas Agrarias de España (CCAE), Spain

6C. Felcoop, Fedagri, Legacoop, Confagri, Coperativas Agràries pain, Italy, Portugal, France
The following stakeholders organisations have expressed a negative opinion in developing market monitoring centres or observatories:

11. Dutch Produce Association (DPA), Netherlands

66. National Farmers Union (NFU), UK
A 3.  
Case studies on Market monitoring centres: CSO and SNM

A 3.1. CSO – Centro Servizi Ortofrutticoli

CSO – Centro Servizi Ortofrutticoli – is a cooperative established in 1998 with the aim of fostering and developing the production and sale of fruit & vegetable products.

It now has 50 members all over Italy, who have a global turnover of 1.3 billion Euro, corresponding to 11% of the value of Italy’s F&V sector.

The cooperative is made up of leading producers’ organisations, private enterprises and national fruit and vegetable Unions.

The organisation is based on the principle of mutuality and is non-profit making. It was created and organised to develop synergies among operators and provide services to promote and develop the marketing of fruit & vegetable products and to raise the competitiveness of the F&V sector.

In greater detail, CSO performs the following tasks:

- gathers and disseminates information to steer production towards products most suitable for the needs of the market and to the tastes and aspirations of consumers;
- develops methods and tools to improve the quality of products, production processes and business quality systems, also promoting relative certification;
- raises the knowledge and transparency of production and of the market, disseminating market information with the aim of raising the competitiveness of member enterprises and the value of fruit and vegetable products;
- fosters and conducts studies for the execution and coordination of actions to promote, divulge and advertise the fruits and vegetables, both fresh and processed, of its members in the domestic market, Community market and overseas markets in general.

In greater detail, activities performed by CSO include the following.
Enhancement division

CSO has extensive and exclusive experience in Italy regarding the development of quality F&V products, organising campaigns in Italy and overseas to encourage and support fruit and vegetable consumption, including the IGP (Protected Geographic Identity), QC (integrated Quality Control) and biological supply segments.

Statistics and Market Observatory division

The Statistics and Market Observatory division gives, in a timely and detailed manner, a picture of the fruit and vegetable world, from analysis of the sector’s production to marketing and consumption-related aspects.

The CSO statistics division focuses on processing data regarding the size of production plants, output forecasts before the harvesting of principal F&V products and estimates of final production. The knowledge of global fruit and vegetable quantities, and especially of their distribution over time, is essential for solving short-term problems and for planning and guiding supply based on medium-term plans.

The main aim of the Market Observatory is to supply to F&V operators a set of information tools for the correct and timely monitoring of the market in order to help with the planning and management of marketing activity. Observatory activities relate chiefly to the following topics: knowledge of production trends in competing countries, monitoring of farmgate and wholesale prices, trading flows with overseas and price trends in main export markets, positioning of production at the main sales points of Italian and overseas large-scale retailing, retail buying trends of Italian families.

Legislative Observatory and certification systems

In order to foster dialogue among enterprises, have them adopt a common stance within the context of legislative proposals regarding the sector, and take on a proactive role even before laws or regulations are passed and published, a legislative Observatory has been set up to observe lawmaking regarding the sector, in order to foster more direct contacts with commercial operations, and to monitor topics relating to crop protection products, labelling, quality standards and SPS (sanitary and phytosanitary) barriers.

As part of this activity, since 2001 CSO has acted to remove non-tariff barriers caused by the non–harmonisation of European legislation on MRLs (maximum residue levels), making more regular exporting possible.

At an international level, CSO is heavily committed to the removal of SPS barriers that prevent the exporting of Italian products to some third-country markets.
In addition to compulsory systems, CSO has also taken on a role in the sphere of voluntary certification, such as the EUREPGAP system, for which it is the national referent.

CSO international cooperation

CSO is involved in a number of relevant international cooperation initiatives, and has become an active member of many organisations, enabling it to represent the interests of its members and to roll out and coordinate projects involving a number of foreign countries.

Tab. A.1 Main CSO data gathering activities and relative methodologies/sources

<table>
<thead>
<tr>
<th>Category</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>CULTIVATED LAND</td>
<td>Two-yearly sample survey, CSO land register analysis</td>
</tr>
<tr>
<td>FORECASTS</td>
<td>Sample survey on the counting of fruit trees, application of statistical method associating an average weight per ha to fruit trees, inversely proportional to the load of fruit trees</td>
</tr>
<tr>
<td>FINAL FIGURES</td>
<td>Yearly sample survey based on interviews to owners of sample holdings, analysis of data from contributions of CSO members</td>
</tr>
<tr>
<td>STOCKS</td>
<td>Gathering and processing of data on stocks of CSO members and carryover to universe of data</td>
</tr>
<tr>
<td>CONSUMPTION</td>
<td>Processed data from GFK_Italia database</td>
</tr>
<tr>
<td>FAST INFO MERCATI</td>
<td>Monitoring of FOB overseas prices for CSO members</td>
</tr>
<tr>
<td>(Pears, Kiwis, Peaches and Nectarines)</td>
<td></td>
</tr>
<tr>
<td>IMPORTS-EXPORTS</td>
<td>ISTAT Data</td>
</tr>
<tr>
<td>LARGE-SCALE RETAILING</td>
<td>Accurate data gathering on representative sample of sales points of large-scale retailing Italy and overseas</td>
</tr>
<tr>
<td>FARMGATE PRICES</td>
<td>Processing of Chamber of Commerce data</td>
</tr>
<tr>
<td>WHOLESALE PRICES</td>
<td>NFO markets</td>
</tr>
<tr>
<td>LAND DEVOTED TO</td>
<td>Analysis from land register base of CSO members + sales data of nurseries</td>
</tr>
<tr>
<td>STRAWBERRY GROWING</td>
<td></td>
</tr>
</tbody>
</table>

The Observatory primarily seeks to provide operators in the fruit & vegetable sector with a set of information tools for the correct and timely monitoring of the market and support for the planning and management of marketing activity. The Observatory’s activity focuses on fresh fruit & vegetable produce. The interest of operators lies basically in the following areas:

- knowledge of domestic production trends and trends in rival countries;
- monitoring of farm-gate prices;
- trading flows overseas and price trends in main export markets;
• the positioning of production at main sales points of Italian and foreign large-scale retailers;
• fresh produce consumption trends on the part of Italian households (in terms of quantities purchased, value, preferred distribution channels).

The intended users of services provided by the Observatory are operators in the fruit & vegetable sector (at all levels, from the farm producer to the retailer). The intended aim, in relation to the productive, social and environmental system, is basically to improve the efficiency of the market. This has undoubted consequences for both producers and consumers, in terms of narrowing the gap between prices at the two levels, bringing the product closer into line with the needs and demand of the end consumer.

All monitoring services are subject to continuous quality control and to regular assessment, through direct contacts with users.

**Observatory services**

*Observatory of Italian large-scale retailing*

The service entails the monitoring of some sales points representing the national large-scale retailing system. In practical terms a weekly survey is conducted at four/five outlets belonging to the main retail chains, in the cities of Milan, Rome and Bologna. The poll, conducted by expert personnel, entails the gathering of the following information for all fruits and for the most important vegetables (tomatoes, chicory, carrots, asparagus, salad, courgettes, potatoes and peppers) being sold at the sales point:

- kinds and varieties;
- origin;
- size;
- packing;
- presence of trademark or brand name;
- packer;
- retail price;
- possible promotional actions performed by producer or distributor.

*Observatory of Italian large-scale retailing – range IV products*

The proposed service has the same methodology as that of the conventional product, with the monitoring of some sales points representing the national large-scale retailing system, with weekly surveys at four/five outlets belonging to different chains, in the cities of Milan, Rome and Bologna. The poll, conducted by expert personnel, entails the gathering of the following information for all fruit and vegetable “range IV” products in the surveyed stores:

- kinds and varieties;
- origin;
• size;
• packing;
• presence of trademark or brand name;
• packer;
• retail price;
• possible promotional actions performed by producer or distributor.

Observatory of overseas large-scale retailing

In a similar way to the service for Italian large-scale retailing, the proposed service entails the monitoring of some sales points representing overseas large-scale retailing. In practical terms, weekly surveys are conducted on four/five outlets belonging to different chains, in the following cities:

• Germany: Berlin and Munich;
• United Kingdom: London

The poll, conducted by expert personnel, again entails the gathering of the following information for the main fresh fruits and the main vegetables (tomatoes, aubergines and peppers) present in the surveyed stores:

• kinds and varieties;
• origin;
• size;
• packing;
• presence of trademark or brand name;
• packer;
• retail price;
• possible promotional actions performed by producer or distributor.

Products are surveyed on the basis of a calendar provided in advance to surveyors by CSO, which takes into account the seasonal nature of fruits and vegetables.

Observatory of Italian and overseas large-scale retailing – Biological produce

The service entails a weekly survey in the city of Milan, with reference to Italian large-scale retailing, and in the same outlets of the same cities monitored for the conventional product for overseas large-scale retailing. The characteristics monitored are:

• kinds and varieties;
• origin;
• size;
• packing;
• packing date;
• presence of trademark or brand name;
• packer;
- retail price;
- possible promotional actions performed by producer or distributor.
- quality of the product offered (according to previously fixed parameters).

Observatory of the harvesting of perishable products – FAST INFO
STRAWBERRIES

CSO has created and organised a network of informers, identifying for each area of interest one or more technically qualified experts having as exact and up-to-date knowledge as possible and ‘in real time’ of harvesting trends and of factors that can have a bearing on trends. The service entails surveys in the following areas:

- Huelva (Spain)
- Piana di Metaponto (Basilicata)
- Campania (Piana del Sele and Naples Caserta zone)
- Emilia-Romagna (Cesena)
- Veneto (Verona)

Observatory of the harvesting of perishable products – FAST INFO
PEACHES E NECTARINES

CSO has created and organised a network of informers, identifying for each area of interest one or more technically qualified experts having as exact and up-to-date knowledge as possible and ‘in real time’ of harvesting trends and of factors that can have a bearing on trends. To this end, CSO drafts a survey compilation sheet covering, for each production zone:

- climate trends (minimum and maximum temperatures, meteorological situation in the reference week and forecasts for the next three days);
- phytosanitary and vegetative state of agricultural facilities;
- harvesting trends of the most representative cultivars of the reference zone. In particular, bearing in mind that, irrespective of the large number of grown varieties of peaches and nectarines, the most representative varieties in the various production areas are rather few in number, the CSO drafts a list, by area, of varieties to be treated based on their diffusion in the area and on their commercial relevance. When drafting the list of varieties, relevance is also given to so-called “emerging varieties”.

The service entails surveys in the following areas:

- Spain (Valencia, Murcia and Catalonia);
- France (main areas of the south of the country);
- Greece (Macedonia);
- Italy (Piana di Sibari, Piana di Metaponto, Naples-Caserta area, Abruzzo, Emilia-Romagna, Piedmont, Veneto).
Observatory of the harvesting of ASPARAGUS – FAST INFO ASPARAGUS

Thanks to collaboration between CSO and some product experts, weekly surveys are conducted on asparagus harvests, pertaining in particular to:

- the harvest start date (distinguishing between greenhouse produce and field produce),
- progression of harvest,
- climate trends,
- commercial trends.

Areas surveyed in Italy are chiefly the production areas of:

- Emilia Romagna;
- Veneto;
- Campania;
- Puglia.

Also in France, Spain and Germany, the same information is made available on a weekly basis referring to harvest and market trends. With reference to Spain, data on exports by type of product (green, white and purple) and destination country are also updated on a weekly basis.

Observatory of the PEACHES AND NECTARINES market

The service entails the following activities:

- on a weekly basis the actual harvesting calendar is calculated in order to progressively evaluate weekly production supplies and predict values for the following two weeks. This is possible by having available the progress of the harvest for the main varieties in Italy’s most important production areas and an estimate of production for the reference year. This tool is indispensable when deciding on the most suitable commercial strategies, based on available supplies.
- Based on indications supplied by chosen collaborators, a grid of ex-warehouse prices actually applied is compiled on a weekly basis, with brief indications on possible future prices on the basis of the amount of predicted supplies.
- Domestic and foreign market trends for the products of national origin must take into account the production and trading situation of Italy’s biggest “rivals”, Spain and France. For these countries, thanks to collaboration with local representatives of peach growers, the report gives weekly supply and market trends.
Services for IGP products

The service, carried out separately for pears and for peaches and nectarines, entails the surveying, on a weekly basis, throughout the marketing campaign, of sales of IGP products, separately by variety and packing type. At the end of the campaign sales data by destination channel, wholesale market or large-scale retailing are also collected for each kind, with special reference to the main brands. In addition to the quantitative survey of sales, commercial trends are observed throughout the campaign period, regarding the product’s ex warehouse prices vis-à-vis conventional product prices.

Observatory of farm-gate prices

In Italy a number of Chambers of Commerce collect and arrange these prices through consolidated and officially approved procedures. CSO carries out this data gathering and selection activity, on a weekly basis, ordering collected information in a rapid and easy-to-consult combined list. Information relates to prices for the main fruit & vegetable products (production phase) published by the following Chambers of Commerce: Bologna, Forlì-Cesena, Verona, on the basis of the following indicative calendar:

- apples: from 1 August to 1 November,
- pears: from 10 July to end of September;
- kiwis: beginning of October to first decade of November;
- cherries: from end of May to 20 July;
- apricots: from end of May to 20 July;
- peaches: from 10 June to end of September;
- nectarines: from 20 June to end of September;
- percoche peaches: from 20 July to end of September;
- strawberries: from 10 April to 10 June;
- melons: beginning of June to 10 September;
- water melons: from 10 June to end of September;
- plums: from 20 June to 10 November;
- kaki (persimmon): from beginning of October to end of November;
- potatoes: beginning of June to end of October;
• onions: from end of May to end of September;
• asparagus: from end of April to end of June;
• garlic: beginning of June to 20 October;
• cauliflower: from 20 April to end of June and from 20 September to 20 January;
• cabbage: all year;
• cucumbers: from 10 April to end of November;
• French beans: from 20 May to 10 December;
• fennel: from 20 May to 10 August and from 20 September to 20 January;
• chicory: all year;
• aubergines: from 20 May to 20 October;
• tomatoes: from 20 May to 10 October;
• courgettes: from 20 April to end of November.

For each reference product the variation vis-à-vis the previous week and the same week of the previous year is reported.

*Observatory of flows and prices of Pears and Kiwi destined for export*

CSO conducts a weekly survey, through interviews with some of the main trading operators, gathering information on sales volumes, main outlet countries and market trends with reference to prices of the main reference products destined for export. Brief indications are also given on very short-term market prospects.

*Observatory of retail purchasing of fruit & vegetables – Monthly report*

On the basis of sample surveys conducted by a specialist research institute, IHA Italia s.p.a., on a panel of households representing the universe of Italian buyers of fruit and vegetables, the following values are measured on a monthly basis, with reference to almost all fruit and vegetables, and for the aggregates “fruit”, “vegetables” and “fruit & vegetables:

• volume of purchases effected;
• value of purchases effected;
• average price paid by buyers;
• comparison of parameters described with those of previous years.
Annual report on consumer buying of fruit and vegetables in Italy

This analysis is usually conducted at the end of the year, and in some cases at the end of the marketing campaign for the national product. For the “fruit & vegetable” category the values reviewed are:

- purchased amounts (yearly data);
- value trends (yearly data);
- average buying price trends (yearly data);
- buying calendar trends (quarterly data);
- average monthly prices;
- penetration index;
- average buying trends by buying household;
- spending trends by buying household;
- distribution of retail buying by commercial channel, in terms of quantities and values;
- average prices by commercial channel;
- distribution of buying by geographic area (North East, North West, Centre and South), in terms of quantities and values;
- distribution of buying by area and channel.

For the most important fruit and vegetable products, including biological and “range IV” products, the values reviewed are:

- purchased amounts (yearly data);
- value trends (yearly data);
- average buying price trends (yearly data);
- buying calendar trends (quarterly data);
- average monthly prices;
- penetration index;
- distribution of retail buying by commercial channel, in terms of quantities and values;
- average prices by commercial channel;
- distribution of buying by geographic area (North East, North West, Centre and South), in terms of quantities and values.

Monitoring of exports

The aim of this activity is to constantly study the trends of Italian fruit and vegetable exports by destination. The focus is obviously on products destined for fresh consumption, the "core business" of CSO members, in particular kiwis, pears, apples, strawberries, peaches and nectarines. There is thus the monthly gathering of data supplied by ISTAT, extrapolating products and destinations of interest, to be entered in an ad hoc database, usable for specific analyses on single products.
Monitoring of exports/imports to and from overseas countries

Special importance has been attached in recent years to the marketing of fruit and vegetable products to and from overseas. There are indeed areas that have characteristics differing from more traditional outlets, but of interest as a destination of products having a different service content and unit value. The observatory entails the:

- Monitoring of kiwi exports to overseas countries
- Monitoring of apple imports from overseas countries - Argentina

Quantitative and qualitative survey of fruit & vegetable consumption “outside the home”

In collaboration with external Research Institutes, CSO intends to start examining a significant sample of consumers to evaluate the extent of fruit & vegetable consumption outside the home with reference to domestic consumption. The survey will also seek to provide indications on single fruits and vegetables consumed, in terms of quantities and values, and on consumption modes. Over a three-year period the trends of fruit & vegetable consumption outside the home will be gauged, together with any actions designed to increase such consumption.

Additional statistical services, current and likely, for the planning of the fruit & vegetable sector

- Assembling of fruit registers of CSO members
- Updating of fruit investments by variety and age classes and projections of medium-term trends
- Initial annual forecasts of peach, nectarine, percoche peach and apricot production at a European level: Europêch
- Yearly forecasts and harvesting calendar for peach, nectarine, percoche production at regional and national level
- Yearly forecasts for pear and apple production at national and European levels
- Yearly forecasts, prior to harvesting, of kiwi production at regional, national and European levels
- Quantitative-qualitative estimate of harvests
- Statistics on stocks in Emilia-Romagna, in Italy and in Europe for apples and pears
- Statistics on kiwi stocks in Italy and Europe
- Monitoring of strawberry growing

A 3.2. SNM - Service des Nouvelles des Marchés

SNM was created in the early 1950s by the Ministry for Agriculture and Fisheries as a national-level technical service. It is currently working under the General Directorate for Economic, European and International Policies, and has a staff of
about 110 units, located all over the country in a network made up of 20 Regional and local “SNM Information Centres”. The Paris headquarters coordinate the service and process data in a centralised system, with a staff of about 15 officials and executives. In 2007 the Ministry commenced work on the structural reform of the SNM, as a result of which human resources will be transferred to the Ministry’s Regional Departments.

The priority aim of the SNM is to ensure the transparency of agricultural and food product markets, inform about prices and analyse economic trends. Every day, at every stage of the supply chain, gathered information is transmitted, analysed and commented upon, and disseminated in real time through SNM information centres based on: the Internet, messaging systems, fax, minitel, audiotel.

Product prices are disseminated by the SNM and recorded at all production, marketing and distribution stages. The organisation operates mainly in the sphere of fresh products, namely fruit, vegetables, meat and fish products.

In greater detail, the SNM collects information on farmgate prices and wholesale and retail market prices and elaborates and publishes:

- daily prices
- “price indexes”, which are not published in real time,

- a synthesis of market and production trends, on a weekly and yearly basis

SNM publications are available from the site: [www.snm.agriculture.gouv.fr](http://www.snm.agriculture.gouv.fr) and from [www.agreste.agriculture.gouv.fr](http://www.agreste.agriculture.gouv.fr)

**Publishing of daily prices**

With regard to the F&V sector, SNM regularly surveys and publishes daily prices and relative quantities of the following 173 products:
The prices for each product are published with a breakdown: a) by the main markets in which they are listed, b) within each market, prices referring to the main commercially relevant or characteristic features (e.g. origin, variety, size, category, etc).
Below is an example of a classification used for tomatoes and for two different markets (Chateaurenard, handling mainly produce from south-east France; St-Charles, handling mainly imports):

Tab. A.3 Example of publication of daily tomato prices, for two markets

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Chateaurenard 22/04/08 (Production) unit: kg* qty: ton*</th>
<th>St-Charles 22/04/08 (Import) unit: kg*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMATO round South-east 57-67mm</td>
<td>1.20 +0.0 1.15 1.30 15</td>
<td></td>
</tr>
<tr>
<td>TOMATO round South-east 67-82mm</td>
<td>1.28 +0.0 1.15 1.35 15</td>
<td></td>
</tr>
<tr>
<td>TOMATO round South-east grape</td>
<td>1.43 +0.0 1.40 1.50 40</td>
<td></td>
</tr>
<tr>
<td>TOMATO round beefheart South-east plateau</td>
<td>2.70 = 2.50 2.80 5</td>
<td></td>
</tr>
<tr>
<td>TOMATO cherry Spain cat.I tray 250g</td>
<td>2.20 -0.10 2.00 2.40</td>
<td></td>
</tr>
<tr>
<td>TOMATO cherry Morocco cat.I tray 250g</td>
<td>1.80 = 1.60 2.00</td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain cat.I 57-67mm pack 6kg</td>
<td>0.75 = 0.70 0.80</td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain cat.I 67-82mm pack 6kg</td>
<td>0.80 = 0.75 0.85</td>
<td></td>
</tr>
<tr>
<td>TOMATO round Spain grape cat.I pack 6kg</td>
<td>0.75 = 0.70 0.80</td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco cat.I 57-67mm pack 6kg</td>
<td>0.63 = 0.60 0.65</td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco cat.I 67-82mm pack 6kg</td>
<td>0.65 +0.0 0.60 0.70</td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco brand cat.I 57-67mm pack 6kg</td>
<td>0.70 +0.0 0.65 0.75</td>
<td></td>
</tr>
<tr>
<td>TOMATO round Morocco brand cat.I 67-82mm pack 6kg</td>
<td>0.73 = 0.70 0.75</td>
<td></td>
</tr>
</tbody>
</table>

(*) unit used unless otherwise stated
Source: SNM

Surveys are conducted directly in reference markets by qualified SNM personnel. In Bretagne the auction system makes data collection easier. According to SNM officials, in relation to the current situation, where about 80% of produce is sold through large-scale retailing, too many surveys are conducted in markets that have become marginal and for specific varieties and sub-varieties.

Price index

This is undoubtedly SNM’s most important service.

The main aim is to create global price indexes, for each of the products observed, in order to be able to define possible trading crisis situations. Prices observed refer to the “Farmgate price”, and the quantities that are observed for each product correspond to at least 50% of national output, and surveys are conducted in regions that contribute at least 10% to national production.

Specific “publication thresholds” and “abnormally low price thresholds” are established for the different products that represent the level of percentage deviation of the current price compared with its average over the past 5 years.
Only in the event of a price level below the pre-established “publication threshold” is its deviation from the five-year average published by the SNM. This dissemination restriction was agreed upon by the main actors of the F&V chain in order to avoid the possible dissemination of the “Reference Price” which could have a negative bearing on the unrestricted operating of the market. In the publication example below, referring to the main products surveyed on 10 March, these thresholds were fixed as follows:

**Tab. A.4 Typical publication threshold, vis-à-vis five-year price average**

<table>
<thead>
<tr>
<th>Products</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>nectarines, peaches</td>
<td>-8%</td>
</tr>
<tr>
<td>melons, pears, apples, grapes</td>
<td>-10%</td>
</tr>
<tr>
<td>cherries, strawberries</td>
<td>-15%</td>
</tr>
<tr>
<td>other products</td>
<td>-15%</td>
</tr>
</tbody>
</table>

*Source: SNM*

In the event of a price level below the pre-established “abnormally low price level”, its deviation from the five-year average is published by SNM and defined as a “state of short-term crisis”; in the daily bulletin the SNM official responsible for gathering data on that product comments on the possible causes of the crisis. In the event of a crisis the Ministry arranges a meeting among representatives of producers and traders in order to find a solution to the large fall in farmgate prices. Alternatively, and if it is deemed necessary to organise a coercive response to the crisis, the Agriculture Minister may order the application of a maximum coefficient for the *retail price*. In the example below, referring to the main products traded on 10 March, these thresholds were fixed as follows:

**Tab. A.5 Example of abnormally low price threshold vis-à-vis the five-year price average**

<table>
<thead>
<tr>
<th>Products</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>nectarines, peaches</td>
<td>-10%</td>
</tr>
<tr>
<td>melons, pears, apples, grapes</td>
<td>-15%</td>
</tr>
<tr>
<td>cherries, strawberries</td>
<td>-20%</td>
</tr>
<tr>
<td>other products</td>
<td>-25%</td>
</tr>
</tbody>
</table>

*Source: SNM*

**Error! Reference source not found.** below reproduces an example of the daily publication of Price indexes as it appears on the SNM website.
**MARKET INDICATORS fruits & vegetables**

**based on prices of 10 March 2008**

stored products leaving dispatch station in Euro/kg (unless otherwise stated)

*Publication compliant with decrees of 24 May 2005 and 2 May 2006 (rural code: article L. 611-4)*

Thresholds appearing in the decree in relation to the average defined in article 2:

<table>
<thead>
<tr>
<th>NAME OF PRODUCT</th>
<th>DEVIATION OF INDICATOR vis-à-vis reference weekly average established for 5 years (% deviation)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>nectarine, peach</td>
<td>-8%</td>
<td></td>
</tr>
<tr>
<td>melon, pear, apple, grape</td>
<td>-10%</td>
<td></td>
</tr>
<tr>
<td>cerise, strawberry</td>
<td>-15%</td>
<td></td>
</tr>
<tr>
<td>other products</td>
<td>-15%</td>
<td></td>
</tr>
<tr>
<td>CARROT (5 days)</td>
<td>-19%</td>
<td>SHORT-TERM CRISIS (12)</td>
</tr>
<tr>
<td>CAULIFLOWER (5 days)</td>
<td>-33%</td>
<td>SHORT-TERM CRISIS (10)</td>
</tr>
<tr>
<td>CUCUMBER (5 days)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENDIVE (2 days)</td>
<td>-19%</td>
<td>SHORT-TERM CRISIS (12)</td>
</tr>
<tr>
<td>KIWI (5 days)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter LETTUCE (2 days)</td>
<td>-29%</td>
<td>SHORT-TERM CRISIS (2)</td>
</tr>
<tr>
<td>ONION (5 days)</td>
<td>-35%</td>
<td>SHORT-TERM CRISIS (7)</td>
</tr>
<tr>
<td>Autumn PEAR (5 days)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEEK (5 days)</td>
<td>-21%</td>
<td>SHORT-TERM CRISIS (7)</td>
</tr>
<tr>
<td>APPLE (5 days)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO (5 days)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: SNM web site*

Finally, it should be noted that for the collection and creation of these Price indexes, SNM uses highly qualified officials, for each specific product, having extensive and recognised knowledge of the respective markets. These SNM experts collect every day the information needed via direct contacts with leading producers,
collection centres and purchasing centres. For the most common products (e.g. apples) this activity is split among three SNM officials, while for less common products there is only one official covering the whole French territory. These SNM officers build up a trusting relationship with data providers (stakeholders in F&V sector), giving them valuable information on general market trends or specific phenomena, and receiving in exchange reliable and up-to-date information on quantities, prices and destinations of different products.

Another function of SNM experts, as part of activities designed to prevent market crises, is that of participating as observers in weekly conference calls organised by Interfel, for every main product, during the course of which the representatives of Producers’ organisations, large-scale retailers and wholesalers attempt to identify and agree upon solutions to prevent possible crises.

As described below, the role of these SNM experts is consequently to monitor various market-related aspects every day.

Summary of market and production trends, on a weekly and yearly basis

As well as gathering information every day, SNM “experts” contribute, with comments and tables, to illustrating and facilitating interpretations of market trends. The following are published for the main products: (i) short weekly datasheets, (ii) Annual harvest reports for single products, (iii) Annual brochures for the F&V sector.

1. On a weekly basis (coming out 1 week later) datasheets are published summarising data referring to:

- “TRENDS“ : Short notes with comments on global market trends and events, referring to that week
- “PRODUCTION” : weekly summary, broken down by main variety/size/category and for main markets, of data on Quantities, Farmgate prices (Minimum – Maximum – Weighted average), Average price variation compared with previous week
- “DISPATCH” – “CONSUMPTION” - “IMPORTS” : detailed weekly summary, by main variety/size/category and for main markets, of wholesale prices – retail prices – imported products (Minimum – Maximum – Weighted average), Average price variation compared with previous week
- “IMPORT DISTRIBUTION”: weekly and daily summary, by main variety/size/category and for main non-EU origin countries, of amounts of products imported

These weekly datasheets are published for the following main F&V products:
Tab. A.6 List of products for which weekly datasheets are published

<table>
<thead>
<tr>
<th>Cherries</th>
<th>Nectarines</th>
<th>Garlics</th>
<th>Cucumbers</th>
<th>Leeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strawberries</td>
<td>Small red fruits</td>
<td>Artichokes</td>
<td>Courgettes</td>
<td>Preserved potatoes</td>
</tr>
<tr>
<td>Peaches</td>
<td></td>
<td>Early carrots</td>
<td>Endive</td>
<td>New potatoes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cauliflowers</td>
<td>Melons</td>
<td>Tomatoes</td>
</tr>
</tbody>
</table>

*Source: SNM*

It should also be noted that production estimates calculated by Agreste, the statistics and agro-economic analysis of the French Ministry for Agriculture are updated on a weekly basis. These estimates include prices generated by SNM, and are disseminated via monthly or twice-monthly publications.

2. “Annual marketing year reports” are published for single products, broken down into four main sections:

- **“Significant events”** – General comment on distinctive features and production and market trends for that year, with graphs comparing farmgate prices vis-à-vis previous marketing years.

- **“Marketing year trend – Retail price”** – Specific comment on distinctive features and production and market trends for each month of that year, with graphs comparing retail prices with (i) the two previous marketing years, (ii) farmgate prices for the same marketing year.

- **“From one marketing year to the next, retail”** – Tables giving three-year data on: Production (for French producing Regions and Top 5 EU producers), Farmgate prices week by week, Product flows to and from France (quantities of imports and exports).


These annual reports are published for the main F&V products, and in particular for the 40 products listed in Error! Reference source not found. below.
Tab. A.7 List of products for which annual marketing year reports are published

<table>
<thead>
<tr>
<th>Fruit/Vegetable</th>
<th>Fruit/Vegetable</th>
<th>Fruit/Vegetable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apricot</td>
<td>Autumn pear</td>
<td>Garlic</td>
</tr>
<tr>
<td>Banana</td>
<td>Summer pear</td>
<td>Artichoke</td>
</tr>
<tr>
<td>Clingstone peach</td>
<td>Apple</td>
<td>Asparagus</td>
</tr>
<tr>
<td>Clementine</td>
<td>Braeburn apple</td>
<td>Preserved carrot</td>
</tr>
<tr>
<td>Corsican clementine</td>
<td>Fuji apple</td>
<td>Early carrot</td>
</tr>
<tr>
<td>Strawberry</td>
<td>Gala apple</td>
<td>Winter cauliflower</td>
</tr>
<tr>
<td>Kiwi</td>
<td>Golden apple</td>
<td>Summer cauliflower</td>
</tr>
<tr>
<td>Small red fruits</td>
<td>Granny apple</td>
<td>Autumn cauliflower</td>
</tr>
<tr>
<td>Walnut</td>
<td>Prune</td>
<td>Cucumber</td>
</tr>
<tr>
<td>Peach-nectarine</td>
<td>Grape</td>
<td>Courgette</td>
</tr>
</tbody>
</table>

Source: SNM

3. “Annual brochures on the F&V sector” are also published, giving detailed information on the 26 main products listed in the following table:

Tab. A.8 List of products covered in annual Brochures for F&V sector

<table>
<thead>
<tr>
<th>Fruit/Vegetable</th>
<th>Fruit/Vegetable</th>
<th>Fruit/Vegetable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apricot</td>
<td>Peach-Nectarine</td>
<td>Artichoke</td>
</tr>
<tr>
<td>Banana</td>
<td>Pear</td>
<td>Asparagus</td>
</tr>
<tr>
<td>Cherry</td>
<td>Golden apple</td>
<td>Carrot</td>
</tr>
<tr>
<td>Strawberry</td>
<td>Other apples</td>
<td>Cauliflower</td>
</tr>
<tr>
<td>Kiwi</td>
<td>Prune</td>
<td>Cucumber</td>
</tr>
<tr>
<td>Melon</td>
<td>Grape</td>
<td>Courgette</td>
</tr>
<tr>
<td>Walnut</td>
<td></td>
<td>Endive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Onion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Salads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leek</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New potato</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Preserved potato</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tomato</td>
</tr>
</tbody>
</table>

Source: SNM

The most significant production and trade data characterising that marketing year are given for each product, as well as weekly/monthly average prices for the last two marketing years: Farmgate, Dispatch, Wholesale and Retail prices, referring to the main reference markets. A graph comparing Farmgate and Wholesale prices, referring to the last 2 marketing years, gives the trends already commented upon in detail in the previous two sections.
A 4. Examples of navigation paths

1. CULTIVATED LAND

+ PRODUCT (list pursuant to reg. 877/2004)

+ TYPE/VARIETY (list pursuant to reg. 877/2004)

+ COUNTRY

+ REGION/AREA

Output Lev. 1°:

A) Data available from: **XXYY** (info-producer)  
data source: *direct*

B) Data available from: **WWZ** (info-producer)  
data source: *Inst. …xxyy*

C) Data available from: **XWK** (info-producer)  
data source: *direct*

Select data provider  

A B C all

Final Output:

Data provided by: **XXYY**  
data source: *direct*

•  
•  
•  

Data provided by: **WWZ**  
data source: *Institute …xxyy*

•  
•  

There is only one starting point for the navigation path for this category of data, and the same goes for subsequent selection phases.
2. – MONITORING OF MARKETING YEAR

A- SITUATION OF MARKETING YEAR

B- HARVEST FINAL FIGURES

+ PRODUCT (list pursuant to reg. 877/2004)

+ TYPE/VARIETY (list pursuant to reg. 877/2004)

+ COUNTRY

+ REGION/AREA

Output Lev. 1°:

Select data provider: A B C all

Final Output:

Data provided by: WWZ data source: Institute …xxyy

• ….. ……. ……. …… … … …….. …….. ……… …… … ……

For this category of data, the navigation path may start from two different information objectives, while subsequent selection phases are identical.

3. – PRICES

A- FARMGATE

B- WHOLESALE

C- RETAIL

+ PRODUCT (list pursuant to reg. 877/2004)

+ TYPE/VARIETY (list pursuant to reg. 877/2004)

+ MARKET (list pursuant to reg. 877/2004)

+ SEARCH BY WEEK (dd/mm/yyyy – dd/mm/yyyy)

Output Lev. 1°:

Select data provider: A B C all

Final Output:

Data provided by: WWZ data source: Institute …xxyy

• ….. ……. ……. …… … … …….. …….. ……… …… … ……

For this category of data, the navigation path may start from three different information objectives, while subsequent selection phases are identical.
4. – LARGE-SCALE RETAILING

+ PRODUCT (list pursuant to reg. 877/2004)

+ TYPE/VARIETY (list pursuant to reg. 877/2004)

+ COUNTRY

+ CITY

+ PRICES / VOLUMES

Output Lev. 1°:

Select data provider: A B C all

Final Output:

Data provided by: WWZ data source: Institute …xxxy

There is only one starting point for the navigation path for this category of data, and the same goes for subsequent selection phases.

5. – IMPORTS (from non-EU countries)

A- VOLUMES

B- PRICES

+ PRODUCT (list pursuant to reg. 877/2004)

+ TYPE/VARIETY (list pursuant to reg. 877/2004)

+ PROVENANCE

Output Lev. 1°:

Select data provider: A B C all

Final Output:

Data provided by: WWZ data source: Institute …xxxy

For this category of data, the navigation path may start from two different information objectives, while subsequent selection phases are identical.
6. – EXPORTS (to non-EU countries)

A- VOLUMES

B- PRICES

+ PRODUCT (list pursuant to reg. 877/2004)

+ TYPE/VARIETY (list pursuant to reg. 877/2004)

+ DESTINATION

**Output Lev. 1°:**

<table>
<thead>
<tr>
<th>Select data provider:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>all</th>
</tr>
</thead>
</table>

Final Output:

<table>
<thead>
<tr>
<th>Data provided by:</th>
<th>WWZ</th>
<th>data source: Institute ...xxyy</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td></td>
<td>•</td>
</tr>
</tbody>
</table>

For this category of data, the navigation path may start from two different information objectives, while subsequent selection phases are identical.

7. - STOCKS

+ PRODUCT (list pursuant to reg. 877/2004)

+ TYPE/VARIETY (list pursuant to reg. 877/2004)

+ COUNTRY

**Output Lev. 1°:**

<table>
<thead>
<tr>
<th>Select data provider:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>all</th>
</tr>
</thead>
</table>

Final Output:

<table>
<thead>
<tr>
<th>Data provided by:</th>
<th>WWZ</th>
<th>data source: Institute ...xxyy</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td></td>
<td>•</td>
</tr>
</tbody>
</table>

There is only one starting point for the navigation path for this category of data, and the same goes for subsequent selection phases.
8. OUTPUT FORECASTS

+ PRODUCT (list pursuant to reg. 877/2004)
+ TYPE/VARIETY (list pursuant to reg. 877/2004)
+ COUNTRY
+ REGION/AREA

Output Lev. 1°:

Select data provider: A B C all

Final Output:

Data provided by: WWZ data source: Institute …xxxyy

There is only one starting point for the navigation path for this category of data, and the same goes for subsequent selection phases.

9. AGRO-METEOROLOGICAL PHENOMENA

A- SHORT-TERM FORECASTS
B- SEASONAL FORECASTS

+ COUNTRY
+ REGION/AREA

Output Lev. 1°:

Select data provider: A B C all

Final Output:

Data provided by: WWZ data source: Institute …xxxyy

For this category of data, the navigation path may start from two different information objectives, while subsequent selection phases are identical.