



**FARM STRUCTURE SURVEY 1999/2000**

**NATIONAL METHODOLOGICAL REPORT**

**Member State: FINLAND**

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**TABLE OF CONTENTS**

SUMMARY.....	3
1. INTRODUCTION .....	5
1.1. History, scope.....	5
1.2. Legislation .....	5
1.3. Main changes in the 1990's.....	7
2. CONTENT.....	7
2.1. Characteristics.....	7
2.2. Questionnaires .....	8
3. SURVEY METHODOLOGY .....	9
3.1. Survey organisation.....	9
3.2. Work process .....	10
3.3. Preparing the survey operations.....	10
3.4. Sampling, data collection and data entry.....	15
3.5. Data processing, estimation and analysis .....	22
4. PUBLICATION AND DISSEMINATION .....	26
5. SUGGESTIONS FOR FURTHER TASKS .....	27
REFERENCES .....	28

## SUMMARY

An Agricultural Census took place in Finland in 2000. The data was collected in three phases. The first phase started in February 2000, when the statistical questionnaire which included questions about machinery, computers, irrigation area, storage facilities and other activity on a holding, was sent to the farms/holdings. The second phase was to collect information about arable land and livestock from the farms which had not applied for subsidies during Summer 2000. The third phase was a labour force interview, which was made as a computer aided telephone interview between August and December 2000.

In addition to the questionnaires, four different registers were used as a source of information. Those were the Rural Business Register, the Register of Horticultural Holdings, the Register of Bovine Animals and the Register of Organic Farming. The data on arable land and livestock were taken from the Rural Business Register and the register of Bovine Animals respectively. The data for horticultural holdings was taken from the Register of Horticultural Holdings and the information concerning whether the farm had applied the methods of organic farming production was taken from the Register of Organic Farming.

Before the actual census, a pilot census took place in 1999. The pilot census gave useful information about how the questionnaire should be done and also about the timetable.

In the Information Centre of the Ministry of Agriculture and Forestry (IC/MAF) the data from different sources was collected in a statistical database. All farms and horticultural enterprises in Finland have a unique identification number with which the data from different sources can be combined. Combining the information from the registers and other sources was made by IC/MAF and took place mainly in Autumn 2000.

The response rate to the census was about 99%. The high response rate was due to several reasons. Firstly it was the help of the rural business departments in the municipalities, who helped the data collection in the first phase. The officers in the municipalities know the farmers in their area well which had a positive affect in obtaining responses. The other main reason for the high response rate was the computer aided telephone enquiry in collecting labour force data. Telephone interviews have proved to be a very effective way to collect information in Finland. Good co-operation between the company making the interviews and IC/MAF is essential as it affects the response rate. The response burden could be minimised by using other sources as much as possible. Under Finnish law, using existing data for statistical purposes is obligatory, and works well in Finland. When most of the data is taken from existing sources, the amount of items which have to be asked can be reduced which simplifies the questionnaires and has, no doubt, an effect on the response rate.

The first results were published in April 2001. During 2001 several press releases were made and the census therefore got a lot of publicity. Results were also published on the internet site [matilda.mmm.fi](http://matilda.mmm.fi). The quality of the census can be deemed to be good, because the response rate was high and

very little imputing was necessary. Due to existing registers, coverage errors were minimised, measurement errors were rare and processing errors were avoided by making checks in the programs at the many stages of the processing.

## **1. INTRODUCTION**

### **1.1. History, scope**

An Agricultural Census took place in 2000, of all Member States. The scope of this survey was to collect and publish comparable data. Some data for national purposes were also collected. The other important function was to update the basic farm register, the Rural Business Register. The register is updated yearly, but the information about farms, which have ceased farming or farms which do not apply for subsidies are not updated automatically in the register.

Four different registers for sources of data in the census were used: the Rural Business Register, the Register of Horticultural Holdings, the register of Bovine Animals and the Register of Organic Farming. In addition to the registers, two separate surveys were made. One was as a statistical questionnaire and the other was by way of computer-aided telephone enquiries.

The Rural Business Register serves both statistical and administrative purposes. It contains a large amount of data collected principally for statistical purposes. The Integrated Administration and Control System (IACS) constitutes a part of the Rural Business Register in Finland. The register of Horticultural Holdings is a purely statistical register and the Register of Organic Farming and the Bovine Animal Register are part of the Rural Business Register. The two separate surveys were purely statistical surveys.

The last census made in Finland was in 1990. Prior to that censuses were carried out roughly every ten years. Between censuses livestock and arable land data has been collected from the Rural Business Register in which the information is collected from administrative sources and by annual sample surveys. Farm Structure Surveys have also been made after joining the EU, in 1995 and 1997. The first agricultural Census was made in Finland in 1910.

### **1.2. Legislation**

- **Responsibility for the census**

The Information Centre of the Ministry of Agriculture and Forestry (IC/MAF) carried out the census according to FAO and EU-regulations. There was no need to write specific national legislation for the census, because of the comprehensive legislation already existing which are as follows:

- Article 1(3) of Finland's Statistics Act (21.1.1994/62)
- Article 1(1) of the Act on the Information Centre of the Ministry of Agriculture and Forestry (4.12.1992/1200)
- Article 1 of the Act on Rural Business Statistics (20.12.1996/1197).

- **Scope and coverage**

At national level, the Rural Business Register Act (29.12.1994/1515) contains provisions on, among others, the scope of application of the Act and the purpose of the register. Specific mention is made of the use of data for statistical purposes.

- **Frequency of the census and time reference**

The frequency and time reference follows EU-legislation. All information collected and used refers to the situation in the reference year 2000. This means that the registers were updated before the data were extracted to be used for the 2000 basic survey.

The reference date for crop and land use was May 26, for livestock the reference date was May 1. The reference time for machinery, storage facilities and rural development was the year 2000 and for the labour force survey the reference time was from 1. September 1999 to 30. August 2000.

- **Administrative and financial provisions**

Since the 1980s, Finland has consistently sought to avoid overlap in data collection and to reduce the burden on those required to provide this information. This principle is incorporated in Finland's Statistics Act (21.1.1994/62). In accordance with article 1(4) of this Act, when data are obtained for the compilation of statistics use should be made in the first instance of data collected in other contexts. In accordance with article 2(6) of the Act the data shall be collected in a manner that is economical and causes the respondents a minimum of inconvenience and costs.

- **Obligations of the public with respect to the census**

According to the national legislation (articles 2 and 5 of the Act on Rural Business Statistics (20.12.1996/1197)), the farmers were under an obligation to respond to the census questionnaires. If the farmer did not respond, it was possible to impose a penalty against the farmer. There was no need to use this penalty

- **Identification, protection and obligations of enumerators**

The agricultural authorities in the municipalities were responsible for collecting the aid application forms and the statistical questionnaires coming from farmers in their municipality. The authorities in the municipalities are, according to article 11 of the Act of Rural Business Register (29.12.1994/1515), obliged to keep data acquired for the Rural Business Register confidential.

The Information Centre gave the personal letter of authority to the computer aided telephone interviewers regarding the collection of the data for the Labour Force Survey. They were obliged, according to article 5(17) of Finland's Statistic Act (62/1994) 17§, to keep the data confidential.

According to both article 10 of the Act of Rural Business Register and article 4(14) of Finland's Statistical Act respectively the maintainer of the register and the authority producing statistics shall see to it that the data are duly protected against unauthorised processing, use, destruction and alteration, as well as against theft.

### **1.3. Main changes in the 1990's**

The last full census was carried out in 1990. Many things have changed since then:

- The number of holdings has decreased significantly (129 114 → 81 807)
- Finland became a member of the EU at the beginning of 1995
- The first Farm Structure Surveys were carried out after joining the EU, in 1995 and 1997. These surveys were sample surveys (stratified random samples, stratification variables were area, farm type and economic size of the holding).
- In the 1990 census the list of characteristics was slightly different, though no major changes, then to that of 2000, in addition data about fur-, reindeer- and forest holdings was also collected.
- There has been a remarkable development in data collection methods. The organisation of the 1990 census consisted of about 4 000 interviewers who visited the farms, along with as a supervisor in each municipality. In the 1990's the use of computer aided telephone interviews and use of data collected in other contexts became common. In 1995, 1997 and 2000 most of the data was collected from existing registers or by computer aided telephone interviews.

## **2. CONTENT**

### **2.1. Characteristics**

The information about land use, arable and other agricultural land, livestock, machinery, irrigation area, storage facilities, labour force and other activity were collected according to the Commission Decision of 18 May 1998 (98/377/EC). Some data for national interests was also collected, for example information about computers and internet-connections. More detailed data of other activity than what is required in the Commission Decision was also collected.

The definitions used for the data in the existing registers corresponded to the Community definitions of the survey characteristics which were compulsory for Finland in the framework of the 1999/2000 Community Farm Structure Surveys.

## **2.2. Questionnaires**

The census data was collected using different data sources. This is the reason for many different questionnaires. All the questionnaires were in paper format. There were separate questionnaires for:

### ***A. Land use, arable and other agricultural land and livestock***

Two different types of questionnaires were used:

**a) questionnaires for the holdings which applied for subsidies:**

- 1) "Farm questionnaire", 2 pages,
- 2) "Aid application form", 4 pages;
- 3) "Basic parcel form of the aid application", 2 pages,
- 4) "Agricultural parcel form of the aid application", 2 pages and
- 5) "Information on the number of livestock: 3 pages".

On these forms and in the instructions for completing them, the farmers were clearly informed that they did not only fill in the forms for applying for certain subsidies, but that they also filled in the statistical questionnaires as a part of the 2000 census. The farmers were also informed that they had to indicate all their crops and animals on the forms, not only the ones for which they applied for subsidies.

**b) the questionnaire for the active farms which did not apply for any subsidies (2 pages).**

### ***B. Machinery, computers, irrigation area, storage facilities and other activity***

This questionnaire contained four pages. This questionnaire was a purely statistical questionnaire.

### ***C. The Labour Force survey***

The questionnaire contained three pages from which the farmer had to choose the one that corresponds correctly to his/her type of farm. This questionnaire was a purely statistical questionnaire.

### ***D. The Register of Horticultural Holdings***

The questionnaire for the Register of Horticultural Holdings contained 4 pages. This questionnaire was a purely statistical questionnaire.



### **3. SURVEY METHODOLOGY**

#### **3.1. Survey organisation**

- **The Information Centre of the Ministry of Agriculture and Forestry - Project team**

When the project team was established, it consisted of eight persons in total, of which only two persons worked full time on the census. The team consisted of agricultural, ADP and statistical experts. The project team had two experienced supervisors with good experience from earlier censuses in Finland. In the year 2000, when the census took place, three more people were engaged; one for the whole year and two for half a year. The working time that the project team used for the census was just over 19 man-years, of which 3 man-years were in 1999, 8.3 man-years were in 2000 and approximately 8 man-years were in 2001.

The project team had the overall responsibility for the census. It was responsible for planning, making contracts, budgeting, informing the farmers and all other persons involved in the census, as well as training the field staff and all personnel involved in registering or processing the data in databases. The project team also had responsibility to aggregate the data from different sources, to validate the data, to publish the results and to build up the EUROFARM database.

The Information Centre was also responsible for printing and the mailing of the forms, the instructions for completing them and the guidelines on aid applications and checking and processing the data of the centralised system.

The Information Centre was also responsible for reminding the farmers who had not answered in time or refused to answer about the legal status of the census.

- **Municipalities**

The municipalities played an essential role regarding the data collection. The agricultural officers in the municipal rural business departments were responsible for the receipt and checking of the forms completed by the farmers, for recording the data on the forms and processing the data of the decentralised system.

There are about 450 municipalities in Finland, so on an average this means 200 active farms in a municipality. The agricultural authorities in the municipalities know the farmers in their area quite well, so that if no answer was obtained they could call on the farm and ask for the information. There was no legal basis for the municipalities to help in the data collection, but they collected the data on a voluntary base. A small compensation per holding was paid to the municipality officers.

- **Teleperformance Finland Ltd**

The company Teleperformance Finland Ltd was responsible, as a subcontractor, for collecting the Labour Force Data.

### 3.2. Work process

Preparation of the census started at the end of 1998. Key activities and timetables were as follows:

Activity	Started	Finished
1. Pilot survey - statistical questionnaire - labour force interviews	1.6.1999 1.9.1999	25.6.1999 30.9.1999
2. Machinery, computers, irrigation area, storage facilities and other activity Training the staff (municipality officers)	24.2.2000 3.2.2000	14.7.2000 24.3.2000
3. Information concerning the statistical questionnaire about farms not applying for subsidies	14.7.2000	31.8.2000
4. Labour Force survey (interviews) Training the staff (interviewers)	1.9.2000 25.8.2000	30.12.2000 25.8.2000
5. Information from the Rural Business Register	26.5.2000	15.11.2000
6. Information from the Register of Horticultural Holdings	15.10.2000	31.01.2001
7. Information from the Register of Organic Farming	1.9.2000	31.12.2000
8. Information from the Bovine Animal Register	1.10.2000	15.11.2000
9. Data checks	30.9.2000	17.4.2001
10. Publications/dissemination	24.4.2001	31.12.2001
11. Data to Eurostat		31.12.2001

### 3.3. Preparing the survey operations

#### 3.3.1. Population and frame

- **Definition of the holding**

The definition of 'farm' in the rural business register follows the definition of 'holding' in the IACS (Council Regulation (EEC) No 3508/92). This definition differs from the definition of 'agricultural holding' in the Farm Structure Survey. A 'farm' means all the production units managed by a farmer (a natural or legal person or a group of natural or legal persons) situated within the territory of Finland.

In Finland, the majority of farms are family holdings, and tend to consist, both technically and economically, of only one production unit. In practice, then, the definition of farm follows that of an agricultural holding.

The target population is agricultural holdings with:

- A utilised agricultural area (UAA) of at least 1 hectare or
- A total standard gross margin of 1.00 European Size Units (ESU) or more

- **Building the frame**

*The Rural Business Register*

The Rural Business Register contains all potential holdings, which could produce agricultural products. Many of these units are farms, which have rented out their agricultural land, but some are farms with agricultural land in management but not in cultivation. In fact, only 87 464 of the farms included in the register were active farms at the time when the frame was made at the beginning of 2000. These were included in the census frame. Regarding the census, in this respect, the Rural Business Register covered 97% of all the holdings.

The register doesn't include all horticultural enterprises, e.g. greenhouse enterprises, which apply for aid only through the Employment and Economic Development Centres.

*The Register of Horticultural Holdings*

The Register of Horticultural Holdings was used as the source of information of horticultural enterprises. Most of them already exist in the Rural Business Register, because they are above the threshold of a farm. There were still 2024 horticultural enterprises, primarily greenhouse enterprises, however which were not included in the register. From those farms which are in both registers, the information about horticultural products is more accurate in the Register of Horticultural Holdings than in the Rural Business Register.

*The Register of Organic Farming*

Information is taken from the Register of Organic Farming about whether a farm cultivates with organic farming methods. Because this register is part of the Rural Business Register, farms have the same identification number in both registers. All farms which cultivate according to EU organic farming regulations are included in this register.

*The Bovine Animal Register*

The Bovine Animal Register is used as the basis for data on the number of bovine animals. This register is also part of the Rural Business Register and therefore has the same identification numbers as in the basic register. The register follows the rules of decisions EU Commission and Parliament (EY) N°1760/2000 and (EY) N° 3508/1992 regarding the Bovine Animal Register. All bovine animals are included in the register in the way it is stated in these decisions.

### *Other active holdings*

There were 708 new farms which had started farming and applied for subsidies. They were included in the frame. The authorities in the municipalities were also asked to give the Information Centre information on possible new farms which had started farming but had not applied for subsidies. Most of the farms which had started farming had also applied for subsidies. A few new farms were also found from the Register of Horticultural Holdings, the Register of Organic Farming and the Bovine Animal Register. Altogether there were 327 of these kinds of farms, which were included in the frame.

### *Combining the registers*

Survey units were taken from the Rural Business Register of 1998 and the Horticultural Register of 1999. The farms, which had started in agribusiness in 1999 - 2000 and applied for subsidies, were also included. In all registers the holdings have the same identification code, so technically combining these registers was not difficult.

The census population was compiled and put into a statistical database. The frame consisted of 90 523 farms and horticultural enterprises. Six different codes were used to differentiate between the farms; there was one code for those farms who had applied for agricultural subsidies, another for those who had not applied for agricultural subsidies and another for horticultural enterprises. In addition all three data sets were divided according to the language code Finnish/Swedish. This was made because the covering letters were different for all six data sets.

### *Updating procedure of the frame*

The bulk of the data used for statistical purposes was based on the Rural Business Register updated once a year by the municipal rural business departments. Such data refer to, amongst others, the areas in various land-use categories, the use of arable land and other agricultural areas and the numbers of livestock (exc. bovine animals). This data is recorded in the computer after the main aid application is made in June and July. The basic data on farms and their farmers is updated at the same time. The basic data (e.g. changes in telephone numbers, addresses and names of the farmers) could also be updated in connection with other aid applications made during the year.

The frame of the Register of Horticultural Holdings is updated yearly by information based on aid applications and other sources. The data for this register are collected by an annual postal survey.

The Register of Organic Farming is updated yearly by aid applications.

The Bovine Animal Register is continuously updated on the basis of information sent in by the farmers. Each cattle rancher is obliged to inform of all changes (e.g. births, deaths, slaughters) that have happened in their herd(s) within two weeks.

### *Frame errors*

The frame was real-time and large frame errors did not exist. Finland's rural business authorities process and pay both EU and national aid through systems incorporated in the Rural Business Register and other databases. These aid systems cover practically all active farms because the aid is of particularly great importance in the composition of farm incomes.

As all farms and other agricultural enterprises in Finland are entered in the databases, it is possible to use the system to find out which farms in production (active farms) have not applied for aid. Every year about 4% of active farms in Finland do not apply for either EU or national aid. The Information Centre collected the data on these farms from the farmers or other agricultural entrepreneurs directly by computer-aided telephone enquiries. These data are then incorporated in the statistical register of the Rural Business Register using the farm identity number.

### **3.3.2. Survey design**

The agricultural Census was carried out by a complete enumeration.

- **Co-ordination with other surveys**

Existing sources were used as much as possible in the census. Because of the use of existing sources, the amount of information collected by purely statistical questionnaires was not very big. For the farms that applied for subsidies, there were two additional questionnaires whilst for those who did not apply for subsidies, additional three short questionnaires were sent. Use of administrative data in Finland is normal because about 96% of all active farms apply for subsidies. The farmers wouldn't understand it if the information on arable land and livestock were to be requested twice. In Finland farmers tend to think that when they give information once, it should be used in all cases where this is relevant information.

### **3.3.3. Pilot Survey**

The pilot census was made about one year before the actual census and was carried out in the same way as the actual census. Three municipalities were chosen on a voluntary basis. Two of these municipalities were quite small whilst the third one was somewhat bigger. The main purpose of the pilot census was to test the questionnaire and to find out the best time for the return of the questionnaires, both from the farmers and the municipality officer's point of view. The pilot survey focused on 2 purely statistical surveys, but data from existing registers (*A. Land use, arable and other agricultural land and livestock* and *D. The Register of Horticultural Holdings*) was collected as well.

#### ***A. Land use, arable and other agricultural land and livestock***

The information was collected from the Rural Business Register in Autumn 1999.

### ***B. Machinery, computers, irrigation area, storage facilities and other activity***

The questionnaire and a feedback form were sent to all active farms in Spring 1999 in these three municipalities. The questionnaires were asked to be returned to the municipality officers. Two different points of time were tested; in two municipalities the questionnaires were asked to be returned with the main agricultural aid applications and in the other one later on in the year. After the experiments of the pilot census, the actual census was agreed to start at the end of February 2000.

### ***C. The Labour Force survey***

The second part of the pilot census was made in September 1999. All farmers, who answered the statistical questionnaire, were sent a question form and interviewers from IC/MAF phoned the farmers and recorded the information on computer during the interview.

### ***D. The Register of Horticultural Holdings***

The information of horticultural enterprises was collected from the Register of Horticultural holdings at the beginning of the year 2000.

- **Results of pilot census**

The data of the pilot census were processed in the same way as in the actual census. The data was transferred to the statistical database, the validation procedures were made and the dissemination plans were made. The results of the pilot census were not published outside of the municipalities taking part. The EUROFARM pilot - database was ready before the first data from the census were received (March 2000).

The pilot census appeared to be very useful. In the pilot census extra information about buildings on the holding were asked because it was also asked for in 1990 and the Ministry of Agriculture and Forestry was interested in collecting the information. It happened that this information was too difficult to collect and because it was not included in the list of characteristics, the question was dropped from the final census. Amendments in the questionnaire for some other items, especially in the section on other activity were also made.

The response rate in these three municipalities was: Mouhijärvi 97%, Iisalmi 89% and Piikkiö 89%. The information collected in the Pilot census was not used in the real census in 2000. In the questionnaire there was also a place for other comments and a lot of useful information was obtained here. All the farmers who answered the questionnaires were sent a cap.

#### **3.3.4. Informing and training the staff and respondents**

Sufficient information was attempted to be given before the census, as this was essential to carry out the census properly. In the information policy the general public was not attempted to be reached. It was specifically aimed at the farmers, the Farmers Unions, the advice organisations and the agricultural

officers in the municipalities. The information was given to the farmers in agricultural magazines and newspapers. There was also information about the census on internet-pages ([www.mmm.fi/tike/](http://www.mmm.fi/tike/)).

Each officer in each of the municipal rural business departments was informed of the census. The persons responsible for the census took part in training sessions which were held all over Finland. There were about 15 different sessions which were mostly arranged by the Employment and Economic Development Centres but were also arranged by advice organisations usually for informing the officers about the changes that would happen within the administration of agriculture this year. Before the first statistical questionnaires were sent, the managers of the municipalities got a letter from the Information Centre informing them of the project. The agricultural officers of each municipality were also sent a guidebook for the census in which there was more information on how to fill in the questionnaire and about recording the data.

Actual training sessions for the municipality officers were organised in Spring 2000. They, also, organised training sessions for the farmers and the advisory services giving advice to the farmers on how to fill in the forms. All these sessions provided an opportunity to stress the statistical aspects, e.g. the importance of information for statistical purposes.

Delegates of the Farmers Unions were informed about this in meetings organised in 1999 and early 2000. They, also, informed personnel in the regional offices of the Farmers Unions.

Separate training sessions were organised for the personnel of the Information Centre of the Ministry of Agriculture and Forestry and interviewers of the company Teleperformance Finland Ltd who were involved in collecting data or in registering and/or processing the data in the databases.

### **3.4. Sampling, data collection and data entry**

#### **3.4.1. Drawing the sample**

The agricultural census was carried out by complete enumeration, so all the farms in the frame were selected for the census.

#### **3.4.2. Data collection**

##### ***A. Land use, arable and other agricultural land and livestock***

The basic data on farms and their farmers, information on the areas in various land-use categories, the use of arable land and other agricultural areas and the numbers of all livestock (exc. bovine animals) were requested on forms appended to the main aid application.

The above mentioned forms and instructions together with guidelines on aid applications were sent in April 2000 to all farmers who had applied for EU and/or national aid in the previous year. The pre-printed basic data on the first pages of some forms was based on the information in the Rural Business Register, which has been updated by the municipal rural business

departments on the basis of the declarations of the previous year. Those who did not satisfy the distribution criteria could obtain the forms, instructions and guidelines from the rural business departments of their municipalities.

Farmers and other respondents had to return the completed forms to the municipal rural business departments by 26 May at the latest. Other purely statistical data was also included in these aid application forms.

The officers in the municipalities were responsible for the receipt and checking of the forms completed by the farmers, for recording the data on the forms and processing the data of the decentralised system. The municipalities' decentralised systems, for example, validate the data recorded and send the information to the central register, which is maintained by the Information Centre.

Data transfers were made over modems and executed by the municipal data transfer program through an EDI-server. The Information Centre combined the data received from the municipalities, validated the data received and carried out the necessary crosschecks.

In the Information Centre the data was transferred directly to statistical registers. Only persons responsible for the census and people responsible for transmitting data were permitted to handle the data.

The active farms, which did not apply for any subsidies, received an additional form to gather information about land use, arable and other agricultural land and livestock. The survey took place from June to August 2000. The data was collected by a computer aided telephone interview using mainly the same procedure as in the Labour Force Survey. This survey was carried out by the Information Centre.

### ***B. Machinery, computers, irrigation area, storage facilities and other activity***

The statistical questionnaire regarding information about machinery, computers, irrigation area, storage facilities and other activity, was sent out in February 2000 by post. The completed statistical questionnaire had to be returned to the municipal rural business departments by the end of March.

In the municipalities the data was received, checked and recorded in the specific municipality program. This program gives instantaneous feedback to the data typist entering the data, if there are any typing errors. The municipalities had until 14 July to transfer the data of the statistical questionnaire to the computer. After this time responsibility for collecting the data moved to the Information Centre and the payment per recorded holding was paid to the municipality officer.

Data transfers were made in the same way as for the questionnaire in 3.4.2 A. In the Information Centre the data was transferred directly to statistical registers. Only persons responsible for the census and people responsible for transmitting data were permitted to handle the data.



### **C. The Labour Force survey**

The Labour Force survey took place from September to November 2000. The Labour Force data was collected by a computer aided telephone interview. The questionnaires were sent to the farms by the Information Centre. The farmers were asked to complete the questionnaire in order to make the interview by phone as short as possible. About one week after sending out the questionnaire, the interviewer called on the farm to collect the data. Farmers also had the possibility to call to the 'service number' to give the labour force information.

The Labour Force Survey was carried out by a private company. There was a 4 hours training session for the interviewers (about 45 interviewers) about one week before the interviews started. All the interviewers were required to participate in this training session. In the case that farmers had some problems to complete the questionnaires, there were telephone numbers available where they could ask for help.

IC/MAF delivered the basic information of the farms which were included in the survey to Teleperformance Finland LTD (TPF). The basic data was delivered in CSV-format and the data was encrypted and signed with a PGP-program. The data was delivered to the company TPF via email. There were two data transmissions of the basic data between IC/MAF and TPF. The first transmission was made before the survey and the other one was made in the middle of the survey. The second transmission of data contained information which was not available when the first part was completed.

During the survey TPF delivered every Monday information about interviews, which had been made during the previous week. TPF delivered information in four CSV-files via e-mail. Before sending this by e-mail it was TPF encrypted and signed the files with a PGP-program. When the files arrived at IC/MAF's mail-server, they were delivered immediately to the statistical database-server. The database-server unencrypted the files and after base-checks it uploaded the files to the validation database-tables. After the manual check the data were uploaded to IC/MAF's Eurofarm database.

After the survey an IC/MAF employee travelled to TPF and checked that all the data which belonged to the Agricultural survey had been erased from the TPF information system.

### **D. The Register of Horticultural Holdings**

The Register of Horticultural Holdings is mainly updated by a postal survey each year at the end of the year. The pre-printed forms and return envelopes were sent to the holdings by post, and the farmers were asked to return the forms to the Information Centre by post. If a farmer did not return the form after a written reminder, these holdings were interviewed by phone. Some administrative information was also used to update the Register of Horticultural Holdings.

In the Information Centre the data was received, checked and recorded in the statistical database using Microsoft ACCESS.

### 3.4.3. 3.4.3 Control of the data

#### **A. Land use, arable and other agricultural land and livestock - The Rural Business Register**

- **Checks at local level**

*Pre-entry checks.* Before the data from the forms was recorded in the computer, the municipal departments responsible for rural businesses carried out a preliminary check to see that the forms had been completed correctly and in full. If shortcomings were discovered at this stage, the farmer or respondent was contacted.

*Computer-based controls.* In conjunction with the recording process, the data were subjected to various constraints and logic checks and for normal consistency checks for relational databases. In addition, the municipal departments responsible for rural businesses carried out various checking and validation routines in the decentralised system. There were more than 30 different checking procedures.

*Advance notification.* In late summer, farmers were sent advance notification of the data recorded in the decentralised system. The notification gives the data on areas of all crops and other agricultural land and numbers of all livestock, and also specifies the areas and number of animals for which support will be paid. The farmers were asked to check the information and let the municipal departments know if there are any errors. Many errors in entering data in the computer were avoided in this way.

- **Centralised system verification**

*General checks.* The validity of the data was also checked centrally by means of various monitoring procedures, reports and deviation studies. In connection with the loading process the data sent by the municipal departments were subjected to checks at national level, and the municipalities were informed automatically of any errors.

*Checks in connection with the production of statistics.* The data of the centralised system was also checked during Autumn 2000 using, for example, sum, logical, cross-checking and comparison procedures. In sum checks, the area of arable land in management, for example, was compared with the areas of arable land owned, land rented to the farm and land rented out. In logical checking, minimum and maximum values were checked, and in crosschecks agricultural parcels, for example, were compared with the area of basic parcels and cultivated land. The area of arable land, the areas under various crops and the numbers of various livestock, for example, were compared with the data of the previous year at national, regional and municipal levels, and sometimes at farm level, too.

In accordance with the IACS regulations, aid applications were checked by means of administrative crosschecks, on-the-spot controls and remote sensing controls.

## ***B. Machinery, computers, irrigation area, storage facilities and other activity***

### **• Checks at local level**

- if there were more than 10 tractors, the program asked to check if they had been used in agriculture within the last 12 months
- if there were more than 5 harvesters or combine harvesters, the program asked to check if they had been used in agriculture within the last 12 months
- if there were more than 15 other fully mechanised harvesters, the program asked to check if they had been used in agriculture or horticulture within the last 12 months

### **• Checks by the Information centre**

There were two phases of checking: Random sampling and checks of logical errors.

1. The random sampling method was made by picking 5 % of the questionnaires from each municipality so that at least 10 questionnaires of each municipality were picked and each questionnaire was checked by hand. In addition to this, a 5 % sample was picked from those farms, which had other activity because this part of the questionnaire was the most difficult section.

2. The logical checks were made from the statistical database after the data from all the municipalities had been transferred to it. The logical checks consisted of some obvious mistakes, which could be found in data. e.g. a farm was assumed to have a tractor if it was not an horticultural enterprise and in the other activity section there needed to be a

yes-answer if the farm had later in the questionnaire selected an item of other activity. Altogether these kind of logical errors were found in about 3 000 farms. All these farms were checked at the same time as the random sample was carried out.

There were six students making checks for about one month. They used a special application created in Microsoft ACCESS for this work.

There were still some final checks made. Next items to be checked were:

- Harvesters but no area under cultivation
- Combine harvesters but no crops to be harvested
- Irrigated area was larger than area under cultivation

## ***C. The Labour Force Survey***

### **• Checks by the subcontractor**

There were several checks made by the interviewing program:

- the whole row (all information on a person working in agriculture) needs to be completed
- all the information on a farmer needs always to be completed for family farms

- the year of birth can't be less than 1986
  - there needs to be a manager of a holding in family farms and in co-operative farms
  - the education of a manager needs always to be filled in.
- **Checks by the Information centre**
    - checks were made that there were none of the above mentioned mistakes in the data before putting it in the statistical database

#### ***D. The Register of Horticultural Holdings***

In the Register of Horticultural Holdings there were several logical checks. For example it was checked that maximum values were sensible and that all items were completed whilst being recorded manually into the database. The information of the Horticultural Register was also compared to the information with the Rural Business Register to avoid under coverage. After all the data was in the database, logical and sum checks were made. The results were compared to the previous year and if considerable changes were found, they were checked by hand.

#### **3.4.4. Non-response**

It was attempted to minimise the number of non-responses by giving a lot of information about the census and the reasons why the census is made. The use of existing registers was also stressed, because it is becoming more and more common in Finland that the farmers wouldn't like to give the same information twice. On the day when the census started and the farmers received the first questionnaires, there was an advertisement and articles in a leading agricultural magazine.

#### ***A. Land use, arable and other agricultural land and livestock***

For the farms, which applied for subsidies, all information was gathered from the Rural Business Register, and there was no missing data. For those, who had not applied for subsidies, one reminder was sent. They were also reminded in connection with the Labour Force Survey.

#### ***B. Machinery, computers, irrigation area, storage facilities and other activity***

After two weeks of posting the first statistical questionnaires, a kind of thanking/reminding postcard was sent to each farm. The meaning of this card was to remind the farms to respond and also to thank them if they had already answered. Although the postcard caused many misunderstandings from those who had already answered, it was very effective and many completed questionnaires were received because of that.

The first real reminders were sent at the beginning of May and the second reminders at the end of July. At the same time at the end of July it was checked whether the farm had applied for subsidies, and if it had not, an additional questionnaire about land use and animals was sent out.

To avoid missing data on the forms, several pre-checks were made. It was compulsory for a farmer to fill in all the items in the statistical questionnaire. If there was no information in any item whatsoever it was impossible for the officer in the municipality to record the data in the computer. If the answer was no, it also had to be recorded.

There were 709 farms from which the answer for the Statistical questionnaire was not received. Those farmers, who had not answered to this survey before the Labour Force Survey started in September, were reminded again during the telephone interview in connection with the Labour Force Survey.

### ***C. The Labour Force Survey***

The first questionnaires about labour force were sent out at the end of August. In the data, which was sent to the company who made the interviews, those farms, which had not answered the statistical questionnaire (machinery, computers, irrigation area, storing facilities and other activity), were marked. During the same call concerning the labour force interviews were made, the farmers were reminded about answering the statistical questionnaire. Those farms, which had replied in the first statistical questionnaire that they had finished farming and not applied for agricultural subsidies, were taken out of the frame.

No visits were made to the farms who had not answered, but they were tried to be contacted by phone several times at different times of the day and different weekdays. After 8 calls the phone number was checked and after 24 calls the farm was marked as unobtainable. A new questionnaire was sent to those farms and they were asked to return the questionnaire by post or by phoning to the service-number of the census. There were about 3 000 farms whose phone number had to be checked.

In the Labour Force Survey it was not possible for the interviewer to skip any item. The interviewing program was made in such a way that the interviewer had to ask all the items on the questionnaire. If the data was not complete for each form, the farm got a status "unfinished" in the database, and new calls were made.

If no phone number was found for the farm, the questionnaire on Labour Force Survey was sent out and farmers were advised either to call to the service-number of the census or return the questionnaire by post. There were less than 200 farms to which no phone number was found.

If the address was incorrect, the questionnaire was returned to the Information Centre. A new address was tried to be identified for those and new letters were sent out again. The number of letters with wrong addresses was not high, about 0.5 % of the whole frame. For about 99% of those a new address was found. If the farmer had died, the letter was sent to his/her spouse or estate. For tracing the addresses, the Information Centre had access to the Population Register, where all deaths and household movements are continuously updated.

In the Labour Force Survey there were 828 farms for which the answer was not received about such farms. These were farms, which are active farms, but could not be contacted. There is some information on these farms in registers

but the rest of the information was imputed. Some of the farms answered for one or the other of the questionnaires whilst others answered to neither.

In addition to this there were 420 farms, which were reached but did not reply to the survey. In this group there were 328 refusals, 53 farms where the farmer had died recently and 39 farms where the farmer was too sick to give the answer. For the Statistical questionnaire (B) this figure was not counted because even if the farmer refused to answer in the first phase for the Statistical questionnaire or had a reason not to answer, they were included in the Labour Force questionnaire and an answer was tried to be obtained via the labour force interview.

#### ***D. The Register of Horticultural Holdings***

Those who had not answered before the deadline were interviewed by phone. If no phone number was found, a reminder letter was sent out.

### **3.5. Data processing, estimation and analysis**

#### **3.5.1. Methods for handling missing or incorrect item data**

##### ***A. Land use, arable and other agricultural land and livestock***

- **The Rural Business Register**

Any errors or shortcomings found were listed and the lists were sent to the municipal departments with a request to correct and complete the data and return them to the centralised system. The officers in the municipalities made the corrections. No imputation methods were used.

- **Additional questionnaire on agricultural land and livestock**

The farms which got an additional questionnaire are farms which did not apply for agricultural subsidies. Those farms were usually small and often the farmers were old. They wanted to keep their piece of land cultivated. They often had hay for fodder or set-aside land. Sometimes it was difficult to distinguish if they were still farms or not. There were altogether about 2 500 farms which did not apply for subsidies and less than 100 of them did not answer the questionnaire.

*Imputation:* The area of land was taken from the Rural Business Register and assumed to be fodder. The number of bovine animals was taken from the Bovine Animal Register but no other animals were imputed.

##### ***B. Machinery, computers, irrigation area, storage facilities and other activity***

All the errors which were found by logical checks, had the corrections to the data made by the Information Centre. If the same logical errors were found in one municipality, all questionnaires for that municipality were checked. The officers in the municipalities were contacted in several cases if there were doubts on the quality of the information. If necessary, the officers in the municipality contacted the farmers. However the quality of the statistical

questionnaire data was good because there were already checks in the program.

*Imputation:* There were 709 farms who had not answered this questionnaire. For those farms the number of tractors were imputed by using an average according to arable land size-classes. For the farms which had cereals, combine harvesters were imputed in the same way. For the farms with animals, the information on storage facilities was imputed by an average volume and the size of the herd. The other information (other harvesters, irrigation equipment, other activity) which was asked by this questionnaire was imputed by 'no-answer'.

### **C. The Labour Force survey**

The quality of the Labour Force Survey data was good because checks were already in the program and the interviewers had been well trained and the quality of information was checked the whole time e.g. monitoring the calls at Teleperformance Finland. There was no item "non-response" because the interviewing program did not allow incomplete data.

*Imputation:* There were 828 farms who had not answered this survey. Regarding these holdings, the basic information of the farmer and the spouse (age, sex) was taken from the Rural Business Register. The working time, work outside of the farm, education and hours of other labour were imputed as an average value by size-classes. If the farm was not included in the Rural Business Register, the information about working time was imputed according to the information of areas in the Register of Horticultural Holdings. The horticultural enterprises with outdoor area and area under glass were treated differently.

### **D. The Register of Horticultural Holdings**

All logical checks to the data were corrected by hand by the Information Centre. Sometimes the owner of the horticultural enterprise or the officer in a municipality was contacted. The non-response rate in this register was very low, only about 0,1 %.

*Imputation:* There was very little need for imputation because almost all the horticultural enterprises were phoned several times. The missing information on areas was taken from the Rural Business Register in most cases.

#### **3.5.2. Estimation and sampling errors**

The agricultural Census was carried out by complete enumeration, so all the farms in the frame were selected for the census.

#### **3.5.3. Non sampling errors**

- **Coverage errors**

There were no notable problems with the coverage. The most obvious problem with coverage were the farms which did not apply for agricultural subsidies. Usually the officers in the municipality know the farmers of their area well and because of the help of the municipalities in the statistical

questionnaire, this problem could be minimised. There still can be a few types of farms from which the information was not collected, but the number were very small and it has no great importance for the results. All farms are still registered in the Rural Business Register. The problem is only to distinguish between which of them are active and which are not.

The same problem also exists in the Register of Horticultural Holdings. The problem in that register was somewhat bigger, because there were more horticultural enterprises than there were farms, which do not belong to any register at all. The new enterprises were chased up by following leads by continuously reading magazines and newspapers.

- **Measurement errors**

### ***A. Land use, arable and other agricultural land and livestock***

#### **The Rural Business Register**

Farms which apply for subsidies usually fill in the forms quite well for fear of penalties. Usually the mistakes in areas and in animals are small and are caused because of a misunderstanding or being in a hurry. The information on animals for mainly statistical purposes was not necessarily counted as carefully as for those who get subsidies, but these were mistakes which also occur in purely statistical questionnaires.

#### **Additional questionnaire on arable land and livestock**

The farms which got the additional questionnaire were the farms which did not apply for agricultural subsidies. Those farms were usually small and often farmers were old. They want to keep their piece of land cultivated. They often only have hay for fodder or set-aside land. Sometimes it is difficult to distinguish if they are still farms or not.

### ***B. Machinery, computers, irrigation area, storage facilities and other activity***

The errors in the questionnaire were mostly misunderstandings or caused by inaccuracy. e.g. irrigable area was difficult to estimate and was often mixed up with the area actually irrigated. Combine harvesters were miscalculated by adding machines also used only for harvesting for self consumption (especially potatoes). The information on book keeping was irregular due to the misconception of farmers who replied in the positive but in fact only did bookkeeping for taxation purposes. The question about storage facilities may give too optimistic a set of figures because of strict EU-regulations.

Other activity on the holding was difficult to obtain because of definitions. It was difficult sometimes even for people working in the project team to define what other activities should have been included and what should not have been.

### ***C. The Labour Force survey***



In the Finnish questionnaire on labour force there was an extra class of working hours (in addition to 1 800 – 2 999 hours, there was a class of more than 3000 hours in a year) included in the questionnaire because farmers are very annoyed if they need to answer that they work only 1 800 hours a year. In the results when counting AWU's this class is combined with the lower class. The effect of this to lower classes is difficult to estimate. As a whole the question of hours worked within agriculture is difficult; the farmers keep asking what is included in farm work and what is not. Also for the first time in the labour force questionnaire the hours of contractor's employees and other persons working on a non-regular basis were asked separately and this may have caused some inaccuracy especially when compared with previous structure surveys.

#### ***D. The Register of Horticultural Holdings***

In the information about horticultural holdings measurement errors were rare. There were sometimes mistakes in a questionnaire with codes and sometimes cultivated areas were counted several times if they were harvested several times.

- ***Processing errors***

Due to checks in programs, processing errors did not exist on a large scale. There was always a risk of errors in transferring the data from the municipalities to or from the interviewing company and to the Information Centre. The transferring between municipalities and the IC/MAF is monitored the whole time. If there was missing data from some municipalities, the officers were contacted and asked to explain why. The data was also taken through the same checks that were in the programs in the municipalities. This was also the case when transferring the data from the interviewing company to IC/MAF.

- ***Non-response errors***

Non-response was described in detail in chapter 3.4.4. The non-response rate was about 1%. It had no effect on reliability.

#### **3.5.4. Evaluation of estimates**

In general, the data in the rural business register can be regarded as relatively reliable. As a result of multiple checks it is possible, for example, to minimise recording errors. The validity requirements for the register system and monitoring have improved the accuracy of the information provided by farmers and encouraged them to take more care when making declarations. Moreover, when it comes to money, it is in the interest of the farmers to complete the aid application forms accurately. The sanctions for incorrect information are much worse than those for false statistical information. Even if farmers can be penalised under the Act on Rural Business Statistics, in practice this has never happened.

In addition, the study carried out by the Information Centre revealed that in the sample survey some farmers had not reported their rented areas. The above

shows very well that it is in the best interests of the farmers to complete the aid application forms more accurately than the statistical forms.

Comparisons were made between the arable land data from the registers and the data in the sample survey of arable land 2000. The sample survey is made every year and the size of the sample is 2 500 farms. The comparison between these two surveys revealed that for the total area of arable land there was no difference. However there were differences between different crops inside the arable land.

A comparison in figures:

	Area (1000 ha) Sample survey	Data from Register	difference 1000 ha	%
cereals	1158,5	1172,9	14,4	1,2
fodder	691,0	686,9	- 4,1	-0,6
other crop	151,1	149,9	1,2	0,1
arable land	2006,6	2009,7	9,1	0,5
set-aside land	189,2	181,1	-8,1	-4,3
total arable land	2189,8	2190,8	1,0	0,0

In the Labour Force survey comparisons with other surveys were difficult to make. There is a Labour Force Sample survey made by Statistics Finland every year, but because of different definitions, the surveys are difficult to compare. For example as a result of the Labour Force Survey of Statistics Finland, the number of people working in agriculture is estimated to be 116 000 persons. In the census results however the number of people working on farms is about 177 000, though most of these are working part time, and the total Annual Work Unit is about 102 000 AWUs.

When comparing the Labour Force Survey with the Farm Structure Surveys of 1995 and 1997, an evaluation of estimates was also difficult to make. The amount of AWUs is declining in Finland, but more rapidly than expected. When looking at the figures of agricultural labour divided into family labour and non-family labour, large changes since 1997 can also be seen. The amount of non-family labour is increasing while family labour is decreasing. This reflects the real situation on farms and horticultural enterprises, but the speed of the change is more rapid than what had been expected. In conclusion the Labour Force data from the Census 2000 can be seen as more reliable than data of the FSS 1995 and 1997, because the census was made as a total survey. Comparisons, however, over a longer time span should be made so that one can evaluate the estimates of labour force with these arguments.

#### 4. PUBLICATION AND DISSEMINATION

##### Publications

The first results, basic information by Employment and Economic Development Centres, were published in April 2001. The results published in Finland include only agricultural farms, because a publication on horticultural

enterprises is published separately each year. The first results were published in the Bulletin of Agricultural Census. The publication got a lot of publicity in the newspapers, on radio and on TV. Altogether six bulletins will be made concerning different areas of interest. The items and their publishing dates are:

1. First results - Structure of agricultural holdings	24.4.01
2. Labour force	29.05.01
3. More specific bulletin of Livestock	October 2001
4. Other activity on the holding	10.7.01
5. Machinery	August 2001
6. Organic farming	December 2001

The results of the census were also published on the internet at MATILDA ([matilda.mmm.fi](http://matilda.mmm.fi)). In MATILDA the results can be found by country, Employment and Economic Development Centres and municipality level. There are six main categories, which are General Knowledge, Structure, Plants, Animals, Labour Force, Enterpreunership (other activity) and Machinery. The total number of tables is over 30. The service is available in three languages; Finnish, Swedish and English. It is mainly free of charge. Only some items notably at municipality level are subject to charge.

The technique behind the service is quite common. The system is browser-based which means that all user actions are handled by HTML-pages reports which can be shown in *HTML* or in *PDF*-format. Both reports and pages are dynamically generated from the database. By these means, maintaining the content (in three languages) of this service has been quite easy. The service was opened to the public on the internet at the beginning of July 2001. In addition to figures, the service includes quality reports.

A statistical book of the census results will be published by the end of the year 2001. There will also be some specific statistical tables, figures and a more analytical section on the results.

## 5. SUGGESTIONS FOR FURTHER TASKS

In Finland, we are fortunate in that the same government body acts as both the keeper of the register and the statistical body. This being the case, we have been able to take the data requirements of the Farm Structure Survey and other agricultural statistics into account for the creation of the system. This has not, however, happened without problems; for example, it has been very difficult to convince staff of the Ministry of Agriculture and Forestry of the importance of data needed for statistics. The different definitions and classifications used in statistics and in administration have also caused problems. Nevertheless an understanding has been reached.

We have had a very favourable experience with the Rural Business Register. Both the rural business authorities and the statistical authorities are satisfied with the joint use of the register, and the farmers are pleased that the burden on them to provide information has been reduced. The data in the register are

relatively reliable. The savings in time are considerable, as are the savings in labour. There have also been gratifying savings in expenses due to the reduction in costs, especially in collecting data.

On the negative side, under this system, Finland's basic register of agricultural statistics is almost totally dependent on the data sources of the rural business administration. In the rapidly changing context of agricultural policy, this could be considered a threat that cannot be ignored.

## REFERENCES

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- 5. Livestock                                 10/01
- 6. Organic Farming                        12/01

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