



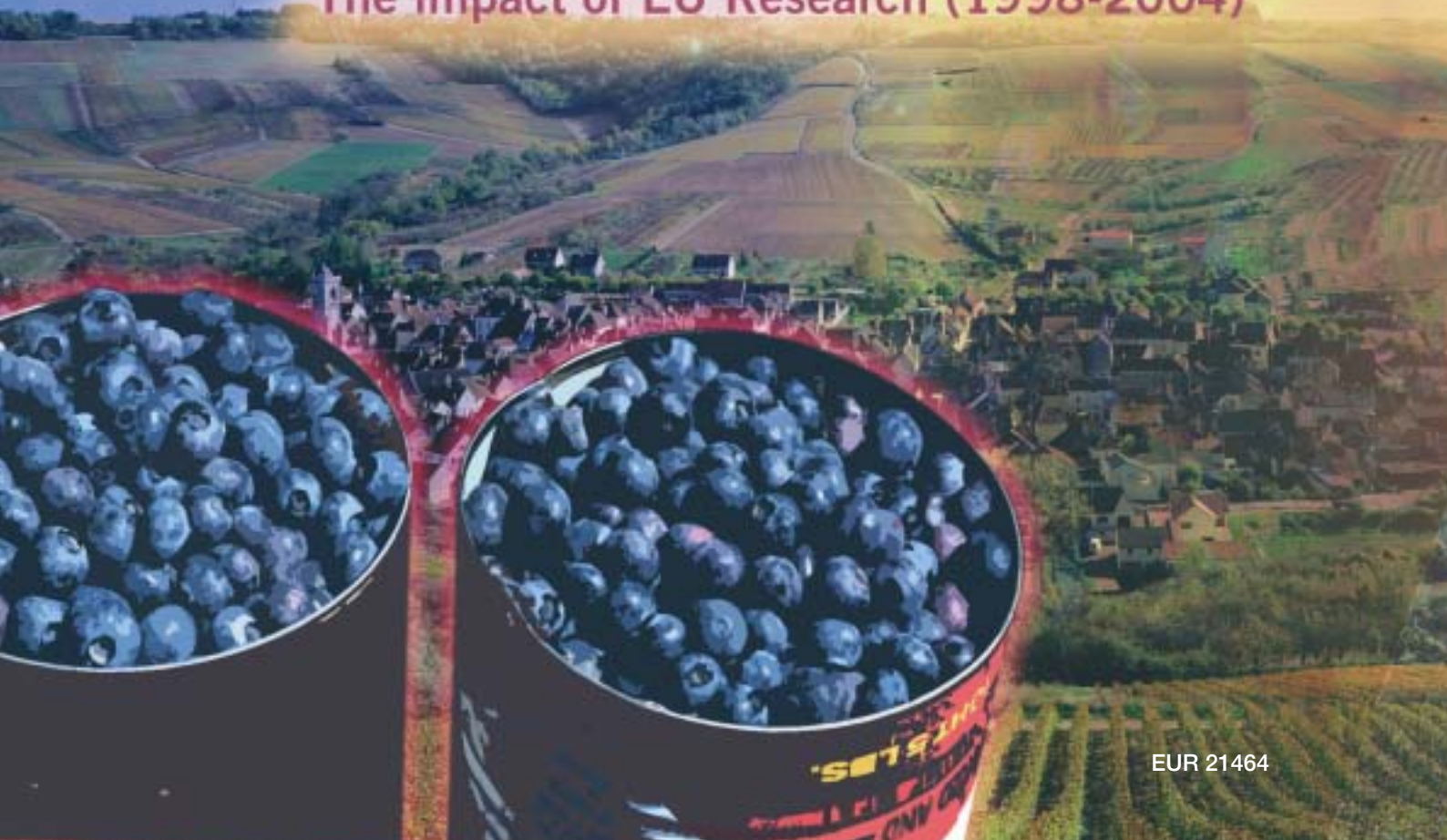
EUROPEAN  
COMMISSION

Community research



# Support to Agricultural Policy

The impact of EU Research (1998-2004)



Interested in European research?

**RTD info** is our quarterly magazine keeping you in touch with main developments (results, programmes, events, etc.). It is available in English, French and German. A free sample copy or free subscription can be obtained from:

European Commission

Directorate-General for Research

Information and Communication Unit

B-1049 Brussels

Fax (32-2) 29-58220

E-mail: [research@cec.eu.int](mailto:research@cec.eu.int)

Internet: [http://europa.eu.int/comm/research/rtdinfo/index\\_en.html](http://europa.eu.int/comm/research/rtdinfo/index_en.html)

***Europe Direct is a service to help you find answers  
to your questions about the European Union***

**Freephone number (\*):**

**00 800 6 7 8 9 10 11**

(\* Certain mobile telephone operators do not allow access to 00 800 numbers or these calls may be billed.

#### LEGAL NOTICE

Neither the European Commission nor any person acting on behalf of the European Commission is responsible for the use which might be made of the information contained in this publication. Any information given does not necessarily reflect the official position of the European Commission. In this regard, it should be noted that the information provided is considered of preliminary nature and users should contact the competent authorities and other public or private organisations for more detailed information or for advice on particular courses of action.

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (<http://europa.eu.int>).

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 2005

ISBN 92-894-9060-8

© European Communities, 2005

Reproduction is authorised provided the source is acknowledged.

*Printed in Belgium*

PRINTED ON WHITE CHLORINE-FREE PAPER



# Support to Agricultural Policy

The impact of EU Research (1998-2004)



# Contents

<b>Foreword</b>	<b>5</b>
<b>Introduction</b>	<b>7</b>
<b>QoL – Fifth Framework Programme – FP5</b>	<b>10</b>
A better quality of life	10
Programme strategy	10
The diversity of key action 5	11
1. Sustainable agriculture and fisheries	
2. Non-food uses of biological materials	
3. Forestry	
4. Support for common policies: common agricultural and fisheries policies	
5. Integrated and sustainable development of rural and other areas	
Objectives and concerns common to all projects	13
<b>Review of QoL and project selection</b>	<b>14</b>
Harvesting the input	14
Star projects	14
<b>Pick of the projects</b>	<b>15</b>
<b>GROUP 1: Sustainable crop management</b>	<b>15</b>
Insect invasion (DIABROTICA)	15
Assessing pesticide risk (EUFRAM)	16



<b>GROUP 2: Feed and sustainable animal production</b>	<b>17</b>
Antibiotic compliance (Feedstuffs-RADIUS)	17
Outdoor pigs are better pigs (SUSPORKQUAL)	18
<b>GROUP 3: Scientific support to CAP</b>	<b>19</b>
Bonds to remove shackles (BONDSCHEME)	19
Insight through models (CAP-STRAT)	20
Modelling animals (ELPEN)	21
<b>GROUP 4: Sustainable rural development and biodiversity</b>	<b>22</b>
Peripheral may be nearby (AsPIRE)	22
High investment in Mediterranean area (MEDMONT)	23
Farming the Alps (IMALP)	24
The market for organic (OMIaRD)	25
Measuring diversity (AEMBAC)	26
Checking the outcome (EASY)	27
<b>Conclusions</b>	<b>29</b>
<b>List of publications</b>	<b>32</b>





## Foreword

As Director of EU Biotechnology, Agriculture and Food Research, it gives me great pleasure to present to you here the findings of the impact of Agricultural Policy support related research as funded by the European Union under the Fifth Framework Programme for Research and Technological Development. This subtopic of Key Action 5 has been an extremely important mechanism in making research more relevant to agricultural policy makers across the EU.

The Commission research policy has been challenged in the past for continual funding of research without full impact analysis of previous results. However, under the Fifth Framework Programme (FP5), which ran from 1998-2002, Key Action 5 - with a total budget of €520 M and covering all aspects of food agriculture, fisheries and forestry - has comprehensively addressed the research impact question through a series of external impact reviews covering the different sectors of the key action. This publication is actually the seventh in the series and the Commission invited eight independent experts to carry out an extensive review of the impact of 72 of the most relevant policy support projects of the 400-plus projects funded in KA5. The review concluded that in most cases the projects carried out important multidisciplinary and complementary research which has provided very useful data and models for the purposes of policy development under the common Agricultural Policy. Thirteen of the 72 projects are presented in this publication as good case study examples of successful EU policy support projects which are available for the general public but also to policy makers and the scientific community.



There is no doubt that these review exercises have been a great success and have helped us to concentrate and focus on future research needs and recommendations for improving EU funded research from both the technical and administrative side. Indeed strategies for the Seventh Framework Programme are currently being developed and debated across the European Union, and this publication can be viewed as an important input to the process of drafting suitable future research topics for coverage under the annual work programme. In addition, the results in themselves have created a significant base for the further development of policy support research in Europe with important implications for the consumer and farmer alike.

Christian Patermann  
*Director of Biotechnology,  
Agriculture and Food Research*



## Introduction



The European Commission's Fifth Framework Programme for research (FP5) ran from 1998 to 2002<sup>1</sup>. The 'Quality of Life and Management of Living Resources' was one of the four thematic programmes within FP5. It was based around six key actions aimed at enhancing the quality of life of European citizens and improving the competitiveness of European industry. All EU policies may require research and potentially draw on research conducted under the Quality of Life Programme (QoL). The needs for research are more clearly defined with respect to the Common Agricultural Policy (CAP). Since its creation in the Rome Treaty, the CAP has had to adapt constantly to changes and to

establish new objectives. Along with increase in agricultural production and fair standard of living of the agricultural community, societal context was one of the drivers of the new trends in agricultural policy development. Multifunctionality has become increasingly important, as agriculture has played the role of providing services to the public. In addition, the situation in remote areas has enhanced the policy concerns regarding social and economic issues. Therefore, CAP requires research to assist with the policy development and implementation processes. However, it is not easy to see if research has contributed, as expected, to changes such as providing tools to support the implementation of the evolving CAP and its adaptation to the limited availability of natural resources, the evolving societal needs and demands, the evolving world trade situation and globalisation of markets and the EU enlargement.

No fewer than 340 research projects have been funded by the EU using around €520 million over four years under the 'Sustainable Agriculture, Fisheries and Forestry' Key Action. Among them, nearly 150 were directly related to the areas of sustainable agriculture, Common Agricultural Policy support and rural development. The efforts of more than a thousand researchers involved could provide valuable input for the CAP reform and for current and future environmental, agricultural and rural development strategies. Important lessons are being learnt for future research, applied in FP6, and also for planning recommendations and guidelines for FP7.

Most of these projects have already finished or are in their final stages. Taking stock of achievements so far, the Biotechnology, Agriculture and Food Research Directorate of the European Commission's Directorate-General for Research recently **singled out 13 projects** relevant for their important impact in the area of agricultural policy.

<sup>1</sup>) Decision N° 182/1999 adopting the Fifth RTD Framework Programme 1998-2002.



## CAP initiation

The Common Agricultural Policy (CAP) was initiated in the context of insufficient food production in Western Europe. Consequently, its objectives were to provide a fair standard of living for the agricultural community while ensuring a sufficient supply of food at affordable prices. Measured against the criterion of production levels, the CAP has been almost too successful and it had to control quantitative imbalances.

The CAP became increasingly complex to manage, in part because of the enormous diversity of the EU. Farming methods and traditions, agricultural competitiveness and income levels, and natural resources vary greatly between and even within Member States and regions.

## Time for change

General economic change has thrown up new challenges to the European agricultural system.

New challenges that arose in the late eighties also concerned human health protection, safety, environment, and consumer expectations regarding food quality and safety. Moreover, CAP had to face the challenge of enlargement to ten new members and to prepare its agricultural sector for international negotiations.

As a consequence of these diverse challenges, and the changing context of agriculture, the CAP required major reforms. Some of the issues remain unchanged: for example, maintaining rural and farming incomes, ensuring a satisfactory food supply, and fulfilment of international obligations. To these are added an ever-greater concern for protecting the environment and food safety throughout the entire production chain, and the desire for a more decentralised system with unambiguous rules and rigorous controls.



With the 1992 reform, the CAP embarked on a combination of lower institutional prices and making compensatory payments. Agenda 2000 then aimed at deepening and widening the 1992 reform by replacing price support measures with direct aid payments, and accompanying this process with a consistent rural policy.

As the basis for reform of the CAP, the European Council reaffirmed its desire for multifunctional, sustainable and competitive agriculture throughout Europe, including in those regions facing particular difficulties. The European Parliament and the Committee of the Regions wanted to empower rural areas to enable them to contribute fully to the EU, both economically and territorially.

The multifunctionality of agriculture corresponds to a diversity of requirements and constraints. Agriculture, and thus agricultural policy, is important in maintaining the landscape and the countryside, and is crucial to environmental protection. Obviously, it also makes an essential contribution to the vitality of rural communities. In addition, it should alleviate consumer concerns and fulfil demands regarding food quality and safety, and ensure appropriate animal welfare standards. The idea was to implement a system whereby subsidies should be made to support desirable activities other than agricultural production, and the production function of farms should remain subject to free trade in the market place.

Research can contribute to securing multifunctional, sustainable and competitive agriculture in Europe. The measures included in the CAP and their related activities require improved and innovative evaluation tools, particularly in the areas of production and environment protection.

This brochure presents the results of an independent review of the work carried in Key Action 5, in relation to its specific impact on agricultural policy development and implementation.



## QoL – Fifth Framework Programme – FP5



© Sandrine Petit, Suaci Montagne/GIS Alpes du Nord

### A better quality of life

Economic and political developments in Europe have resulted in greater prosperity, but the availability of natural resources does not correspond precisely to the requirements of human activities. In recent years, our understanding and knowledge of the structure and function of all living things has increased tremendously, leading to diverse possibilities for new developments in, for example, healthcare, pharmaceuticals, agriculture and food.

The Quality of Life and Management of Living Resources research programme (QoL), which covered the period 1998-2002, aimed to unlock the resources of the living world and thereby improve the quality of life. It placed particular emphasis on new technologies, including biotechnology, and addressed the links between discovery, production and end-use. The needs of society and the requirements of the consumer were central and the research funded was directed towards future wealth and job creation, while respecting the principles of sustainable development.

The QoL programme was structured around six specific key actions that were goal-oriented and designed to solve problems: food, nutrition and health (key action 1); control of infectious diseases (key action 2); the cell factory (key action 3); environment and health (key action 4); sustainable agriculture, fisheries and forestry, and integrated development of rural areas including mountain areas (key action 5); and the ageing population and disabilities (key action 6). There were also generic activities intended to exploit RTD projects to develop the knowledge base in identified areas of strategic importance for the future.

### Programme strategy

The strategy of QoL was to focus on areas where improving knowledge is expected to provide solutions to some of the pressing needs of society that could appropriately be addressed on a European scale. In line with the criteria laid down for selecting the major research themes for the Fifth Framework Programme, QoL emphasised the following issues:



- The projects within the programme addressed cross-border challenges or, in other words, subjects of concern to more than one Member State, or to regions in different states. Respecting the principle of subsidiarity, issues of concern to only one Member State were left to national programmes. Thus, the QoL programme concentrated on problems of wider interest, such as exploiting renewable natural resources. In fact, due to their size and complexity, many of the activities addressed in the programme, such as genomic research, neurosciences, infectious diseases, ageing and disabilities, sustainable management and utilisation of forestry resources, fish management and human, animal and plant diseases, are more meaningful and more feasible if addressed at the European level.
- The research funded by the QoL programme had clear social objectives. It had to contribute to health and quality of life, to improving food quality and safety, to protecting and generating a healthy environment, to promoting rural and coastal communities, to improving responses to consumer needs, and to optimising information available to the consumer.
- The third issue was that of economic development. The rapidly growing high-technology industries are currently dominated by small and medium-size enterprises (SMEs). There is still massive potential for economic growth and job creation in these sectors, and the projects financed had to contribute to fulfilling this potential as well as optimising exploitation of traditional industries, particularly agriculture. To ensure that the economic benefits of research can be expressed, findings, results and know-how must be transferred from research to commerce and industry. Consequently, the QoL programme encouraged training, dissemination and exploitation of research results, and stimulated innovation and entrepreneurship.

## The diversity of key action 5

European agriculture has to meet the demand for cheap, plentiful food and non-food products; but agriculture is multifunctional, and issues such as sustainability, animal welfare, the local economy and the wider needs of the environment must also be considered. In this context, EU research seeks

to improve agricultural knowledge to support farmers, meet expectations of consumers, and give sufficient rationale for decision-making to policy-makers, and regulatory bodies.

Agricultural research was one of six key actions in the European Commission's 'Quality of Life and Management of Living Resources' programme: Key Action 5 covered sustainable agriculture, forestry, fisheries and rural development. A guiding principle of Key Action 5 was to support sustainable production through the rational use of the Earth's limited resources; another was to promote innovative new technologies such as biotechnology. The budget for the Key Action was around €520 million for the four-year period 1998-2002. Research proposals and networks (RTD) were invited through specific calls published on a yearly basis and targeting the following specific objectives:

- Enhancing competitiveness of rural economies and recognising the changing demands that society places upon the food chain;
- Ensuring sustainable and long-term production within all sectors for the benefit of future generations;
- Producing high-quality products, particularly relevant in a decade where Europe has experienced significant food scares such as BSE, foot-and-mouth disease, and *Escherichia coli* outbreaks in the food chain.

Within the Key Action, a small part of the budget was allocated to training and SME grants, and support measures through open calls for proposals.

### The projects funded were classified into five areas:

#### 1. Sustainable agriculture and fisheries

In addition to improving systems of production and exploitation of agricultural production – including breeding methods – this area intended to develop new approaches for sustainable agriculture, fisheries and aquaculture, improving the health and welfare of animals and reducing undesirable effects on the environment. The diverse aspects concerned address sustainable production, farm technologies, organic farming, integrated fishery management, fish conservation, diversification of cultivated plant species, genetic improvement of plants, and disease resistance and control in plants and animals.

The following action lines were open for research proposals:

- The diversification of agricultural production; new and improved production and farming systems; new and sustainable systems of production, including breeding methods in agriculture, fisheries and aquaculture;
- Plant health, in particular novel and innate defence mechanisms of plants and biological control of plant diseases;
- Animal health and welfare;
- Quality of agricultural products and farm-processed products;
- Influence of different farm production systems on the food chain;
- How to increase consumer confidence (waste, feed, veterinary products and their impact on public and animal health; impact of EU standards on the external competitiveness of European agriculture);
- The profitability and convenience of genetically modified and of non-genetically modified crops at production level;
- The role of genomics and post genomics in agricultural systems;
- Scientific basis of fisheries management; interactions between environment, fisheries and aquaculture; improvement of aquaculture production; sustainable fisheries and aquaculture.

## 2. Non-food uses of biological materials

Projects in this area considered both energy and the environment, and the production of non-food crops for industrial and energy uses, including assessments of the conditions for the economic profitability of such crops.

## 3. Forestry

Projects here covered Community forestry measures, such as the need to understand the kinds of natural hazards and other factors that put pressure on forest ecosystems. They also included the monitoring of forest conditions and the protection, conservation and restoration of the forest ecosystem.

## 4. Support for common policies: common agricultural and fisheries policies

This area included analysis of the effects of trade agreements, in particular the impact of bilateral, regional and international free trade agreements (involving, for example, the WTO). It also

considered the needs and consequences arising from the inclusion of the new Member States in the CAP. In addition, it covered the trade-related issue of intellectual property rights. Another target subject was pre-legislative research, that is research designed to provide a scientific and informed basis for policy-making and EU legislation. The objectives included studying the international context, particularly with the World Trade Organisation (WTO), monitoring and modelling the Common Agricultural Policy (CAP), monitoring and enforcing the common fisheries policy (CFP), and analysing factors affecting coastal communities. The related tasks dealt with scientific support, world trade disputes, food quality, rural development, fishing data, and market-support mechanisms.

## 5. Integrated and sustainable development of rural and other areas

The last area included research underpinning the multifunctional European model of agriculture, and the identification and development of indicators of sustainable development at local, regional and European scale. Work to analyse the composition, structure and vulnerability of Europe's different rural economies was supported, including assessments of the changing role of agriculture, and the prospects for farm diversification. This area dealt with the analysis of rural situations, changes and trends, producing integrated development concepts for rural and other relevant areas, and assessing rural and coastal development policies. It used modelling systems, trans-European transfer, landscape management, multifunction agriculture and the socio-economic importance of aquaculture and fisheries.





## Objectives and concerns common to all projects

A multidisciplinary, integrated approach is desirable, encouraging the active participation of farmers, end-users, consumers and regulatory bodies, with special attention being given to the dissemination and utilisation of the results. The programme strongly encouraged the formation of networks involving leading scientific and socio-economic stakeholders to enable a truly multidisciplinary and integrated analysis.

The work was aimed at supporting competitiveness, and thereby having beneficial effects on: (i) employment and conditions in rural and other relevant areas; (ii) reduction of the vulnerability of the relevant sectors through diversification; (iii) the response to society's demands for sound environmental practices; and (iv) the sustainable production of renewable resources. The research contributes to supporting the implementation of both the evolving Common Agricultural Policy (CAP) and Common Fisheries Policy (CFP) and their adaptation to the limited availability of natural resources, the evolving societal needs and demands, the evolving world trade situation, and globalisation of markets and EU enlargement. It also supports the implementation of international commitments and Community measures on the protection and sustainable management of forests and other living resources.

To attain these objectives, the research was expected to deliver tools and methods in addition to information. The work involved developing tools and methods for production and other systems of farming, fisheries and forestry, as well as monitoring and assessing policy, rural development, the environment, and economic and social indicators. The output of this research thereby helps identify and describe future trends.

The technical and economic competitiveness of bio-based industries will be improved by integration of diverse scientific disciplines and consideration of both the vulnerability of environment and resources, and the characteristics of markets, processes and production practices. The consequences will include improved economic, social and environmental benefits from the sustainable management and responsible



utilisation of biological resources: sustainable production and clean and efficient process technologies providing new or improved products with high added value and less environmental damage. The aim was to promote high-quality products corresponding to consumer requirements, with detailed data on life cycle, possibilities for recycling, cost analysis, safety, and product performance.





## Review of QoL and project selection

The QoL programme was subdivided into six Key Actions, all of which were intended to enhance the quality of life of European citizens and to contribute to the competitiveness of European industry. Policy, in particular that of the EU, should be underpinned by knowledge and understanding, and research funded by the Union, including the QoL programme, was designed to provide such insight and knowledge, as well as tools to generate better descriptions and analysis of the current situation and the impact of policy decisions. As one of the most important EU policies, the CAP is no exception – indeed, the input from research can make a significant contribution to improving the CAP, and adapting it to the changing political, social and economic context. Since its inception, the requirements of the CAP have evolved from increasing agricultural production and providing a fair standard of living for the agricultural community towards multifunctionality and rural development.

The situation of remote and rural areas has led to concern over social and economic issues as regards agricultural communities. The CAP can therefore benefit enormously from research to assist with the development and implementation of the policy, especially in light of the change of emphasis from stimulating production to decoupling. However, the contribution, or even potential contribution, of EU-funded research may not be immediately apparent, whether it concerns developing and validating tools, supporting the implementation of the evolving CAP and its adaptation to the limited availability of natural resources, assessing the evolving needs and demands of society, or analysing the effects of the evolving world trade situation and globalisation of markets.

### Harvesting the input

As a consequence, the European Commission launched an expert review of projects financed under Key Action 5 of the QoL programme (1998-2002). The review was conducted between 29 June and 2 July 2004 at the Directorate-General of Research. The aim was to assess the potential policy impact of research projects funded in the area of sustainable agriculture (excluding projects concerning non-food production, fisheries or forestry). A panel of ten independent experts was selected and all projects in the pertinent sub-areas

of Key Action 5 were considered. All the experts had international reputations, having participated in similar exercises and relevant conferences, and established competence in research and the relevant policy areas. Their professional backgrounds, qualifications and expertise were appropriate for the task of reviewing the scientific and technological aspects of the projects.

The review lasted four days and included a final discussion to reach a consensual view. Those projects (10 to 12), selected from all categories, with the largest impact on policy were identified. A total of 340 projects were funded during the four-year period: most were shared-cost and demonstration projects along with a small number of concerted actions and thematic networks. From these projects, 190 were in sub-areas relevant to the review: 147 in the sub-area plant and animal systems; 16 on CAP support; and 27 for rural development. The list was further shortened by eliminating those projects in which the scope was too narrow to be expected to have broad policy implications. In fact, many of the projects in the plant and animal systems sector considered only one crop type, or involved research of a very focused nature and, as such, were mostly valuable for a particular field rather than wider policy issues. Consequently, 72 projects were reviewed in detail.

### Star projects

The outcome expected from the review was the identification of some ten to 12 projects which were particularly important, having the greatest impact on policy. At the end of the review, 13 projects were identified as making a large impact on policy. Ten additional projects were found to have a significant impact on policy. This brochure describes the 13 projects with the greatest policy implications.





## Pick of the projects

### Group 1: Sustainable crop management

#### Insect invasion (DIABROTICA) – QLK5-CT-1999-01110

***'Threat to European maize production by invasive quarantine pest, Western Corn Rootworm (Diabrotica virgifera virgifera): a new sustainable crop management approach'***

Western Corn Rootworm (WCR) (*Diabrotica virgifera*) is a new insect pest posing an enormous and immediate threat to maize production in Europe. The potential establishment of the pest in Italy confirms theories that WCR will threaten maize production in other EU Member States in Central Europe in the very near future. The Union's policy on plant protection advocates the minimal use of pesticides. Therefore, other approaches to the management of this insect pest are urgent if the EU is to continue its policy of sustainable, environmentally friendly, crop management practice.

Key strategies for the control of WCR have been established under DIABROTICA. This project has been the framework for the development and incorporation of sustainable, biologically based crop management practices for European maize production. These practices maintain high-yield maize production while requiring less chemical pesticides. Specific objectives have been met to: (i) characterise plant stimuli which trigger the host plant preferences and the egg-laying behaviour of WCR; (ii) test European corn varieties and related non-cultivated species for their potential as food resources; (iii) identify natural enemies of WCR in Europe and improve mating disruption techniques; (iv) improve existing methods for the monitoring of WCR; (v) model the potential economic consequences of invasion of EU countries by WCR; and (vi) analyse the cost and benefits of containment strategies to prevent further spread of WCR.

Ecological, distributional and behavioural studies carried out within the DIABROTICA framework have shown the positive impact of crop rotation on the abundance of WCR in Hungary, and have demonstrated the preference of WCR for certain plant and weed species.

Chemical analyses on the influence plant surfaces have on WCR behaviour have offered a realistic opportunity to enhance the resistance of new maize varieties to cope with this pest within Europe. Also, a mating disruption technique has been established which demonstrates the potential of this unique method to serve as an additional measure for the control of WCR populations. Finally, the identification of European areas with a high density of maize production, in combination with climate data, has made it possible to simulate the spreading of the WCR population. The high-risk areas identified should be regarded as focus areas where the results of the DIABROTICA project should be implemented after WCR invasion.

These findings may have profound implications for the recommendation for integrated crop-managing strategies. The communication of these findings, through technical bulletins, can provide farmers and breeding companies with guidelines for controlling and eradicating new invading populations of WCR.

The results and conclusions of DIABROTICA have a direct effect on EU plant health policy. The project has demonstrated easily implemented systems to help control the disease at farm level, while respecting EU policy on sustainable growth and rural management.

#### **Coordinator:**

Prof. Stefan Vidal  
Institute for Plant Pathology and Plant Protection,  
Section Agricultural Entomology,  
D-37077 Goettingen  
Germany  
svidal@gwdg.de





## Assessing pesticide risk (EUFRAM) – QLK5-CT-2002-01346

### *'Concerted Action to develop a European Framework for probabilistic Risk Assessment of the environmental impact of pesticides'*

The use of pesticides, with their perceived environmental risks, tends to get a negative press and often has little support from the general public. The major concerns are environmental impact, consumer safety, and risks to health. However, current methods for risk assessment are mostly "deterministic" which means that a product has a fixed effect, and findings are not easy to assess, much less make clear in a wider context. Factors such as the toxicity of pesticides are treated as if they were fixed, and precisely known, whereas in the real world these factors are variable. Current risk-assessment methods allow for variability and uncertainty, but often fail to give a complete description of the full range of possible risks. The EUFRAM project builds on the key recommendations of the EUPRA workshop in developing probabilistic methods – that is, considering the probability of an effect occurring – for assessing the environmental risks of pesticides. It also looks to the implementation of standard software and databases that would greatly facilitate the adoption of probabilistic methods by end-users. These tools need to be appropriate for users in all parts of the expanding EU.

EUFRAM has developed a framework of basic principals for probabilistic assessment of pesticide risks in the form of a guidance document. The framework also includes worked examples and case studies of probabilistic risk assessment, showing how the methods are applied to assessing the impact of pesticides on terrestrial and aquatic organisms. These examples are required to: i) test procedures and recommendations developed within the project; and ii) provide benchmark examples for dissemination to the scientific and regulatory community. Criteria have also been established for evaluating the suitability of software and databases for probabilistic assessments.

A public network has been created for researchers, end-users and other stakeholders. The network shares information about research, projects in progress, and planned future activities relating to

the continuing development of probabilistic methods for pesticides. This has helped to determine priorities among outstanding research needs, and encourages initiatives aimed at addressing those needs. The network has also circulated progress reports and outputs from EUFRAM itself. This network is accessible via the project website, including public pages describing EUFRAM.

EUFRAM provides methods for moving towards a harmonised approach in Europe on environmental policy (concerning, for example, soil protection and sustainable pesticide use), quality of life and consumer safety, and to improving the efficiency of the regulatory process for pesticides. It also provides a framework for the pooling of data and the sharing of information, thus reducing the duplication of research effort while promoting collaboration with stakeholders. The EUFRAM framework will be made available for use by risk assessors in government and industry.

#### **Coordinator:**

Prof. Andy Hart  
Central Science Laboratory  
York, UK  
a.hart@csl.gov.uk  
www.eufram.com





## Group 2: Feed and sustainable animal production

### Antibiotic compliance (Feedstuffs-RADIUS) – QLK5-CT-2000-00900

#### *'Rapid Antibiotic Detection for Illegal and Unlicensed Substances in animal feedingstuffs'*

For many years now, antibiotics have been added to feedstuffs as non-therapeutic agents. Their use in poultry, swine and cattle feed at sub-therapeutic levels over an extended period of time was intended primarily to optimise growth and, to a much lesser extent, prevent disease. Non-therapeutic antibiotic use has become a cause for real concern in the last few years. There is a risk that antibiotic residues in edible tissue could lead to the development of resistant strains of bacteria in humans. Consequently, the EU made the sensible precautionary decision to ban the use of a number of antibiotics as growth promoters in animal feed. Five antibiotics were targeted by the ban: avoparcin, spiramycin, tylosin, virginiamycin and zinc bacitracin. The existing Union methods of analysis are, unfortunately, not always well suited for the effective policing of the ban. They are microbiologically based, non-specific and susceptible to interference by other components of feed. Consequently, these methods of analysis lack the specificity required to identify unknown compounds. Therefore, new screening and confirmatory tests were required.

Feedstuffs-RADIUS has the objective to develop robust 'dip-stick' methods for the detection of antibiotics in animal feedstuffs. These methods result in robust, reliable and highly specific assays that are less susceptible to interference than previously used immuno-biological or microbiological tests.

**Within Feedstuffs-RADIUS, a framework for the development of these methods was implemented, integrating five distinct steps:**

- i) the development of immunoassay reagents for each antibiotic;
- ii) the development, validation and inter-laboratory collaborative testing of chemical assays for determination of these antibiotics;
- iii) the development of prototype immunoassay test kits for each antibiotic;
- iv) the comparison of prototype kit performance with chemical assays – the validation step; and



v) the end-user testing of the kits – confirmatory analysis of real samples.

Together with these dip-stick techniques, liquid chromatographic methods coupled to mass spectrometry were developed to enable the unequivocal identification and quantification of each antibiotic. Finally, the results of this development process were disseminated to end-users, partners and stakeholders.

The twin-track approach of microbiological and chemical confirmation methods has led to highly efficient methods for ensuring that Member States can check their compliance with the ban on non-therapeutic antibiotic use in animal feedstuffs. The project has produced an operational, commercially interesting and widely applicable rapid test kit for the detection of the presence of illegal concentrations of five antimicrobial growth promoters in ruminant, pig and poultry feed. It produced a complementary operational and highly precise method for confirmation of the positive results of the rapid test.

**The use of collaborative testing has established these methods as definitive EU methods of analysis. Feedstuffs-RADIUS provides an excellent example of the collaborative work that can have a major impact on the enforcement and effective implementation of Union policy.**

#### **Coordinator:**

Dr Chris Elliott  
The Queen's University of Belfast  
Belfast, UK  
Chris.Elliott@dardni.gov.uk



## Outdoor pigs are better pigs (SUSPORKQUAL)–QLK5-CT-2000- 00162

***‘Sustainability in the production of pork with improved nutritional and eating quality using strategic feeding in outdoor pig production’***

The consumer is becoming increasingly sophisticated and demanding in the choices they make. This is especially important for food purchases. Consumers demand increasingly high standards regarding the diversity, quality and safety of products. Furthermore, the environmental and animal welfare aspects of food production are becoming ever-more important in the choices made by consumers. Outdoor sustainable pig production, which also includes organic production, is an obvious choice in the establishment of alternative production systems as it can provide better animal welfare, less environmental pressure, healthier products and better eating quality.

The aim of SUSPORKQUAL was to establish the general framework for outdoor sustainable pig production systems which can subsequently be introduced in all EU countries and prospective EU



countries. These systems should satisfy the increasing demands of European consumers regarding safety, nutritional quality, eating quality and improved shelf-life. More importantly, they should meet calls for high standards of animal welfare and care for the environment.

SUSPORKQUAL has shown that consumers expect higher quality from free-range, outdoor-reared pigs, but that they also expect consistency. It has been established that consumers are prepared to pay a 12% premium for pork labelled organic or free-range, showing the economic benefits of a well-thought-out and implemented sustainable agriculture policy. However, marketing strategy is very important. Information about the nature of the outdoor systems used and nutritional qualities needs to be included, as prior information has an effect on the acceptability and willingness to buy premium pork products.

The new CAP policy is designed to reward quality production. Animal welfare is one such measure of quality and is an important factor in consumer choice. SUSPORKQUAL has defined the standards needed to attract a subsidy to reward quality production. It has also shown that quality production in its own right can have added economic benefits. It has described the use of alternative farming systems for a sustainable agriculture policy, and has provided the scientific and knowledge basis for the development of new and improved systems for meat production.

**Optimal output of high-quality meat has been developed, while taking account of environmental and animal welfare aspects. SUSPORKQUAL provides a basis for the delivery of high-quality, sustainable pig production within the EU.**

### **Coordinator:**

Dr Anders Karlsson  
Danish Institute of Agricultural Sciences  
Denmark  
anders.karlsson@agrsci.dk  
[http://web.agrsci.dk/anf/Susporkqual-Folder/  
Susporkqual/#](http://web.agrsci.dk/anf/Susporkqual-Folder/Susporkqual/#)



## Group 3: Scientific support to CAP

### Bonds to remove shackles (BONDSCHEME) – QLK5-CT-1999-01510

*'An assessment of the practicalities and acceptability of a bond scheme as part of Common Agricultural Policy reform'*

The biggest change in the CAP reforms is the notion of decoupling – that is, payments to farmers are no longer linked to production volumes. This means that EU farmers are given the freedom to produce what the market, and they themselves, want. Subsidies or “single farm payments” will, in general, be paid independently from the volume of production. However, as prices will then be “market-driven”, there will be an inevitable loss of income to farm businesses due to reductions in prices at market. One problem of decoupling may be the creation of an imbalance in the market by farmers switching between sectors, since they would no longer have to plant certain crops to claim subsidies. A potentially more problematic consequence of the decoupling approach is that of land abandonment in marginal areas of the market. This would have major implications for the sustainability of the environment and rural communities.

The BONDSCHEME project sought to assess the so-called ‘bond scheme’ as a way of providing transitional relief to farm businesses experiencing reductions in prices and income support due to decoupling in the CAP reform. Its main objective was to design a workable bond scheme and to test its practicality and acceptability among policy-makers, farmers and other stakeholders in agriculture. This was achieved through literature reviews, conferences, postal surveys, case-study interviews with farmers, and workshops involving stakeholders. The costed and worked-out scheme was applied to all types of farmers in the UK, Germany and Portugal, with the intention of extending the scheme to the rest of the EU.

The devised bond scheme is based around four key features: (i) farmers would be issued with bonds on which the EU would make annual payments for a certain number of years; (ii)

expected income loss and the amount of existing direct payments would determine the value of the bonds issued; (iii) the bonds would be allocated to individual farmers on the basis of their output, quota holding, or entitlement to direct payments based on a recent reference period and would not be affected by production decisions; and (iv) the bonds would be transferable and could be sold on the private capital market.

BONDSCHEME has found that a wide range of stakeholders, including farmers, thought the proposed scheme could work. Farmers’ responses across the three study countries were very similar. Although a few said they would leave land idle after receiving the bond, significant numbers said that they would use it to finance diversification or to make improvements to their farms. This wide consultation amongst farmers, policy-makers and other stakeholders in agriculture has resulted in extremely encouraging responses which have been detailed in a resulting book.

The bond scheme indicates a change in the implementation of direct payments without excluding other instruments of aid. It removes the shackles which force farmers to plant some hectares or keep some animals uneconomically, simply to receive payments. It allows farmers to make more productive use of their resources. It also makes it more feasible to implement alternative uses of farmland leading to rural development and employment, and a sustainable environmental policy.

**BONDSCHEME has shown that, despite the changes in the CAP, policy can adapt to such change, leading to the logical evolution of existing system of direct payments. The outcome of this work could become an elegant way for a second set of adjustments of decoupled payment scheme of the reformed CAP.**

#### **Coordinator:**

Prof. Alan Swinbank  
Centre for Agricultural Strategy,  
The University of Reading, UK  
a.swinbank@reading.ac.uk  
<http://www.reading.ac.uk/agristrat/bondscheme/home>

## Insight through models (CAP-STRAT) – QLK5-CT-2000-00394

### *'Common Agricultural Policy strategy for regions, agriculture and trade'*

Within the FP5 work programme, one of the main action points specifically highlights the need to forecast the development of agriculture, identifying the necessary adjustments in the CAP and evaluating the potential impact of policy decisions together with the improvement of existing models. A previous project within the context of the FAIR programme, entitled 'Common Agricultural Policy Regional Impact Analysis (CAPRI)', developed a regionalised model for the agricultural sector. This model has been so successful in supporting the deliberations of the Agriculture DG that it was used as a starting point for the CAP-STRAT project – Common Agricultural Policy Strategy for Regions, Agriculture and Trade.

One of the strengths of CAPRI is that it explicitly considers regional diversity. Land use and production capacity obviously vary between regions within countries. Even policy may be implemented at different rates. The CAPRI model is being used to evaluate the three main policy impacts, relating to further steps towards decoupling, measures supporting environmentally friendly production, and the review of dairy market regulations. The CAP-STRAT project applies a complex agricultural modelling system to the evaluation of policy options for the CAP, which have been defined in close co-operation with the Agriculture DG. The updating and adjusting of the existing CAPRI system was broken down into four interrelated tasks: i) database improvement and updating; ii) methodological improvements of the existing modelling system; iii) comprehensive validation of the modelling system; and iv) scenario writing and application of the system.

The successful application of a complex agricultural sector model requires up-to-date input data. The consortium used data from Eurostat, supplemented with statistics from agencies in the different Member States, benefiting from networking between the partners based in different countries and regions. The consortium conducted methodological research with the specific aim of improving some of the model's modules, concentrating on those



concerning the three main issues addressed by the CAPRI project. The modules were validated, integrated into the model, and the model as a whole was validated. The different partners' detailed knowledge of their regions was of great value to this validation step, and participating in the validation gave the partners a better insight into the behaviour of the system.

With the model up and running, the consortium consulted with the Agriculture DG to test possible scenarios. They have included current policy settings, and the various assumptions concerning technical progress, farm structure, population, macroeconomic development, and demand patterns. Extensive discussion among the different partners and consideration of the various assumptions in the model has optimised the relevance of the forecasts.

**CAP-STRAT is proving highly useful and important for the evaluation and development of the CAP within the EU. The project represents a sound scientific approach and basis, and benefits from the long-term experience of the research team. The team's ambitious goal of forecasting developments in the agricultural sector over the next ten years should provide policy- and decision-makers with the tools to evaluate, redesign and reform agricultural policy in an appropriate and sensible way.**

#### **Coordinator:**

Dr Wolfgang Britz  
Institute for Agricultural Policy  
Market Research and Economic Sociology  
Germany  
britz@agp.uni-bonn.de  
<http://www.agp.uni-bonn.de/agpo/rsrch/capstr/capstr>



## Modelling animals (ELPEN) – QLK5-CT-1999-01296

### ***'European livestock policy evaluation network: development of a livestock policy decision support system'***

In many rural areas, livestock production has historically been the main economic and social activity. Livestock production often has a profound impact on the environment, the economy and the social diversity of rural areas, and supports large numbers of rural communities. Within the EU, with its great diversity of natural and human resources, there are, without question, large differences in livestock production systems. Each system has its own merits and its own distinct impact on the local environment and rural economy. There is now an increasing demand from policy-makers in the livestock area to be able to assess, in an integrated way, the economic, environmental and social impact of potential policy changes. However, the large differences in livestock production systems within the EU make such assessments difficult to achieve in different regions on a comparable basis.

The ELPEN project aimed to build a decision-support system for the appraisal and evaluation of European livestock policy. The system uses an integrative, client-oriented, knowledge-based and spatially explicit approach and is capable of assessing potential economic, environmental and social impacts. This was achieved by integrating: i) a dynamic, knowledge-based decision-support system, using state-of-the-art technology that can

answer specific questions posed by policy-makers about the economic, environmental and social impacts of livestock policy; ii) a network of experts from different EU countries with specialist knowledge on different aspects of livestock systems, providing the knowledge needed to build the system; iii) biogeographic, technical, economic, environmental and social data on livestock systems throughout the EU; and iv) policy-makers, researchers and end-users in the design of the system.

### **The project has been completed and the ELPEN decision-support system has been built. Its features include:**

- Different European scales: EU, country, 5 km grid and 1.1 km grid levels;
- A multidimensional database with new typology of European farms and detailed reference farm data;
- Land cover, soil and altitude data at 5 km and 1.1 km grid level;
- Disaggregation and spatial allocation
- Economic cost analysis and farm behaviour modelling;
- Economic, ecological and social indicators
- Maps, tables, documents and dynacubes (allowing the detailed analysis of data at different dimensions).

ELPEN has proved an extremely ambitious modelling project that has come to fruition in the development of freely available software ([www.objectvision.nl](http://www.objectvision.nl)). This tool will be useful in further reform of the CAP and in the harmonisation of EU policies in relation to agriculture, environment and rural development.



Livestock production has a profound impact on the regions within which it is situated, and both creates and supports the landscape. ELPEN should allow policy-makers to achieve a balance between the negative and positive economic, social and environmental impacts of livestock production.

#### **Coordinator:**

Dr Iain A. Wright  
Macaulay Land Use Research Institute  
UK  
[i.wright@macaulay.ac.uk](mailto:i.wright@macaulay.ac.uk)  
<http://www.macaulay.ac.uk/elpen>



## Group 4: Sustainable rural development and biodiversity

### Peripheral may be nearby (AsPIRE) – QLK5-CT-2000-00783

#### *'Aspatial peripherality, innovation and the rural economy'*

Throughout history, some regions have had more economic activity and higher incomes than others. In recent times, areas including large cities have tended to be more prosperous and dynamic than outlying rural areas. Aspatial peripherality (AsP) is a term describing a range of processes and phenomena which increasingly compound or distort the effects of physical remoteness. In simpler terms, peripheral areas, or those furthest away from core areas, are often underdeveloped.

Conventional thinking about the imbalance between regions tends to focus on concepts of distance costs. Increasing the distance to markets and pools of skilled labour obviously inhibits economic development. However, it is increasingly obvious that physical distance is only one of a diverse range of factors that affect a region's economic performance. Indeed, travel and freight costs are diminishing as an impediment to economic activity. The benefits due to the reduction of these distance constraints may be enhanced or masked by a range of essentially non-geographic processes. These include information and society technology, business linkages and networks, social capital, governance, and tourism.

AsPIRE is investigating the reasons why some regions appear to underperform. The research consortium comprised five teams from Finland, Germany, Greece, Ireland, Spain and the UK. Its principle aims were to establish the concept of aspatial peripherality based on 12 regional case studies. Robust methodology for measuring and mapping aspatial peripherality was developed which provided best practice and policy evaluation guidelines. The understanding of aspatial peripherality was enhanced through a set of thematic studies, focusing on: (i) the role and effectiveness of information society technology in rural and peripheral regions; (ii) the nature and role of business networks and innovation among small and medium-sized enterprises; (iii) the effect of

different forms of governance; (iv) the functionality of social capital in overcoming geographical disadvantages; and (v) the character and role of the tourism industry in peripheral regions.

Data from 600 telephone interviews and 1 250 face-to-face interviews with entrepreneurs, and the representatives of various public sector and 'third sector' organisations were conducted, collated and analysed across all 12 case study areas for each of the five themes. The results were made available in the form of thematic and regional reports. A set of operational indicators of aspatial peripherality has been set up together with a corresponding statistical database for the entire EU. Statistical and cartographic methods have been developed to analyse the relationship between aspatial peripherality indicators and economic performance indicators. A web-based diagnostic tool has been designed to help regional development agencies assess the degree to which their region is peripheral in both the conventional and aspatial sense.

AsPIRE has proved invaluable in identifying the factors contributing to good economic performance in some regions and the reasons for relative weakness in others. It appears that, rather than any one single feature, synergy between various aspatial factors is required for regions to exploit their potential. It has made a significant contribution to the knowledge base relating to the overall EU cohesion objective and the implementation of the European Spatial Development perspective. It has offered a web-based diagnostic tool for regional development agency staff throughout Europe. This tool generates a benchmarked profile of a region, illustrating which soft/aspatial factors may be acting as constraints to economic performance, and making broad recommendations as regards types of intervention which should be considered.

**AsPIRE's findings can clearly contribute to the development of adapted and effective regional policy and provides strategic guidelines for rural development policies.**

#### **Coordinator:**

Dr A. Copus  
The Scottish Agricultural College, UK  
A.Copus@ab.sac.ac.uk  
<http://www1.sac.ac.uk/management/External/Projects/AspireExternal/Default.asp>



© Angelos Kazaklis

## High investment in Mediterranean area (MEDMONT) – QLK5-CT-2000-01031

### *'Tools for evaluating investment in the Mediterranean mountain areas – an integrated framework for sustainable development'*

The mountainous zones in the Mediterranean areas of Europe present a series of particular problems as regards sustainable rural development. These regions have been marginalised, and have a weak social and economic fabric. Although their natural resources are potentially valuable assets, they are subject to severe environmental problems concerning water, erosion and resource degradation. There are also institutional issues, with less efficiency from public administrations and poor implementation of programmes. Little attention has been given to the decision-making process in the Mediterranean mountain areas. In this context, investment decisions or individual projects related to integrated mountain sustainable development should be based on balanced information about these numerous issues.

MEDMONT assessed the natural resource base and evaluated the capability specific to agriculture, forestry, livestock, recreation, wildlife and water. It also evaluated socio-economic, institutional and welfare concerns using an integrated model based on multiple criteria analysis and cost benefit

analysis. Spatial entities suitable for development analyses were identified and mapped for the Mediterranean mountain areas. These thematic maps have been made available for evaluation by end-users. The variety of mountain landscape types, natural resources, and socio-economic and institutional situations in the case studies make the MEDMONT framework applicable throughout Mediterranean mountain regions. With suitable modifications, the framework can also be applied to other mountain areas in Europe.

Such an integrated framework and tools will allow the interested target groups to obtain objective trade-off information about the multiple impacts of sustainable development investment projects in the mountain areas, and to select the best combination of evaluation tools in terms of cost and accuracy of the attained goals within their budget limits, when they need to support evaluation and monitoring investment decisions. The MEDMONT evaluation framework also includes local actors in the evaluation process, through measurements of social preferences.

**MEDMONT's integrated tools make it possible to assess sustainable development projects in terms of the trade-off between environmental and socio-economic indicators. Although the methods are complex, the comprehensive evaluation process makes them ideal for the evaluation of investment projects in Mediterranean mountain regions.**

#### **Coordinator:**

Dr Vassiliki Kazana  
Mediterranean Agronomic Institute of Chania  
Greece  
vkazana@spark.net.gr  
<http://www.maich.gr/medmont/>



## Farming the Alps (IMALP) – QLK5-CT-2001-01099

### **'Implementation of Sustainable Agriculture and Rural Development in Alpine Mountains'**

For many the Alps mean tourism. Indeed, economically, the Alps are becoming more and more dependent on tourism, with agriculture being replaced progressively by winter sports and summer tourism. With the number of small farms decreasing in this region, maintaining sustainable agricultural activities and promoting rural development are particular challenges. This leads to the question: is rural development an opportunity for alpine agriculture, or is alpine agriculture, and its associated skills, an opportunity for rural development?

**Based on a previous R&D project (FAIR-CT97-3798), IMALP has developed an innovative approach comprising four key methods and tools:**

- i) the creation of a local group of farmers, elected officials and civil partners;
- ii) the development and implementation, by group, of action plans for sustainable agriculture;
- iii) the evaluation of the impact of the action plans by an interdisciplinary team of scientists and experts; and
- iv) the proposal of methods and tools to disseminate the results.

These tools and methodologies have been developed and their value demonstrated in four voluntary pilot Alpine regions (Moyenne Tarentaise, France; Murau, Austria; Val di Sole, Italy and Val d'Hérens, Switzerland). A comprehensive and consistent series of actions has been implemented at three different levels: at the farm level, where farming practices are adjusted to social, territorial and environmental demand; at the farmers' organisation level, where groups can better address problems of work overloads, organise themselves to supply services for the community or to promote food products; and at the local level, where new partnerships between agriculture, communities and local societies can be investigated.

Action plans have been established within the framework of IMALP. Pilot regions have exchanged actions concerning diversification through on-farm educational and tourism activities in partnerships

with schools, school teachers and tourism offices. Several very innovative contracts have been signed between farmers and municipalities for sustainable landscape upkeep and rehabilitation in slope areas. IMALP also provides good tools for communication, ensuring information for local inhabitants and tourists, and exploiting discussions with municipal representatives. This is particularly valuable as it makes progress towards the important target of exchange and communication in the context of decentralisation.

IMALP facilitates the provision of information to other farmers through visits, phone calls and access to databases of available equipment and services, enabling the implementation of local sustainable agriculture and rural projects.

**IMALP provides the motivation for farmers to build collective structures for mutual help and the exchange of services. It also allows the assessment of activities, methods and indicators and the adaptation of new policies for Alpine areas.**

#### **Coordinator:**

Pt G. Ducrey  
Groupement d'Intérêt Scientifique Alpes du Nord  
Service d'Unité Agricole  
à Compétences Interdépartementales  
Montagne Alpes du Nord,  
France  
suacigis@suacigis.com





## The market for organic (OMIaRD) – QLK5-2000-01124

### 'Organic Marketing Initiatives and Rural Development'

As organic products generally have a higher added value and therefore generate higher revenues, organic farming and production should maintain the income of the producers. In addition, the environmental consequences of organic farming are obviously less damaging than those of standard farming techniques. However, in recent years, there has been an over expansion of organic farming, leading to the overproduction of products. Indeed, only a very small percentage of consumers buy organic products, and even fewer do so on a regular basis. This suggests that the marketing efforts associated with these products have been insufficient. Organic producers share a variety of common interests which are not necessarily shared by other local producers. As a consequence, producers of organic products become involved in networks that form between the like-minded, rather than joining in the local networks.

OMIaRD is the first major research project aimed at addressing these questions and looking at the place of organic products in the two key EU policy areas of sustainable agriculture and rural development.

Countries in Europe vary in the development of their organic food markets and many Organic Market Initiative (OMIs) set themselves social and ethical goals that cannot be measured in economic terms. The OMIaRD team have found that internal and external competences, and sector and regional conditions are so diverse that defining what makes a successful OMI is a very complex task. However, in-depth case studies have provided much valuable material for analysis. A range of different marketing channels has been shown to be important, and OMIaRD has demonstrated that general food retailers have an important role in the development of the market for organic products. Retail through general food shops and a single nationally recognised label for organic products may both contribute to the success of the organic sector.

OMIaRD has provided valuable insights and illustrative material that has resulted in the publication of a popular marketing handbook for

the development of organic marketing initiatives. It has addressed such problems as the lack of marketing skills, the fragmented nature of the market, high consumer prices, poor availability of organic products, and lack of consumer information. These issues, together with the possible conflict regarding the standards and definitions associated with the use of the term 'organic', are considered the most important constraints upon supply and demand in the organic food market.

#### Coordinator:

Prof. P. Midmore  
School of Management and Business,  
University of Wales, UK  
pxm@aber.ac.uk  
<http://www.irs.aber.ac.uk/OMIaRD/>

OMIaRD has proved very successful in delivering a huge amount of new knowledge for the deeper understanding of the organic market. The work has characterised market structures and identified where improvements in regulations, policy and good practice can be made.





## Measuring diversity (AEMBAC) – QLRT-1999-31666

### *'Agri-Environmental Measures for Biodiversity Assessment and Conservation'*

There are many and diverse reasons for the lack of sustainability of agriculture. They include ecological, social and economic factors, as well as the obvious variations between regions and countries. However, the objective of protecting the environment receives wide approval. Policies and actions that promote a better environment are generally desirable, particularly in the field of agriculture. However, defining what exactly is good for the environment, and identifying the impact of policies and actions on the environment, is problematic.

The aim of the AEMBAC project was to establish a common European methodology for assessing biodiversity and landscape conservation, particularly as affected by agriculture at the agro-ecosystem level. It aimed to develop agri-environmental measures tailored to site-specific environmental needs and opportunities. The project is based on the notion that neglecting to consider the complexity and the holistic nature of multifunctionality, for example, will inevitably result in approaches that fail to deliver the desired results. This requires: (i) a detailed, flexible and transparent methodology that integrates scientific results and ecological objectives into agri-environmental policy formulation and implementation; (ii) a clear, science-based picture of current ecological and socio-economic agricultural sustainability; and (iii) an evaluation of existing agri-environmental policies through comparison with newly proposed agri-environmental policies.

Through the work of academic and research institutions in seven European countries – Estonia, Germany, Hungary, Italy, the Netherlands, Sweden and Switzerland – the AEMBAC project has developed and tested a relatively simple, yet powerful, method of creating local agri-environmental measures (AEM) with predictable, quantifiable and verifiable outcomes. This tool is helping to ensure resources can be mobilised to promote sustainable development. The analysis of impacts exerted by local agricultural systems on environmental biodiversity and landscape conservation has been implemented in 15 study



areas in these seven participating countries. A methodology has also been developed to connect science and policy in order to tailor agri-environmental measures to the most relevant local impacts exerted by agriculture. This supports the supply of environmental goods and services by farmers and discourages unsustainable agricultural practices.

A key result of AEMBAC has been the selection of scientifically based indicators for assessing environmental outcomes. It has provided invaluable input into policy considerations, due to the detailed ecological, economic and social information provided. As AEMBAC generates quantifiable measures of environmental goods and services, the application of this methodology will provide scientific support to the concept of multifunctionality in agriculture. Although developed for agriculture, the methodology may also be appropriate for assessing environmental impact in other sectors, particularly forestry, fishing and tourism.

**The AEMBAC project demonstrates the economic, cultural, agricultural and ecological feasibility of AEMs for biodiversity and landscape conservation at local level. In achieving this goal, the project will aid the development of agricultural and environmental policy from local to European level.**

#### **Coordinator:**

Mr R. Simoncini  
The World Conservation Union  
European Regional Office  
The Netherlands  
riccardo.simoncini@cce.unifi.it



## Checking the outcome (EASY) – QLK5-CT-2002-01495

### ***'Evaluating current European agri-environment schemes to quantify and improve nature conservation efforts in agricultural landscapes'***

Enhancing botanical diversity in intensively farmed fields is a continuing challenge that plays an important role in sustainable rural development. There are currently a number of agri-environmental schemes in Europe aiming to stabilise and reverse biodiversity losses in farmland habitats. This is achieved through paying farmers to adapt the management on parts of their farms to the benefit of biodiversity, environment or landscape. Although these schemes are making substantial contributions to some policy objectives, their effectiveness, both environmentally and economically, is difficult to quantify mainly because of the small scale of the schemes compared to the extensive farmland area inhabited by many of these species. Thus, there has been no conclusive evidence that these schemes actually do contribute to the conservation of biodiversity.

Through EASY, a framework has been put in place to evaluate the effectiveness of European agri-environment schemes in protecting biodiversity, and to determine their economic consequences. The primary processes and environmental factors addressed by EASY have been: (i) the spatial scales most suitable for conservation efforts aimed at species groups with different mobilities; (ii) the influence of landscape structure on the effectiveness of schemes; (iii) the effect of the local species pool on the schemes; and iv) the effect that schemes have on ecosystem processes such as pollination and pest control.

Five schemes in different European countries have been evaluated using pair-wise comparisons: Germany – organic wheat fields vs conventional wheat fields; Spain – extensively farmed cereal fields vs conventional cereal fields; the Netherlands – postponing grassland agricultural activities vs conventional grassland activities; the UK – arable fields with 6m margin strips vs conventional arable fields; and Switzerland – extensively used grasslands vs conventional grasslands. A standardised sampling protocol was developed to estimate the biodiversity of schemes in these five regions. Birds,

vascular plants, spiders, grasshoppers and bees were sampled and all species groups were identified. The spatial scales best suited to conservation efforts have been implemented on plants, bees, hover flies and birds. Factors determining the effectiveness of schemes, such as landscape context and structure, and agricultural connectivity, as well as the influence of the species pool have been identified and described.

The most effective and reliable way to assess agri-environment schemes is to integrate evaluation studies into agri-environment programmes from the very start. EASY, which evaluates ongoing schemes by a pair-wise comparison of fields with and without agri-environment schemes, yields extremely reliable results. This project has developed a framework by which authorities can evaluate the ecological outcome of agri-environment schemes, now and in the future, in an efficient and scientifically sound manner.

**EASY is proving to be of great relevance and value to policy-makers and should be helpful in the local implementation of agri-environmental schemes and in the domain of rural development.**

#### **Coordinator:**

Dr David Kleijn  
Department of Environmental Sciences  
Wageningen University  
The Netherlands  
David.Kleijn@wur.nl  
<http://www.dow.wau.nl/natcons/NP/EASY/>







## Conclusions

**Key Action 5 addressed a wide range of areas related to 'Sustainable agriculture, fisheries and forestry, and integrated development of rural areas including mountain areas'. The aim was to improve the quality of life through sustainable production and rational utilisation of natural resources through a multidisciplinary approach considering environmental, social and economic effects.**

The review was expected to identify the potential policy impact of those projects selected, with particular relevance to rural development and the Common Agricultural Policy, specifically after the 1992 reform and the implementation of Agenda 2000.

**The success** of the projects in supporting policies in the various areas such as plant and animal health, farming methods, marketing of agricultural products and rural development schemes **has been clearly demonstrated.**

Projects have achieved the development of **tools and methodologies** and helped **to adapt policy instruments** by evaluating these tools. Similarly, research supporting specific policy issues has demonstrated that it can **provide a scientific basis for decision-making in the field of the CAP** and rural development. Some fields seem less relevant in terms of policy impact, such as the delivery of high-quality products, even though they have clear consumer relevance.

Coverage of the programme objectives was striking in its diversity, but some trends have been identified from the review. Analysis of areas retained in the review process suggests emphasis on the following elements:

The area 'sustainable agriculture' considered the various farming systems from a **balanced approach**, and the multifunctional structure of agriculture and socio-economic implications of policy were largely addressed. **The sustainable management** of resources was targeted primarily at the protection of the landscape and natural areas and also at soil and water resources. **Genetic diversity** and waste management were studied well. **Policy on quality aspects** was analysed from



different angles, including policy support to standards and marketing strategies, bearing in mind the international dimension.

The area 'CAP scientific support' dealt with **support schemes** from the context of **international trade** as well as agricultural policy in **Central and Eastern European Countries**. Numerous projects developed tools to control and assess CAP measures, in particular innovative evaluation tools were created relating to the implementation of Agenda 2000. Under the '**rural development**' area, projects were spread across analysis instruments of rural situations, changes and trends, and the role and impact of multifunctionality on rural economies and farm families. **Landscape management** was also addressed, as well as the conceptualisation of integrated development of rural and other relevant areas focusing on strategies and tools for the transfer of experience, for integrated resource utilisation and re-organisation of marketing. Lastly, the **assessment of the performance of rural development** and the setting up of tools that specifically describe, forecast, monitor and evaluate policies were revised.

It is important to say that the follow-up of CAP measures, the multifunctionality of agriculture, the preservation of biodiversity, and the international perspective in a world moving **towards globalisation** have been clearly addressed by the Key Action 5 projects.



The importance of having continuity in research projects supporting policy – specifically supporting agricultural policy – was emphasised.

With '**Scientific support to policies**' as a specific priority in the **Sixth Framework Programme**, there is a tool for precisely targeting innovative research with respect to the needs of EU policy-makers. Its overall objective is to support the formulation and implementation of Community policies, by providing scientific contributions to policies that are "demand-driven", coherent across the various Community policy areas, and sensitive to changes in policies as they take place. Scientific support to policies combines a flexible programme of research requirements with a precise specification of research objectives. The work programme is adapted from year to year, in response to requirements identified by policy-makers and the scientific community. The tasks often involve a requirement to address different disciplines, in view of the increasingly integrated nature of Community policies. For example, the Common Agricultural Policy reform includes not only agricultural issues as such but also environmental, regional development, social,

economic and trade dimensions. In this context, scientific support to 'Sustainable management of natural resources in Europe' was designated as a very important area driving 45% of the total budget of 'Scientific support to policies'. Within this area, the budget dedicated to agricultural research represents a total amount of €70 million for four years.

The new market models developed have been instrumental for *ex-ante* analysis of policy options. New features of the CAP, such as decoupling, have been tested through research projects before implementation. New challenges are now arising following the CAP reforms in 2003 and 2004. Policy instruments will need to be adapted to the evolution of the agricultural sector and the continuous development of the policy.

The Commission's proposal for the **Seventh Framework Programme**<sup>2</sup> emphasises the role of research in agricultural products, defining a specific theme 'Food, Agriculture and Biotechnology' for research activities carried out in transnational co-operation at every scale



across the European Union and beyond. The activities are built on three pillars, all of which are related to agricultural products but from different perspectives:

- Sustainable production and management of biological resources from land, forest, and aquatic environments;
- “Fork to farm”: food health and well-being;
- “Life sciences and biotechnology for sustainable non-food products and processes”.

While there is no longer separate support for the Common Agricultural Policy and rural development, these areas are being taken into consideration when developing the specific programme of the theme to reflect the future of agriculture in the EU after the 2003 and 2004 reforms.



2) Proposal for a Decision of the European Parliament and of the Council concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013) – COM(2005)119 of 6 April 2005.



## List of publications

- Plant Genomics and Biotechnology for sustainable and competitive agriculture  
ISBN: 92-894-6374-0
- Plant Health: Impact of EU Research (1998-2004)  
ISBN: 92-894-9026-8
- The Forestry Wood Chain: The impact of EU research (1998-2004)  
ISBN: 92-894-8248-6
- Genomics research in livestock. What does it offer?  
ISBN: 92-894-7091-7
- Foot and Mouth Disease and Swine Fever: The impact of EU research (1998-2004)  
ISBN: 92-894-9032-2
- Rural Development: The impact of EU research (1998-2004)  
ISBN: 92-894-8247-8
- Organic Food and Farming Research in Europe  
ISBN: 92-894-9600-2
- Towards a European knowledge-based bioeconomy, York University 2004  
ISBN: 92-894-8778-X
- Renewable biological materials for non-food use: The impact of EU research (1998-2004)  
ISBN: 92-894-8977-4
- Support to Common Agriculture Policy: The impact of EU research (1998-2004)  
ISBN: 92-894-9060.
- Key Action 5 External Advisory Group  
Report and opinion of research carried out under the European Commission's Fifth Framework Programme [1998-2002]  
ISBN: 92-894-5790-2
- Science for society. Science with society. How can research on food and agriculture in Europe better respond to citizen's expectations and demands? Summary of EURAGRI conference, Brussels, 14-15 October 2002  
ISBN: 92-894-5320-6
- New vision on European food and agricultural research. Summary of EURAGRI conference Athens, 8-9 May 2003  
ISBN: 92-894-6260-4
- Science for society. Science with society. Summary of the EURAGRI conference Brussels, 3-4 February 2005. How to adapt and use the knowledge base for an optimal functioning of the food-health-agriculture system in the European Union  
ISBN 92-894-9787-4
- Key Action 5. Sustainable agriculture, fisheries and forestry. Research projects. Volume 1 (1999-2001).  
ISBN: 92-894-0932-0
- Impact of EU Research, 16 agricultural success stories under the FAIR programme  
ISBN: 92-894-9685-1
- Food Quality and Safety in Europe - Project synopses  
ISBN: 92-894-6811-4

European Commission

EUR 21464 - Support to Agricultural Policy - The impact of EU Research (1998-2004)

Luxembourg: Office for Official Publications of the European Communities

2005 – 32 pp. – 21.0 x 29.7 cm

ISBN 92-894-9060-8

### **SALES AND SUBSCRIPTIONS**

Publications for sale produced by the Office for Official Publications of the European Communities are available from our sales agents throughout the world.

You can find the list of sales agents on the Publications Office website (<http://publications.eu.int>) or you can apply for it by fax (352) 29 29-42758.

Contact the sales agent of your choice and place your order.

## **Internet links**

**QoL projects are summarised at the following web addresses:**

[http://europa.eu.int/comm/research/agriculture/index\\_en.html](http://europa.eu.int/comm/research/agriculture/index_en.html)

[http://www.cordis.lu/life/src/proj\\_browse.htm](http://www.cordis.lu/life/src/proj_browse.htm)

**Sixth Framework Programme projects and calls for proposals related to 'Scientific support to policies' can be found at the following addresses:**

[http://fp6.cordis.lu/fp6/calls\\_activity.cfm?ID\\_ACTIVITY=500](http://fp6.cordis.lu/fp6/calls_activity.cfm?ID_ACTIVITY=500)

<http://www.cordis.lu/fp6/find-doc.htm>

**Seventh Framework Programme proposal can be found at the following address:**

[http://europa.eu.int/comm/research/future/index\\_en.cfm](http://europa.eu.int/comm/research/future/index_en.cfm)

**The Food Quality and Safety Cordis Website can be found at the following address:**

<http://www.cordis.lu/food/home.html>

**The EU-funded Agricultural Research Portal (AgriNet) can be found at the following address:**

[http://europa.eu.int/comm/research/agriculture/index\\_en.html](http://europa.eu.int/comm/research/agriculture/index_en.html)

**Commission Infodesk (Food Quality and Safety):**

[rtd-food@cec.eu.int](mailto:rtd-food@cec.eu.int)

**For further information, please visit the Agri-Net website:**

[http://europa.eu.int/comm/research/agriculture/index\\_en.html](http://europa.eu.int/comm/research/agriculture/index_en.html)

**Or contact us:** [rtd-food@cec.eu.int](mailto:rtd-food@cec.eu.int)

The 'Quality of Life' priority of the Fifth Framework Programme was based around six key actions aimed at enhancing the quality of life of European citizens and improving the competitiveness of European industry. The need for research aimed at policy development or policy assessment is more clearly required with respect to the Common Agricultural Policy (CAP). This is why the Commission services have launched an expert review of on-going projects under Key Action 5 of this programme. The objective of the review was to assess the potential policy impact of the selected research projects funded in the area of sustainable agriculture with the exception of non-food, fisheries and forestry. At the final discussion of the panel of experts, a list of 13 projects was selected as the most relevant in terms of impact on agricultural policy including rural development. It is the intention, in this publication, to present the review report in the context of CAP reform and of the current and future research programmes on support to agricultural policy.



Publications Office

*Publications.eu.int*

