



Farm structure survey

2007

NATIONAL METHODOLOGICAL REPORT

MEMBER STATE: PORTUGAL



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SUMMARY

Farm Structure Survey 2007 (FSS 2007) is one of the specific surveys that goes on during the inter-census period, according to Community legislation, is carried out using the census results data file as a sampling baseline for designing the operation.

Community legislation duly provides that FSS be carried out in 2003, 2005 and 2007, and aims to harmonise how these are implemented in each Member State.

The principle of harmonisation in terms of methodology, concepts and variables to be collected is essential to an accurate assessment of the agricultural situation in the EU and in each Member State. It also allows that comparative studies between different EU countries could be conducted.

Farm Structure Surveys are a way of meeting international obligations and constitute an essential management tool for decision-making, particularly in connection with agricultural, regional and land-use policy.

FSS 2007 methodology, main topics:

Survey period

The survey period was from 1 November 2006 to 31 October 2007.

Coverage

The survey was carried out simultaneously throughout Mainland and Autonomous Regions of the Azores and Madeira.

Survey organisation

Central Services of the National Statistical Institute (NSI), Economics Statistics Department (DEE) - Agriculture and Environment Unit (DEE/AA) - took responsibility for national co-ordination of the operation, and Data Collection Department (DRI) of the NSI took responsibility for organising and carrying out the work of data collection and validation the information.

The following structure was established: interviewers, supervisors, data input clerks, regional coordination and central services of NSI.

Work process

The FSS 2007 took place in seven major stages: preparation (questionnaire, instruction manual, sample design), letter to inform farmers, recruitment of temporary staff (only interviewers), training, gathering information, evaluating the operation and dissemination.



Preparing the survey operations

The target population is constituted by holdings (comprising at least one hectare of utilised agricultural area (UAA) or "its equivalent") and the sampling frame used to select the sample was the register of all Portuguese holdings, which was built after the Agriculture Census 1999.

Sampling

For FSS 2007 it was used stratified random sampling.

Data collection

Individual interviewers conducted questioning, which covered, crop areas, land use, livestock numbers, labour force, environmental questions and questions on non-agricultural activities.

Data entry mode

The 'Heads up' data entry mode was chosen. In this case the computer program gives instantaneous feedback to the data typist entering the data form.

Data processing, estimation and analysis

The estimation method was the usual domain estimation for a random stratified sample. The FSS 2007 results (micro/macro level) were compared with other data sources (administrative data and/or survey data).











1 - INTRODUCTION

1.1. History, scope

History

The first FSS conducted in Portugal dates back to 1987-88. It was carried out simultaneously throughout the territory (mainland plus the Autonomous Regions of the Azores and Madeira), and was followed by the 1992, 1995, 1997 surveys in the nineties and after Census 1999, the FSS 2003 and FSS 2007.

Scope

The FSS 2007 applies to all legal or natural persons who have an agricultural holding located in Portugal and who, from 1 November 2006 to 31 October 2007, produce *for the purpose of selling* animal or vegetable products, including those produced under contract, or just maintaining agricultural land in good agricultural and environmental condition.

1.2. Legislation

Community

Council regulation (EEC) No 571/88 of 29 February 1988 Council Regulation (EC) No 2467/96 of 17 December 1996 Commission Regulation (EC) No 2139/04 of 8 December 2004 Commission Regulation (EC) No 1444/02 of 24 July 2002 Commission Regulation (EC) No 204/06 of 6 February 2006

National

At national level, Law No. 6/89 of 15 April 1989 on the National Statistical System (SEN) lays down the obligation to provide information and rules that each informant's individual data are confidential.

At national level there aren't specific laws to deal with:

- scope and coverage;
- frequency of the census and time reference;
- responsibility for the census;
- administrative and financial provisions;
- obligations of the respondents with respect to the census;
- identification, protection and obligations of enumerators;
- right of access to administrative data.











2. CONTENT

2.1. Characteristics and reference period

Consultation

The FSS is defined as a collection of a whole series of information on agricultural holdings: areas under crops, numbers of animals, type of equipment, information about farm buildings and installations, characteristics of the agricultural labour force, etc. The definitions of the characteristics that are surveyed comply with those laid down in the Community legislation establishing the survey on the structural of agricultural holdings. Other characteristics, or more detailed characteristics, are also surveyed in response to certain national requirements.

Defining the national characteristics of the questionnaire was one of the first stages in the 2007 Farm Structure Survey and, in November 2006, around 30 users were asked to co-operate in identifying the primary requirements.

On the basis of the contributions received, knowing that the structure and size of the questionnaire would depend to a large extent (more than 80%) on the compulsory questions, a test version incorporating a wide range of the suggestions made was produced.

The questions included in the questionnaire were designed to capture the specific features of Portuguese agriculture, in both national and regional terms, as well as meeting Community obligations.

Test

The FSS 2007 questionnaire was not tested across Portuguese territory, due to the fact that it was done in 2003 and no major problems were identified on FSS 2005.

Characteristics surveyed

The questionnaire consists generally of these sections:

- Crops
- Land use
- Livestock
- Irrigation
- Labour force
- Questions on other gainful activities rather than agricultural activities, "rural development" were included again, which have taken particular importance on policy discussions about the future of farming.

Characteristics that deviate from UE list of characteristics

For all characteristics Portugal has the same definition as EU.

Characteristics not collected

The characteristics not included in the survey questionnaire because of their inapplicability in Portugal are as follows:

- Characteristics Non-Significant NS:
 - One or more natural persons who is/are a partner, where the holding is a group holding,
 - Some industrial plants: hops, cotton, rape and turnip rape, soya, linseed (oil flax), flax, hemp, aromatic plants, medicinal plants and culinary plants,
 - Raisins,
 - Permanent crops under glass,
 - Mushrooms.
- Characteristics Not Existents NE:
 - Geese.
- Characteristics Not collected NS:
- tobacco (NS);
- other têxtil crops (NS);
- other oil seed crops (NS);
- Set-aside areas under incentive schemes raw material for non-food purposes
- Set aside areas under incentive schemes
- Set aside areas under incentive schemes others

For the last three characteristics, in the beginning of collection period (October 2007) the Portuguese body responsible for IACS confirm Statistics Portugal that there aren't any areas under these incentive schemes.

Reference periods

The FSS 2007 refers to a holding's situation from 1 November 2006 to 31 October 2007 - agricultural year, except for livestock witch is on the reference day of the survey.

Changes

The main change arise from the Council regulation (EC) No 1782/2003 of 29 September 2003 that establish the common rules for direct support schemes under the common agriculture policy and establish certain support schemes farms and several amending regulations that introduces the maintenance of land in good



condition as an agricultural activity, which makes the revision of various definitions necessary. However, since reference time and/or measurement still follow the same criterion, the results didn't affect the comparability with previous data.

2.2. Questionnaires

Description of the questionnaire

Only paper questionnaires were used in the FSS 2007.

How many different questionnaires

Just one questionnaire was drawn up, with different validation rules for each Regional Agriculture Department and Autonomous Regions. This reflected the desire to identify and validate the specific features in each region.

Data collection period

The data collection started on November 2007 and ended on April 2008.

3. Survey methodology

3.1. Survey organisation

Organisation

On the mainland, the tasks of organising and collection and validation data were carried out by Data Collection Department (DRI).

In the Azores and Madeira, responsibility for organising the field work fell upon the Regional Statistical Service of the Azores (SREA) and the Regional Statistics Department of Madeira (DREM).

Establishing a proper, effective organisational structure for the FSS 2007 was essential to achieve goals as high-quality and sticking data, proper information from this statistical operation, which also needed to be organised in such a way that it could be possible to make the best use of existing resources.

Therefore, the following structure was established:

Interviewers – The interviewers were responsible for gathering information through direct interviews with farmers.



On average, each interviewer administered 175 questionnaires during the period set aside for information gathering (November 2006 – March 2007).

Supervisors – The supervisors monitored interviewers in the task of information gathering.

Their tasks were:

- organising and distributing work;
- analysing, reviewing and sent back questionnaires which had not been filled in a proper way;
- assessing and settle difficulties practised by individual interviewers.

Data input clerks – working at recording centres, this staff is NSI's employees.

Staff from the DRI made up the regional co-ordination. They were responsible for the operation of the structure concerned with the gathering, input and validation of information.

Central Services of the INE Economics Statistics Department - Agriculture and Environment Unit (DEE/AA): These took responsibility for national co-ordination of the operation.

Human resources involved									
NUTS2	North	Center	Lisbon	Alentejo	Algarve	Main land	Azores	Madeira	Portugal
Interviewer	58	48	26	30	24	186	20	16	222
Supervisor	6	4	5	3	2	20	-	-	20

3.2. Calendar – Work process

Timetable for implementation						
Tasks	Date of completion					
Initial document	January 2007					
Questionnaire	July 2007					
Manual Handbook	July 2007					
Sample design	June 2007					
Letter to inform farmers	October 2007					
Training	Several regional actions during October 2007					
Administrative procedures	September 2007					
Gathering information	November 2007 – April 2008					
Evaluating the operation	September 2008					

3.3. Preparing the survey operations

3.3.1. Population and frame

Population

Target population

The target population encloses 411 278 holdings that were enumerated at the 1999 Agricultural Census, or introduced after it as a result of an update of the register used as a sampling frame.



Definition of a holding

This is a technical and economic unit, which uses its own labour and production factors, and must fulfil four conditions, i.e. it must:

- produce agricultural products
- reach or exceed a certain size (thresholds)
- be subject to single management
- be located in a specific, identifiable place.

It also includes the holdings exclusively maintaining agricultural land in good agricultural and environmental condition.

Description of Thresholds

Three conditions apply to the size of a holding. These are shown in descending order below, and at least one must be met:

Condition 1

A utilised agricultural area (UAA) equal to or exceeding 100 ares (10 000 m²). This includes arable land, kitchen gardens, permanent crops and permanent grasslands and meadow.

Condition 2

A utilised agricultural area of less than 100 ares, but with a minimum area of at least one of the following grown as a main crop within the following limits:

- 5 ares of ornamental flowers and plants or greenhouses or nurseries or aromatic plants
- 10 ares of intensive horticultural crops in terms of ground area or seeds of fodder crops or seeds and seedlings of non-woody crops
- 20 ares of industrial crops or orchards or vineyards
- 50 ares of olive plantation or potato or extensive horticultural crops
- 1 tonne of mushroom production

Condition 3



A stock on the day of the interviewer's visit, or production in the preceding farming year of any of the following species within the limits indicated:

Stock

1 breeding bull or 1 cow or 2 bovines aged 2 years or more or 3 fattening pigs or 1 breeding sow or 6 ewes or 6 female goats or 10 breeding rabbits or 100 laying and/or breeding females of the poultry species considered or 10 beehives or 2 breeding ostriches or 500 laying quail

Production

5 bovine animals or 5 pigs or 250 geese or 250 turkeys or 250 guinea fowl or 500 broilers or 500 ducks or 15 ostriches or 10 000 quail.

The limits prescribed for the Autonomous Regions of the Azores and Madeira were slightly lower, bearing in mind particular regional features.

The comparability with previous survey data is possible because there aren't any changes in the detention of a holding.

<u>An abandoned holding</u> means one which previously came within the survey limits, but which is not under production at the time of updating, although its capacity to resume agricultural activity is intact.

A former holding means one, which has ceased to meet the minimum limits. Two situations are possible:

- a holding's agricultural area may have been put to another kind of use (e.g. woods and forests, civil engineering, roadways, etc.) or,
- it may no longer qualify because it has ceased to produce a specialist crop, it may no longer have a specific number of animals or may have reduced its utilised agricultural area.

The Sampling Frame

The Sampling Frame used to select the sample for the Farm Structure Surveys and for others agricultural surveys are the register of all the Portuguese holdings, which is built after each Agriculture Census.

The holding's register created after the Census is an ORACLE database and its management was developed in VISUAL BASIC.

Actually the register contains for each of the 415 194 existing agricultural holdings:

- An identification number, which is composed by the codes of the geographical/ administrative units
 where the holding is located and a serial number resulting from the complete enumeration of the
 holdings at the lower level of the administrative unit;
- The name, the address and the telephone number of the farmer (in 73% of the cases);



- The tax number of the farmer (in about 90 % of the cases);
- 130 variables chosen between all the information collected at the Census.

The methodology for updating the register involved the following phases:

- Updating with the data collected from surveys conducted during the inter-census period.
- Updating with administrative sources

3.3.2. Survey design

Type of sample - Stratified random sample

The total sample size couldn't exceed 40 000 holdings, and should correspond to a sampling fraction of approximately 9, 5%. The sample size was considered enough in order to get, for each agrarian region, a sufficient precision for the most important variables.

The sample was firstly allocated to each of the 9 agrarian regions of the country, according the respective number of holdings, by the following expression:

$$n_R = \frac{\sqrt{N_R}}{\sum_{R=1}^{9} \sqrt{N_R}} x \, 40000$$

where,

 n_R number of holdings in the sample of the agrarian region R

 N_R number of holdings in the universe of the agrarian region R

In order to obtain good results for some variables, with significative importance at national level, but concentrated in a relatively small number of holdings, it was adopted a stratification "in cascade". Some strata were built that contained all the holdings of the region with a non-zero value or above a certain value for those variables. It's called stratification "in cascade" (water fall), because the holdings with values of the concerning variables above certain limits were progressively isolated.



Due to the importance of these holdings, the strata specially built for their inclusion were 100 % sampled observed or with a very high sampling fraction, depending on the existing number of holdings.

All the remaining holdings, not belonging to these special strata, were stratified by size classes of UAA. For the classes by UAA the size of the sample was defined taking into account the respective number of holdings.

Beyond the 100% observed strata special strata, was also exhaustive the stratum containing the holdings from the last defined size class, or in some cases with variables of certain variables with values above a certain threshold.

The stratification and the variables used can be found in annex. In those tables is presented the size of the co-ordinated sample.

Final tables with the adjusted size of the specific sample of Farm Structure Survey 2007 will be furnished after treating the results from the survey.

3.3.3. Pilot survey

Due to the methodology and organisation of FSS 2007 survey being the same as Census 1999 it was not essential to carry out a pilot survey.

3.3.4. Informing and training the staff and respondents

Interviewer and other staff training

Objective

The objective of the training programme for the various FSS 2007 operators was to provide qualified human resources that could correctly carry out the duties with which they were entrusted.

Because of the scale and the specific features of the FSS 2007, the various operators had to be trained in succession, in view of their respective profiles and duties.

Appropriate training was provided at each level, without ambiguities and with an equivalent degree of rigour all along the line, so that the entire team could reach a uniform level of preparation and competence.

Aspects relating to the organisational structure, the programme and duration of training could not therefore be overlooked because it was essential that there should be a baseline of common objectives at national level, although the necessary adaptations would be made at regional level.

Programme



Training was intended to give technical staff skills geared to the following objectives:

- knowledge of the aims and purpose of the operation;
- mastery of the concepts, definitions, methodology and procedures associated with the survey;
- mastery of the computer application underpinning the FSS 2007;
- mastery of aspects related to co-ordination/management of the operation;
- leadership and team management skills;
- skills to back up training;
- improved ability to analyse information;
- Knowledge with regional and local agriculture.

The training programme tackled the following aspects:

- notions about the operation in general and how it would work (chain of command, levels of responsibility, etc.);
- team leadership and co-ordination;
- interview techniques;
- guidance about training at the next level;
- introduction to the methodology for monitoring and managing the information-gathering operation: documents were prepared at national level to be used by everyone; explanation of procedures and timetabling;
- the manual: every point referred to in the manual was covered, both technically and in terms of procedures for filling in the questionnaire. Although most of the people had technical mastery of all concepts, the training given was based on the lowest level of knowledge. Particular attention was paid to some changes in concepts;
- team leadership and co-ordination.

The length of training varied: Technical staff – 3 days Supervisors– 1 days Interviewers – 1,5 days.

The training had a substantial practical component (interviewing farmers and simulating practical cases), especially for interviewers. The number of participants per session never exceeded 10.

Informing the respondents

The holdings were informed about the survey and data collection by personal letters.

Experience gained from earlier farm surveys had shown that farmers' participation and receptiveness were greater when they were well informed.

3.4. Sampling, data collection and data entry

3.4.1. Drawing the sample

Sample units chosen

The holdings were systematically selected in each stratum.

Statistical/other programs used in the sample selection

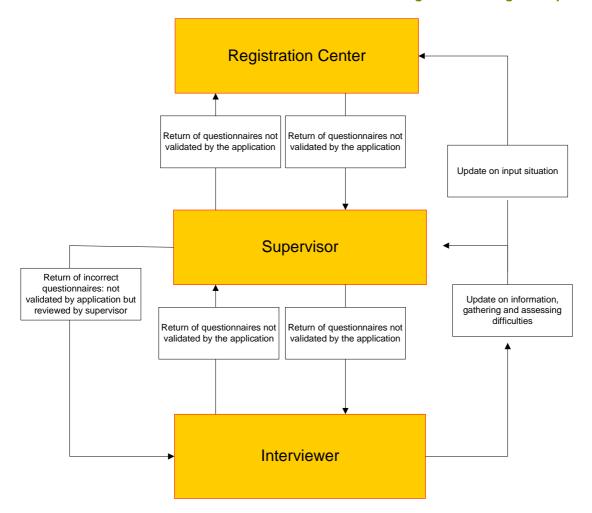
For the study and selection of the sample it was used the package SAS, with programs made for the occasion.

3.4.2. Data collection and entry

Data collection organisation

ORGANISATION OF FSS 2007





Data collection methods

Personal interview

Completion time per questionnaire

The overall interview time during the FSS 2007 was ½–1 hour.

Data entry methods - IT organisation

Because of the scale of the FSS 2007, a large number of operators and institutional structures needed to take part. IT solutions for organising the FSS 2007 therefore took into account the fact that the level of training and the resources available within each unit were not homogeneous.



The following aspects were vital when designing the architecture and choosing options for data input and computer processing:

the user-friendliness of the input and validation programme, so that it could be used easily by a wide range of non-specialist employees.

the speed of input/validation: As far as possible, priority was given to options in terms of equipment and programming that allowed for significant gains, reducing the time taken to fill in a questionnaire in the field, to input, analyse and, if necessary, to correct it.

It was necessary to arrange to have preliminary accumulators available at any stage of the operation. It was therefore important to ensure that all information was integrated up to national level.

The philosophy underlying the organisational arrangements for data collection and input was as follows:

- minimising the intervention of specialist IT personnel;
- minimising the use of communications infrastructure;
- standardising working methods at the various organisational levels in order to optimise the application to be developed;
- simplifying data consolidation;
- making all information accessible as soon as possible;

The hierarchy thus culminated centrally in the unit responsible for the operation.

It was established that all links between the various levels referred to here should be solely and exclusively between adjacent levels, with top-down monitoring and information moving from the bottom up. This gave a network in which each unit controlled the lowest possible number of operators and each reported only to a single higher echelon, thereby simplifying the inherent complexity of an organisational structure with so many operators.

Data entry transmission

The information consolidation was in two stages. The first was exporting information from one level to the higher echelon on holdings containing information considered to be valid. The second was importing information from the lower echelon.

3.4.3. Utilisation of administrative data sources

There was not any use of administrative data sources.



3.4.4. Control of the data

The data-input application triggered data validation during input (on-line). This validation could be triggered later, after input (batch processing), and a file summarising all the validation tests could be produced. This could be analysed on screen or printed out.

The results of these validations could be analysed by the technical staff. The data-imputers made the necessary corrections. A further batch validation ensued and so on.

Only after validation had been completed without errors were data considered being correct.

The information on each holding was analysed automatically. If this was consistent according to the rules defined, the holding was counted as correct. If it was inconsistent, the holding was taken as wrongly entered.

3.4.5. Non response

Reasons

The criteria's for the substitution of a holding from the sample were very restricted. A replacement should be done only in a situation of impossibility to contact the holder or someone that could give the information asked in the survey or still in case (illness, other) of a refusal to answer. In FSS 2007 there were 384 non responses that were replaced according this methodology.

Measures to increase response rates

The following measures were established:

- Follow up interviews
- Legal actions

3.5. Data processing, analysis and estimation

3.5.1. Methods for handling missing or incorrect data items



Substitution of holdings

A holding always did the substitution of holdings from the same strata. In the exhaustive strata (100 % sampled) it's not possible to make a substitution. In such a case either the missing information was copied from the previous survey, assuming that there was no change, or the information was copied from a duplicated questionnaire of a holding from the strata. Very few cases happened to be in the exhaustive strata.

It was developed a computer program to enable a direct selection from the population to make a replacement of a holding, from the same strata and as similar as possible of the effective one.

Data validation

The information on each holding was analysed automatically. If this was consistent according to the rules defined, the holding was counted as correct. I it was inconsistent, the holding was taken as wrongly entered.

3.5.2. Estimation and sampling errors

The estimation method is the usual domain estimation for a random stratified sample. The formulas can found on annex.

Estimation of the number of existing holdings, in production

The changes detected on the sample must be reflected in the departing population: the percentage of disappeared or abandoned holdings should be excluded from the universe and the new holdings should be added. These calculations are made in each stratum defined for the selection of the sample (see annex).

$$Number\ of\ existing\ holdings = \begin{cases} Initial & Universe \\ - \\ Disappeared\ and\ abandoned\ holdings \\ + \\ New\ holdings\ \ (daughters) \end{cases}$$

A new holding can result from the subdivision of the land of an existing holding or from joining land from more than one holding. The new holdings are called "daughter holdings" and they are treated as belonging to the strata of their "mother". The "mother holding" is considered the holding that gave the biggest part of the land to the new holding.



A holding can disappear because it joined an existing holding, became a construction area or doesn't fulfil anymore the conditions to be defined as a holding. An abandoned holding is a holding not producing at the moment of the survey but that can take back its activity.

3.5.3. Non sampling errors

There is no methodology to estimate non-sampling errors (coverage errors, measurement errors and processing errors, non-response errors, model assumption errors). By the reason of that the effects to the variance and bias due to non-sampling errors weren't estimated.

3.5.4. Evaluation of results

The FSS 2007 results (micro/macro level) were compared with other data sources (administrative data and/or survey data).

4. PUBLICATION AND DISSEMINATION

The statistical information gathered in a FSS is only of value insofar as it is disseminated. The dissemination process is therefore highly important.

The products to be disseminated and the way they are disseminated have evolved since the last census, due to developments in the reality of agriculture itself, a more demanding public, need for information, and the technological progress now available to producers and users of information.

Paper still has unquestionable value as a tool for disseminating data, and maintains its own advantages.

As a result of advances in the field of information technology, however, users are turning increasingly to electronic media (Internet, dissemination of information on request, etc.) as a means of accessing information.

Fast, easy access for internal and external users to information on the FSS 2007, whether via predetermined tables or in new investigative formats, was one of the aspects that was given more attention. Progress made in databases (more user-friendly consultation processes) and hardware, which make information processing faster, was also given due consideration.

Dissemination plan

This envisaged the following:



- initial results, i.e. a set of indicators allowing conclusions to be drawn about developments, to be publicised after completion of data input.
- Pre-determined analyses, with tables available at NUTS2 level and Regions level.
- Demand-led analyses, which required easy access to a user-friendly database.

The dissemination products are available in various media:

- on paper
- on the Internet

All FSS 2007 products incorporate procedures to protect statistical confidentiality.

All dissemination products for the FSS 2007 incorporate the same method of rounding up and calculation for the various geographical levels for every variable, with the exception of accumulators.

Date of issuing

November 2008, information would become available for the users but only by his request. It is not foreseen a publication since PT are preparing the agriculture census that will be carried out in 2009.

The publications

Users don't have access to individual data.