



FARM STRUCTURE SURVEY 2007

NATIONAL METHODOLOGICAL REPORT

MEMBER STATE: ESTONIA

CONTENTS

SUMMARY	3
1. INTRODUCTION	5
1.1 History, scope	5
1.2 National legislation	6
2. CONTENT.....	6
2.1 Characteristics and reference period	6
2.2 Questionnaire	8
3. SURVEY METHODOLOGY.....	9
3.1 Survey organisation	9
3.2. Calendar	10
3.3 Preparing the survey operations	11
3.3.1 Population and frame	11
3.3.2 Sample design	13
3.3.3 Pilot survey	14
3.3.4 Informing and training the staff and respondents.....	14
3.4 Sampling, data collection and data entry	15
3.4.1 Drawing the sample	15
3.4.2 Data collection and entry	15
3.4.3 Utilisation of administrative sources	17
3.4.4 Data editing	18
3.4.5 Non-response	19
3.5 Data processing, analysis and estimation	20
3.5.1 Methods for handling missing or incorrect data items.....	20
3.5.2 Estimation and sampling errors.....	20
3.5.3 Non sampling errors.....	22
3.5.4 Evaluation of results	22
4. PUBLICATION AND DISSEMINATION.....	23
ANNEX 1. QUESTIONNAIRE FOR HOLDING OF NATURAL PERSON.....	24
ANNEX 2. QUESTIONNAIRE FOR HOLDING OF LEGAL PERSON.....	33
ANNEX 3. FORMULAS APPLIED FOR ESTIMATION METHODS.....	41

SUMMARY

FSS 2007 was the fourth farm structure survey in Estonia and the third in the field of sample structure surveys. The responsible body for FSS 2007 was Statistics Estonia and the responsible department Agricultural Statistics Department.

FSS 2007 was conducted based on the regulation of the Government of the Republic No 549 from 16 October 2006 "List of the official statistical surveys 2007". The questionnaires of the FSS 2007 were approved by the regulation of Minister of Finance No 4 from 23 January 2007 "Conforming reports of official statistical surveys".

Statistical unit was the agricultural holding (hereinafter holding), which is a single unit both technically and economically, which has single management and which produces agricultural products or maintains its land which is no longer used for production purposes in good agricultural and environmental condition, where:

- there is at least one hectare of utilised agricultural land or
- there is less than one hectare of utilised agricultural land but agricultural products are produced mainly for sale or economic size of the holding is at least one European Size Unit (ESU).

Compared to FSS 2005 the definition of holding has changed - in accordance with EC 204/2006 the units which do not produce agricultural products but only maintain their land in good agricultural and environmental condition have been added into the population.

The characteristics of FSS 2007 correspond to the list of characteristics in EC 204/2006 and definitions to those in EC 1444/2002 and EC 204/2006. In FSS 2007 there were only some characteristics added for national purposes only and some added for the Survey on Plantations of Fruit Trees.

Data of FSS 2007 were collected:

- from natural persons mainly by computer-aided personal interviews (CAPI), in some regions by mail;
- from legal persons first by mail and from those who did not respond also through interviewers.

The reference date of the FSS 2007 was 1 June 2007. Reference period was from 1 June 2006 to 31 May 2007. The fieldwork was carried out in the period from 1 June to 19 November 2007. Two separate questionnaires were used for natural and legal persons.

Fieldwork was organised by the fieldwork organisation service of the Data Collection Department of Statistics Estonia. 62 interviewers participated in the fieldwork. Interviewers were guided by two instructors. All interviewers had previously attended a special training seminar and had received also written instructions. The main aim of the training was to explain the content of questionnaire and to teach how to fulfil the questionnaires in laptop.

All respondents received prior to the survey personal letters informing about the survey, period of the visit of the interviewer and the content of the questionnaire.

The sampling frame of agricultural holdings was the statistical Register of Agricultural Holdings. It is composed on the basis of the Agricultural Census 2001 data and is regularly updated on the basis of administrative and statistical data. The sample design of FSS 2007 was the combination of exhaustive and sample. The number of holdings surveyed was 20 000. 11 328 of them were included in completely enumerated stratum. A stratified simple random sample was selected from other holdings. The stratification variables were: economic size, type of farming and county.

Each interviewer questioned about 306 respondents. The average completion time per questionnaire was approximately 30 minutes.

Data were collected and entered by the Data Collection Department of Statistics Estonia. Data checking and making corrections was made by the staff of Agricultural Statistics Department.

The total number of holdings of legal and natural persons who did not respond was 2 852 (14.2% of the sample).

Unit non-response was compensated using re-weighting and post-stratification. Only in case of few holdings with economic size at least 16 ESU or farming types 2, 3, 5 and 9, the imputation was used for compensating unit non-response. Administrative data and data from FSS 2005 were used. In case of item non-response the follow up interviews were used. If it was not possible to contact the holder by phone, the missing data were imputed using administrative data and data from FSS 2005.

Modified Agricultural Census software was used for estimating totals. Sub-sample was not used and each holding had only one extrapolation factor.

In order to estimate the quality of estimated indicators, the relative standard error (coefficient of variation) for main indicators was calculated. The coefficient of variation of main indicators of crop and animal production for the whole Estonia was less than 1,8%. In general the data are not published, if the coefficient of variation exceeds 30%. For obtaining coefficients of variation the software SAS was used.

FSS 2007 results can be regarded as good. The comparisons were made both with administrative data and other agricultural statistics surveys.

The detailed results of the FSS 2007 (some also on county level) will be published in the statistical database of the Statistics Estonia on 30 June 2008. Description of the methodology is included. Data on the Internet website are bilingual and free of charge. The overview of some most important results will be published in paper form in autumn 2008.

1. INTRODUCTION

1.1 History, scope

Agricultural Census 2001 was the first one in re-independent Estonia. Before World War II Agricultural Censuses were organised in Estonia in 1919, 1920, 1925, 1929 and 1939.

To determine the agricultural production potential for Estonia, the Agricultural Census 2001 covered both operating and non-operating agricultural holdings as well as agricultural small units (agricultural household plots).

The definitions of the units of Agricultural Census 2001 - agricultural holding and household plot – were the following.

Agricultural holding - a production unit which has a single management, both technically and economically, and the main activity of which is agriculture, where:

- 1) there is at least one hectare of agricultural or wooded land or at least 0,3 hectare of fish ponds, or
- 2) there is less than one hectare of agricultural or wooded land or less than 0,3 hectare of fish ponds or there is no agricultural or wooded land or fish ponds and where agricultural products are produced mainly (more than one-half) for sale.

Household plot - a production unit where there is less than one hectare of agricultural or wooded land or there is no agricultural or wooded land and where agricultural products are produced mainly (more than one-half) for own use and where:

- 1) there are fifty or more square metres of kitchen garden or there are at least three fruit trees or six berry bushes, or
- 2) there are at least ten rabbits, ten domestic fowls or other farm animals, or
- 3) there are at least three beehives.

Agricultural land included both utilised and unutilised agricultural land.

Besides the needs of the Estonian users, the requirements established to the European Union FSS were taken into account in Agricultural Census 2001. On the basis of data of Agricultural Census 2001 the statistical Register of Agricultural Holdings (hereinafter Farm Register) was composed.

In FSS 2003 the threshold of holding was changed compared to Agricultural Census 2001. The definition of agricultural holding in FSS 2003 (and also in FSS 2005) was the following.

Agricultural holding - single unit both technically and economically, which has single management and which produces agricultural products, where:

- 1) there is at least one hectare of utilized agricultural land or,
- 2) there is less than one hectare of utilized agricultural land but agricultural products are produced mainly for sale or economic size of the holding is at least one European Size Unit (ESU).

In order to ensure the comparability of the data of the following FSSs with the results of the Agricultural Census 2001, the latter have been recalculated on the basis of the definition of a holding used in the FSS 2003 and 2005.

FSS 2003, 2005 and 2007 were conducted as sample surveys and according to the methodology developed by Eurostat. Different from the Agricultural Census 2001, non-operating holdings and small production units have not been included in surveys.

1.2 National legislation

The main agency conducting official statistical surveys in Estonia is Statistics Estonia, which comes under the Ministry of Finance.

According to the Official Statistics Act the Government of Estonia approves for each year a list of official statistical surveys together with detailed list of characteristics collected in each survey. Prior to the approval of the said list the Minister of Finance submits information relating to the methods used in conducting surveys. The FSS 2007 was conducted based on the regulation of the Government of the Republic No 549 from 16 October 2006 “List of the official statistical surveys 2007”. On the basis of the list of official statistical surveys, the Minister of Finance approves the official statistical questionnaires. The questionnaires of the FSS 2007 are approved by the regulation of Minister of Finance No 4 from 23 January 2007 “Conforming reports of official statistical surveys”.

There has been no special national legislation for FSSs after Agricultural Census 2001.

The responsibility for official statistics, administrative and financial provisions concerning official statistics and right to access to administrative data are determined in the Official Statistics Act.

According to the list of respondents presented in the Official Statistics Act the FSS is compulsory for all agricultural holdings. In line with the Act the failure to submit data collected through official statistical surveys, or submission of distorted data, is punishable by a fine. Statistics Estonia is required to ensure the full protection of collected data.

2. CONTENT

2.1 Characteristics and reference period

The characteristics of FSS 2007 correspond to the list of characteristics in EC 204/2006 and definitions to those in EC 1444/2002 and EC 204/2006. Though some of the characteristics from the list were not included into FSS 2007, because they were not existing (NE) or not significant (very rare) in Estonia in 2007.

Not existing characteristics in Estonia in 2007 were: A02a (mountain area), D02 (durum wheat), D06 (grain maize), D07 (rice), D11 (sugar beet), D23 (tobacco), D24 (hops), D25 (cotton), D27 (sunflower), D28 (soya), D32 (hemp), D33 (other textile crops), F02 (rough grazing), G01b (subtropical fruits and berries), G01c (nuts), G02 (citrus plantations), G03 (olive plantations), G03a (table olives), G03b (olives for oil production), G04 (vineyards), G04a (quality wine), G04b (other wines), G04c (table grapes), G04d (raisins), G06 (other permanent crops), G07 (permanent crops under glass).

Not significant characteristics, which were not included into the questionnaire in Estonia in 2007 were: B01b (group holding), D09f (lentils, chick peas, vetches), D35 (other industrial plants), D20 (other arable land crops), I02 (mushrooms), I03a (total irrigable area), I03b (cultivated area irrigated), J16a (turkeys), J16b (ducks), J16c (geese), J16d (other poultry) and J19 (other livestock). D09g (other protein crops harvested dry) and D30 (other oil seed crops) are also marked as not significant characteristics in EC 204/2006, but were still added into the questionnaire and these data were also delivered to Eurostat.

In FSS 2007 there were few characteristics added for national purposes only: agricultural training of the manager, area of permanent grassland used for production purposes eligible for single area payment and strawberries.

With FSS 2007 some characteristics were collected also for the Survey on the Plantations of Fruit Trees. These data were collected only from the holdings, which produce apples for sale and included area and age structure of the apple orchard, number and main kinds of apple trees.

From those holdings, which participated also in the Survey of Sown Areas (3 357), the land use data were asked in more detail.

In accordance with EC 204/2006 the definitions of A11 (utilized agricultural area), F (permanent grassland), D22 (fallow land eligible for subsidies), I08a (D22+F03) and I08b (areas used for the production of agricultural raw material for non-food purposes) have changed, when compared to FSS 2005. New characteristic F03 (permanent grassland no longer used for production purposes and eligible for the subsidies) have been added. The change in the definition of D22 and inclusion of F03 affect also the typology calculations.

There are no changes in the other definitions compared to FSS 2005.

I08c (areas converted into permanent pasture and no longer used for production purposes), I08d (agricultural areas converted into wooded areas) and I08e (other areas no longer used for production purposes) are zeros. According to the definition I08c are set-aside areas according to the EC 1251/1999, which are not applicable in Estonia. It means that there is no support paid in Estonia for converting land into permanent pasture without use for production purposes (F1). I08e is the other area eligible for single payment or for the payment of set-aside entitlements. In Estonia single payments are paid only for utilized agricultural area. I08d is also zero in Estonia in 2007. In 2005 the special support was paid for converting former agricultural areas into wooded area (I08d) and the relevant data were delivered also to Eurostat. In 2007 this activity was not supported any more. The question was in the questionnaire because in 2006 the relevant support was paid and while

composing and conforming questionnaires it was not known that it would be not applicable in 2007 any more.

Reference date of the FSS 2007 was 1 June 2007. Reference period was from 1 June 2006 to 31 May 2007.

2.2 Questionnaire

In the FSS 2007 two separate questionnaires for natural and legal persons were used like in FSS 2005. The reason is that adding the questions designated only for natural persons, into questionnaires of legal persons is too confusing for respondents (data were collected from legal persons mainly by mail). Such feedback was received also in FSS 2003.

The questionnaires consisted of following sections:

- A. General data;
- B. Land use;
- C. Utilized agricultural area;
- D. Apples for sale;
- E. Arable land;
- F. Livestock;
- G. Farm labour force;
- H. Other gainful activities in the holding.

Both electronic versions of the questionnaire and paper questionnaire were used for data collection and they were similar. Both questionnaires included all relevant explanations. Still the paper versions of the questionnaires included one more page with most important definitions (such as agricultural holding, holder, manager and location of holding). So the electronic version of the questionnaire for natural persons included 7 pages and paper version 8 pages. The electronic questionnaire for legal persons included 6 pages and paper version 7 pages.

The electronic questionnaires in laptops were pre-filled with the identification data of the holding and holder – identification number, name and location of the holding, commercial register code, name and address of the holder, telephone numbers and e-mail. In paper questionnaires for legal persons the identification number, name and location of holding, commercial register code, address, telephone numbers, e-mail, website and type of owner were pre-printed. In paper questionnaires for natural persons only the name and address of holder were preprinted. In all cases these data had to be checked and corrected/completed if necessary.

A special manual for interviewers was composed. Questionnaires were translated also into Russian to avoid language problems in the work of interviewers in some regions. The details about data collection are presented in chapter 3.4.2.

Like all other questionnaires, the questionnaires of FSS are available on the website of Statistics Estonia and both in Excel and pdf format. Copies of the questionnaires for natural and legal persons are presented also in annexes 1 and 2.

3. SURVEY METHODOLOGY

3.1 Survey organisation

The responsible body for FSS 2007 was Statistics Estonia and the responsible department Agricultural Statistics Department. Several other departments participated in the project having following main tasks:

- 1) Information Technology Department:
 - development of data entry software,
 - data transmission programs,
 - preparation of workstations for temporarily hired data controllers,
 - security arrangement;
- 2) Methodology Department:
 - sampling,
 - calculation of coefficients of variation;
- 3) Data Collection Department:
 - hiring additional temporary interviewers,
 - organisation of training courses,
 - data collection by laptops and mail,
 - data entry of the questionnaires of legal persons;
- 4) Marketing and Dissemination Department:
 - printing the questionnaires and organization of sending,
 - publishing data;
- 5) Financial Planning and Administration Department:
 - organisation of financing works,
 - organisation of rooms for temporarily hired data controllers.

Besides the usual staff of Agricultural Statistics Department three temporarily hired persons were engaged in data processing (correction of frame, data control and corrections, output tables, etc.). One person worked from 1 March to 31 May 2007 and from 8 October 2007 to 31 May 2008, the second from 2 July 2007 to 31 January 2008 and third from 8 October 2007 to 30 June 2008.

The details about data collection staff are presented in chapter 3.4.2.

3.2. Calendar

Key activities of the FSS 2007	Time/period
Preparatory works	
Working out the strategy, principles and working plan for FSS 2007	19.04-30.11.2006
Regulation No 549 of the Government of the Republic approving the list of the official statistical surveys for 2007 “List of the official statistical surveys 2007” was approved	16.10.2006
Composing questionnaires (including the Regulation No 4 of Minister of Finance confirming the questionnaires for FSS 2007)	04.09.2006-23.01.2007
Composing instructions and training materials for	01.02-14.05.2007
Training courses for interviewers (two days, four groups)	22.05-21.06.2007
Sampling	29.01-11.04.2007
Composing lists of holdings for interviewers	11.04-02.05.2007
Software	
Composing and testing software for data entry in laptops	02.10.2006-18.05.2007
Testing data collection with laptops	11.05-17.05.2007
Composing and testing software for data processing (data capture and data control)	16.10.06-27.04.2007
Composing and testing data transmission software	18.05-13.06.2007
Data collection	
Data collection by mail from legal persons	03.05-15.07.2007
Data collection through interviewers	01.06-19.11.2007
Data collection by mail from natural persons	02.08-19.11.2007
Data collection from administrative registers	04.07-16.10.2007
Data processing	
Data entry of the questionnaires of legal persons	11.05-15.07.2007
Data entry of the questionnaires of natural persons	11.10-27.11.2007
Data control and output tables	22.06.2007-08.05.2008
Publication	
Composing tables in the statistical database	09.05-30.05.2008
Eurofarm Project	
Formatting, codification and validation of data for delivery to Eurostat	20.05-30.06.2008
Data delivery to Eurostat	10.06-30.06.2008
Control tables	02.06-27.06.2008

3.3 Preparing the survey operations

3.3.1 Population and frame

Population

The target population includes all holdings that satisfy the definition of statistical unit of the survey.

Definition of the holding

Statistical unit was the agricultural holding, which is a single unit both technically and economically, which has single management and which produces agricultural products or maintains its land which is no longer used for production purposes in good agricultural and environmental condition, where:

- 1) there is at least one hectare of utilised agricultural land or
- 2) there is less than one hectare of utilised agricultural land but agricultural products are produced mainly for sale or economic size of the holding is at least one European Size Unit (ESU).

The holding could be run by natural person or company. Firms which are engaged in other economic activities and where agriculture plays a small part of firm's economy should still be included.

There is no difference between the national definition of agricultural holding and the EU definition. The number of holdings within the frame was 28 776.

Compared to FSS 2005 the definition of holding has changed - in accordance with EC 204/2006 the units which do not produce agricultural products but only maintain their land in good agricultural and environmental condition have been added into the population.

Frame

The sampling frame of agricultural holdings was the Farm Register composed on the basis of the data, which had been collected in the Agricultural Census 2001. The Farm Register has been regularly updated on the basis of following sources:

- 1) Register of Agricultural Animals of the Estonian Agricultural Registers and Information Board (ARIB),
- 2) Register of Agricultural Support and Agricultural Parcels of the ARIB (land use data),
- 3) Organic Farming Register of the Plant Production Inspectorate (PPI),
- 4) Statistical Business Register of Statistics Estonia (frame for business statistics),
- 5) data received by official agricultural statistics surveys (including FSS and special inquiry of agricultural holdings).

The data from ARIB and PPI are received according to the special contracts. Data from the Register of Agricultural Animals are used quarterly, data from other registers annually.

On the basis of ARIB registers the new holdings have been added into Farm Register and the numbers of animals and utilized agricultural area has been updated. The new holdings have been added into Farm Register also on the basis of Organic Farming Register. Updating is organised partly automatically, partly manually. Special software is used. The

bridge tables containing ID numbers of both units have been composed and are continuously completed. Bridge tables are composed on the basis of commercial register codes, personal identification codes, etc. All other available information (name of holding and holder, address of holding and holder, etc.) is also used during linking. In few cases the additional information is asked by phone.

Statistical Business Register of Statistics Estonia (frame for business statistics) has been used for updating Farm Register annually. The holdings have been added and in case of legal persons also deleted. The data of the registers have been connected on the basis of commercial register codes and personal identification codes. For potential new holdings the special questionnaires are sent to clarify their land use and number of animals.

Official agricultural statistics surveys are also important source in updating Farm Register. Data from these surveys have been used continuously without special problems. At the same time updating on the basis of administrative registers is quite complicated as the units in Farm Register and other registers are different (as well as ID numbers). In Farm Register the unit is agricultural holding but in ARIB registers and Organic Farming Register the unit is person and in Statistical Business Register legal unit.

Frame errors

According to the results of FSS 2007 frame over-coverage was 6 250 (21,7%) units. These units were included into frame, but did not belong to the target population because their agricultural activity had decreased below threshold or they had finished their agricultural activity at all. The reasons for over-coverage are rapid changes in economy and difficulties to update information of small agricultural holdings.

Frame under-coverage was 810 units. The information that they have started the agricultural activity was received from ARIB land use data of the year 2007 and taxation data 2006 (available from August 2007). Under-coverage was taken into account in post-stratification and re-weighting.

Due to updating the Farm Register with administrative registers containing different units (ARIB registers and Organic Farming Register) some duplicates have occurred. Duplicates have been taken into account in re-weighting. The plan for handling possible duplicates was worked out before data collection already.

Misclassification is considered not to be a problem. The class allocated at the last update was right and changes occurred due to the unstable situation in agriculture and changes in the calculation rules (D22 and F03). Comparing frame and final results, the changes in structure are not remarkable.

Distribution of holdings by economic size

	<2 ESU	>=2 ESU
In the frame	66,20%	33,80%
In results	68,70%	31,30%

Distribution of holdings by type of farming

	Type 1	Types 2, 3 and 5	Type 4	Type 6	Type 7	Type 8	Type 9
In the frame	19,7%	1,8%	33,0%	9,5%	16,0%	19,8%	0,2%
In results	18,0%	3,5%	30,0%	11,9%	18,5%	18,0%	0,1%

Other frame errors were also small.

3.3.2 Sample design

The sample design of FSS 2007 was the combination of complete enumeration and sample survey. The number of holdings selected was 20 000 (69,5% of the total number of holdings in the frame). 11 328 of them were included into completely enumerated stratum. The stratification tried to avoid small stratas with very few units.

Sample size was decided according to the available financial resources combined with expected rate of operating holdings and data collection method. The sample sizes in the strata were determined by the proportional allocation regarding the population size. Sample fractions were chosen according to economic size (0-<2 ESU – 50% and >=2 ESU – 100%).

In completely enumerated stratum were included:

- 1) holdings of legal persons,
- 2) holdings with type of farming where the number of holdings is quite small (holdings specialised in horticulture (type 2), permanent crops (type 3), breeding granivores (type 5), non-classified holdings (type 9),
- 3) organic farming holdings,
- 4) holdings participating in the Survey of Sown Areas 2007
- 5) few new holdings.
- 6) other holdings with economic size of 2 ESU or more.

Completely enumerated stratum was decided taking into account that the proportion of holdings with economic size at least 2 ESU was quite large (33,1% of frame) and they produced main part of the total SGM (more than 90%). The proportion of legal persons was 4,9% of the frame and more than 70% of them were with economic size 2 ESU or more. The number of holdings with types of farming 2, 3 and 5 was too small to stratify them by economic size and county (LAU 1). Holdings with organic farming do not correlate with any stratification variables.

The Survey of Sown Areas was conducted together with FSS and the sample of FSS included the sample of the Survey of Sown Areas. The questionnaires were harmonised in order to avoid the situation that these farms should have answered twice. The data collected were used for both surveys.

A stratified simple random (fully probabilistic) sample was selected of the other holdings in the frame. The sample was not permanent. However, the sample design was exactly the same in FSS 2005.

The stratification variables were: economic size, type of farming and county. The holdings in each county (15) were divided by economic size (0–<2 ESU) and five types of farming (specialist field crops, specialist grazing livestock, mixed cropping, mixed livestock and mixed crops-livestock) into 75 strata. So 76 stratum were composed including one completely enumerated stratum.

3.3.3 Pilot survey

A pilot survey is generally defined as a survey where the questionnaire is sent to a small number of respondents to test the questionnaire and correct it if necessary. For FSS 2007 no such pilot survey was organised as most of the questions have been previously tested. Still the electronic questionnaires in laptops were tested by 5 permanent interviewers of Statistics Estonia in the period from 11 to 17 May 2007. Each person interviewed 15 respondents. Special training courses were organised on 11 May. On 17 May the analysis of the results was organised in discussion form.

3.3.4 Informing and training the staff and respondents

Training courses for interviewers

The training courses for interviewers were organised from 22 May to 21 June (in four groups). It was obligatory for interviewers to participate in these two-day training courses. Training materials and special manual with detailed instructions were distributed to all participants a week before training courses.

The main aim of the training was to explain the content of questionnaire and to teach how to fulfil the questionnaires in laptop. At the same time the fulfilling of questionnaires of Survey of Sown Areas 2007 was clarified. The main errors made during previous farm structure surveys were explained to avoid them in FSS 2007. Additionally organisational aspects of the survey were explained. Many exercises were made about practical fulfilling of the questionnaires in laptop. Training courses ended with special tests and errors made in tests were analysed in detail.

During all the survey the information telephones of two instructors from Data Collection Department were available for interviewers.

Training courses for data processors

Temporarily hired data processors were all the previous workers of Agricultural Statistics Department and therefore very experienced. Still training courses were organised for them after hiring. Training courses included the explanation of the content of questionnaire, arithmetical, logical and other controls (including controls with previous official statistical surveys and administrative sources), use of software and practical exercises.

Informing persons questioned

The holders were not informed in the press. All respondents received prior to the survey personal letters with the following information:

- 1) what is FSS and what is the purpose of the FSS,
- 2) when the survey will be carried out,
- 3) who is responsible for the survey,
- 4) which data will be collected,
- 5) who has to provide the data,
- 6) use and protection of the data,
- 7) contact data of Data Collection Department (instructors).

The aim of personal letters was to make interviewers' work easier, avoid refuses and get accurate data.

3.4 Sampling, data collection and data entry

3.4.1 Drawing the sample

Simple random sample was selected in each stratum (except completely enumerated stratum) using permanent random numbers. To each unit in the frame the random number generated from uniform distribution between 0 and 1 is associated and it is not changed. A new unit (a birth) is assigned a random number, which is independent of the existing ones. Closed down unit (a death) is withdrawn from the register together with its random number.

The starting point for sample selection was the same in each stratum. The shift of starting point was chosen 0.25, which guarantees minimum overlap between FSS 2005 and 2007 samples. It reduces response burden of small agricultural holdings. Software SAS was used for sample selection.

3.4.2 Data collection and entry

The survey date was 1 June 2007. The fieldwork was carried out in the period from 1 June to 19 November 2007.

Data were collected:

- 1) from natural persons mainly by computer-aided personal interviews (CAPI), in some regions by mail;
- 2) from legal persons first by mail (from 3 May to 15 July) and from those who did not respond also through interviewers.

The fieldwork of FSS 2007 was organised by fieldwork organisation service of the Data Collection Department. 62 interviewers participated in the fieldwork, 24 of them were temporarily hired (still 9 had the experience in interviewing).

Interviewers visited the holders of agricultural holdings in their places of residence. The holders of agricultural holdings were tried to contact at least three times in rural areas and five times in urban areas in different hours and days. If address was changed and new address was found out, the interviewer visited the holder in new address. If the place of residence of holder differed from the location of holding, the interviewer still visited first the place of residence and if necessary also the location of holding. The number of cases, the interviewers visited the holders in the other address was 339.

Interviewers gathered information through direct computer-aided interviews (CAPI with laptops) with the holders of agricultural holdings. The laptops with MS Windows XP operating system were used. Questionnaires were composed using software BLAISE. In case of holdings, which participated also in the Survey of Sown Areas, the questionnaires included more detailed questions about land use (the fact whether the holding had to participate in the Survey of Sown Areas was checked automatically and the interviewer does not have to choose between the different types of questionnaires). It was the same in case of legal persons. In addition to the pre-filled data the interviewers had about each holding some background information (registration in ARIB registers or Organic Farming Register for the year 2006 (2007 data were not available yet) and the names of other persons (such as managers, etc.) acting in the holding if available).

Each interviewer questioned about 306 respondents. The average completion time per questionnaire was approximately 30 minutes.

About each holding the special electronic report had to be fulfilled by the interviewer. The report consisted details about the data collection, including the description of the contacting process (time, type and result of each contact). In case of these holdings for which the questionnaires could not be completed, the reports were checked by instructors of the interviewers and finally accepted by the staff of Agricultural Statistics Department. In case of any inconsistencies the interviewer had to clarify the situation and if necessary to visit the holding again.

The checked and corrected questionnaires together with their reports were transferred to the Statistics Estonia as soon as possible via special data sending tool. Data were automatically compressed, encrypted and transferred over secure sftp protocol using custom software. Data could be transferred over any available Internet connection. Mostly was used ADSL cable at home and public wifi access points. Until sending the data were stored offline in laptop's encrypted hard drive.

Besides interviewers, two temporarily hired instructors of the Data Collection Department participated in the survey. One worked from 1 April to 10 October and the other from 1 May to 19 November.

The instructors were responsible for the overall organisation of field works. Their main tasks were:

- 1) organizing, distributing and monitoring data collection;
- 2) checking and registration of the reports;
- 3) assessing and resolving difficulties experienced by individual interviewers.

During all the fieldwork period the information telephones of instructors were available for interviewers. The staff of Agricultural Statistics Department worked in close co-operation with instructors.

From legal persons data were collected by data collection service of the Data Collection Department. As data from legal persons were collected mainly by mail, they had information telephones both in Data Collection Department (information about sending report) and if necessary also in Agricultural Statistics Department (fulfilling the

questionnaire). Besides paper questionnaires, the electronic version of the questionnaire in Excel was available for legal persons. It was possible to fulfill the questionnaire in Excel and send via special secure data sending tool of Statistics Estonia (available on the website of Statistics Estonia together with instructions). Still the electronic version of the questionnaire in Excel was used infrequently. Before starting data collection from legal persons through interviewers, the written reminders were sent to those who did not return the questionnaire by deadline. Finally the interviewers visited 304 legal persons who had not respond and fulfilled the questionnaires if possible.

Due to the situation in labour market, it was not possible to hire interviewers in all regions, even if the questionnaires were fulfilled in paper form. So in some regions data were collected from natural persons mainly by mail. The number of natural persons from whom the data were collected by mail was 3838. The reminding by telephones was also used. These data were manually entered by the staff of Agricultural Statistics Department together with the preliminary check.

For data entry of the questionnaires of the legal persons the 'heads down' mode was used (data typed at high speed without feedback about content from the machine). Data were manually entered in data entry service of Data Collection Department with unified data entering software.

3.4.3 Utilisation of administrative sources

The utilisation of administrative sources is defined by 2007/80/EC.

In FSS 2007 the following administrative source was used in Estonia:

1) Organic Farming Register for characteristics:

C5a - the utilised agricultural area of the holding on which organic farming production methods are applied according to European Community rules (ha/a);

C5d - the utilised agricultural area of the holding that are under conversion to organic farming production methods (ha/a) and;

C5e - is the holding applying organic production methods also to the animal production? (totally, partly, not at all).

The aim of the Organic Farming Register is data collection about the persons engaged in the organic production or handling of agricultural produce and systemizing of their data in order to guarantee efficient surveillance and consumer protection. The chief processor of the Organic Farming Register is the Ministry of Agriculture and the authorised processor of the register is the Plant Production Inspectorate. The legal base of the Organic Farming Register is regulation (EEC) No 2092/91. The relevant national legislation is:

1) Organic Farming Act (adopted on 20 September 2006);

2) The regulation of the Government of Republic "Statutes for maintenance of Organic Farming Register" (adopted on 7 December 2006).

Data received from Organic Farming Register refer to agricultural producers - persons who are engaged in the production of agricultural produce, and the preparation and marketing of agricultural produce produced in the same enterprise or a part thereof. Different from the definitions of units, the definitions of characteristics collected from administrative sources completely match with definitions of FSS characteristics. The reference time of used

information is also in line with the FSS regulations. The reference date for C5a, C5d and C5e is 1 June 2007. It means that preliminary data were used.

The reliability, accuracy and coherence of the data originated from Organic Farming Register have not been checked by Statistics Estonia, as there are no other data sets with which figures in administrative sources can be compared. At the same time the Plant Production Inspectorate exercise state supervision of their data. Linkage errors with Organic Farming Register are supposed to be of minor importance. The same data were used also in FSS 2005.

All organic farming holdings were added into completely enumerated stratum in FSS 2007. In general the data of organic farming could be regarded as good.

The data of Organic Farming Register have been regularly used also in updating Farm Register. The details are presented in chapter 3.3.1.

3.4.4 Data editing

Checks during completing the questionnaires in laptop

Depending on the type of questionnaires 50-63 arithmetical and logical controls had to be passed while fulfilling the questionnaires in laptops. The automatic controls checked that the answers provided were not contradicting to each other and that the questionnaires are completed correctly and in full. In such a way most errors could be corrected on place with the help of the holder of agricultural holding.

Checks in Statistics Estonia

All data collected and entered with different methods were finally transferred to the database of Agricultural Statistics Department. Database was checked by special program (MS Access, Visual Basic). The program disclosed the errors on each questionnaire and it was possible to watch and correct them. During data validation all validation rules from the Eurostat's Manual for data suppliers were passed. Additionally valid value checks were made, as well as comparisons with administrative data and data from previous surveys. During data processing the respondents were contacted if needed and discovered errors corrected. Finally the economic sizes and types of farming were calculated for each unit and units under threshold were excluded from the analysis.

Editing rate and editing ratio of selected indicators are presented in the following table.

Indicator	Editing rate, %	Editing ratio, %
Agricultural area	8,1	0,6
Cereals	9,5	0,8
Potatoes	3,5	2,1
Fresh vegetables	8,2	1,6
Fruit and berry plantations	14,2	-5,4
Permanent grassland used for production purposes	7,9	-12,7
Cattle	2	-0,5
Pigs	0,8	1,1
Sheep	2,3	0,8
Broilers	1	0,0
Laying hens	0,2	0,0

The editing rates are higher than in the last farm structure surveys because FSS 2007 micro-data were thoroughly compared with the data from administrative sources. Quite many holders were contacted for additional information about differences. The editing ratios are still small which shows that data were corrected in case of quite many holdings but in a very small scale. The quite large editing ratio of fruit and berry plantations occurred because of misunderstandings concerning kitchen gardens and some quite big plantations without use. The largest is the editing ratio of permanent grassland used for production purposes. It is caused because of misunderstandings concerning the new characteristics F03 and sometimes also D18.

3.4.5 Non-response

The difference of number of holdings in the sample and number of responses received is the number of unit non-response (i.e. the number of holdings which data are not available). If the response to some questions is missing while other questions have been answered, it is item non-response.

Unit non-response by collection mode

Data collection mode	Sample	Unit non-response	
		number of holdings	% of the sample
Data collection from natural persons through interviewers	14808	1502	10,1%
of which refusals		450	3,0%
failure to contact the holder		1013	6,8%
other reasons		39	0,3%
Data collection from natural persons by mail	3838	1276	33,2%
Data collection from legal persons (by mail and through interviewers)	1354	74	5,5%
Total	20000	2852	14,3%

The methods for handling unit and item non-response are presented in chapter 3.5.1.

3.5 Data processing, analysis and estimation

3.5.1 Methods for handling missing or incorrect data items

Data processing in Statistics Estonia (checking and making corrections) was made by the staff of Agricultural Statistics Department.

Unit non-response was compensated using re-weighting. Due to the non-response in completely enumerated stratum the post-stratification was used. Only in case of few holdings with economic size at least 16 ESU or farming types 2, 3, 5 and 9, the imputation was used for compensating unit non-response. Administrative data together with data from FSS 2005 were used. As for each unit only its own data were imputed, no special tools were used.

In case of item non-response the follow up interviews were used. If it was not possible to contact the holder by phone, the missing data were imputed using administrative data and data from FSS 2005. As main part of information was collected by trained interviewers and main arithmetical and logical controls were included in laptops' data entry programmes, the item non-response can be regarded as not relevant.

The possibility of incorrect data items was minimised by multiple checks.

3.5.2 Estimation and sampling errors

Modified Agricultural Census software was used for estimating totals. Sub-sample was not used and each holding had only one extrapolation factor.

Due to the non-response in completely enumerated stratum the post-stratification was used for compensating non-response. After post-stratification the completely enumerated stratum included:

- 1) holdings with type of farming where the number of holdings is quite small (holdings specialised in horticulture (type 2), permanent crops (type 3), breeding granivores (type 5), non-classified holdings (type 9),
- 2) organic farming holdings.
- 3) other holdings with economic size 16 ESU or more.

For the few new holdings new economic sizes and types were calculated, all other holdings were post-stratified according to the preliminary economic sizes and types of farming. In addition to the preliminary stratum 45 new strata were composed. The holdings in each county (15) with 2-16 ESU were divided by type of farming into three groups (type 1, type 4 and types 6-8).

So the initial extrapolation factors were adjusted. Extrapolation factors were corrected also in case of few duplicates and outliers. Outliers were new organic farming holdings added to Organic Farming Register after sampling. According to the sample design these new organic farming holdings were moved to completely enumerated stratum.

In order to estimate the quality of indicators found, the relative standard error (coefficient of variation) for most important indicators was calculated (crop and animal characteristics, standard gross margin and number of annual work units, by counties and legal types). The coefficient of variation of main indicators of crop and animal production for the whole Estonia was less than 1,8%. The coefficients of variation of main indicators of crop and animal production for the whole Estonia are presented in the following table.

Relative standard errors of main indicators of crop and animal production for the whole Estonia

Indicator	Relative error, %
Agricultural area	0,2
Cereals	0,2
Potatoes	0,6
Fresh vegetables	1,3
Fruit and berry plantations	1,4
Permanent grassland for production purposes	0,5
Cattle	0,1
Pigs	0,06
Sheep	1,8
Laying hens	0,2
Standard gross margin	0,1
Number of Annual work units	0,3

In general data were not published if coefficient of variation exceeded 30%.

For estimating coefficients of variation the procedure `surveymeans` of software SAS was used.

3.5.3 Non sampling errors

Coverage errors

The details about over coverage, under coverage and misclassification are presented in chapter 3.3.1. The frame errors have been taken into account during re-weighting.

Measurement errors

The main sources of measurement errors are mode of data collection and the form of questionnaire. In order to minimise measurement errors the main part of information was collected by trained interviewers. At the same time questionnaires were carefully designed and mainly EU variables were used. Due to these reasons the measurement errors were small.

Processing errors

Due to the several checks processing errors did not exist on a large scale. Coding was used only for geographical location of the holding. It can be assumed that most processing errors were discovered and they do not have important impact on the overall accuracy.

Non-response errors

The details about non-response are presented in chapter 3.4.5 and methods for handling unit and item non-response in chapter 3.5.1.

3.5.4 Evaluation of results

FSS 2007 results can be regarded as reliable. The comparisons were made with administrative data and other agricultural statistics surveys both on micro-data and aggregated level. Still the use of administrative data in comparisons is only partially possible on account of differences in definitions and methodology.

FSS 2007 data were compared with:

- 1) Register of Agricultural Animals of ARIB,
- 2) Register of Agricultural Support and Parcels (land use data and data about supports for energy crops and afforestation) of ARIB,
- 3) Organic Farming Register of Plant Production Inspectorate,
- 4) other agricultural statistics surveys.

The differences between the FSS 2007 micro-data and micro-data from other sources were clarified. If necessary the holders were contacted for additional information. The differences occurred mainly due to the differences in the definitions of characteristics and units and sometimes also due to the misunderstandings.

The differences on aggregated level are small and caused by the differences in the methodology. The utilized agricultural area as well as the area of most crops in FSS 2007 is larger than in ARIB as all holdings do not apply for agricultural subsidies and are therefore not registered in ARIB. On the contrary, the number of registered cattle in ARIB was 0,5%

bigger than that in FSS as small units (with 1 or 2 cattle) under the threshold of holding are not included in FSS. The numbers of sheep and goats were in ARIB smaller than those in FSS as only sheep and goats older than six months should be registered in ARIB. The numbers of pigs were also smaller than those in FSS. The reasons are different reference dates of the data and probably also the lack of data of small holdings in ARIB. Differences between preliminary data of Organic Farming Register and FSS 2007 data were small.

As I08b (areas used for the production of agricultural raw material for non-food purposes subject to the payment of subsidies) refer to the areas of energy crops, the data of this item presented by holders were compared with the Register of Agricultural Support and Parcels (areas eligible for the support of energy crops). The differences were small.

When compared FSS 2007 data with data from crop production and animal surveys the differences occurred mainly at county level.

Comparison with Estonian Labour Force Survey was not made due to the fundamental methodological differences.

4. PUBLICATION AND DISSEMINATION

The detailed results of the FSS 2007 (general data, land use, livestock farming and labour force) will be published in the statistical database of the Statistics Estonia on 30 June 2008. Statistical database is available on the website of the Statistics Estonia www.stat.ee. Some data are presented also on county level. Description of the methodology is included. Statistical confidentiality is strictly followed. Data on the Internet website are bilingual and free of charge. Together with the publication of data in statistical database Statistics Estonia will deliver the press release.

FSS 2007 micro-data have been sent to Eurostat in June 2006. The anonymised FSS 2007 micro-data are also available for Estonian research institutions, but under strict confidentiality treatments.

The overview of some most important results will be published in paper form in autumn 2008.

ANNEX 1

QUESTIONNAIRE FOR HOLDING OF NATURAL PERSON



Please send the fulfilled report to one of the following addresses:

Post Endla 15, 15174 Tallinn

File <https://aruanne.stat.ee>

Fax 625 9141, 662 1531, 662 0816

212081295

Annex of the 23.01.2007 regulation of the Minister of Finance No4 "Confirming reports of official statistical surveys"

AGRICULTURAL STRUCTURE SURVEY agricultural holding of natural person

Year 2007

Page 1(8)

Data of respondent

Commercial register code

Name of the holding

Code of interviewer

Area code of interviewer

Area code of instructor

Location of the holding

Official statistical report

Reference date is 1 June 2007

Statistics Estonia guarantees the protection of data

Please check the data and correct/complete if necessary.

Identification number of unit

A. General data

1. Is the holding located in Natura 2000 area (area with environmental restrictions)?

If the holding is only partially located in Natura 2000 area, it is classified as being within this area if the headquarter of the holding (if there is no headquarter the major part of the land) is located in this area

Yes No

2. Who is the manager of the holding? (Mark with cross)

1 holder
2 spouse of holder
3 other member of holder's family
4 other manager

3. Agricultural training of the manager (Mark with cross)

1 only practical experiences
2 basic agricultural training – agricultural vocational education or training courses completed at agricultural college
3 full agricultural training – secondary professional education, vocational higher and/or higher education

4. 16. Does the household of the holder consume more than 50% of the final production of the holding?

Yes No

5. Do the direct sales to final consumers account for more than 50 % of the total sales?

Yes No

B. Land use

Type of land use	No row	Area, ha (accuracy 0,01)	Explanation
Total land tenure (rows 7 + 11 + 13 + 14)	6		Total area of the holding (land ownership (except land leased out), leased land and other tenure)
utilized agricultural area (rows 8 + 9 + 10); (from row 15 to 48, except 17, 21, 37, 39)	7		Area used or no longer used for production purposes but maintained in good agricultural and environmental condition in the year of survey (incl. arable land, permanent grassland, permanent crops, nurseries and kitchen garden)
of which owned	8		Agricultural land in the ownership of the holder
leased	9		Agricultural land leased by the holder
other tenure	10		Other tenure of agricultural land (incl. land, which the holding works free of any charge)
wooded area	11		Wooded area with or without trees
former agricultural areas converted into wooded area	12		Former agricultural areas converted into wooded area or being prepared for afforestation for which the holding is entitled to financial aid for afforestation
unutilized agricultural area	13		Agricultural land which is no longer used for production purposes and not maintained in good agricultural and environmental condition (without single payment)
other land	14		Land occupied by buildings, pleasure gardens, tracks, quarries and inland waters, infertile land (marshland, heaths)

C. Utilized agricultural area

Type of land use	No row	Area, ha (accuracy 0,01)	Explanation
Kitchen garden	15		Area separated off from the rest of the agricultural land where the products are produced for holding's own consumption (only occasional surplus products are sold). Excl. pleasure gardens (parks, lawns)
Permanent grassland used for production purposes	16		Land used permanently (for five years or more) to grow forage plants (sown or self-seeded) and that is not included in the crop rotation on the holding. The land can be used for grazing or mowed for silage or hay
of which eligible for single area payment	17		
no longer used for production purposes	18		Permanent grassland no longer used for production purposes, maintained in good agricultural and environmental condition and eligible for single area payment
Nurseries	19		Areas of young plants (forest trees, fruit trees, bushes and ornamental plants) grown in the open air for subsequent transplantation (excl. noncommercial forest tree nurseries within woodland)
Fruit and berry plantations	20		Fruit trees, bushes and berry plants (excl. strawberries and kitchen gardens) from the year they are planted; sea-buckthorn plantations; forest berries

21. Are the apples grown for sale in the holding?

Yes No

D. Apples for sale

Varieties	No row	Number of trees	Area, ha	Number of trees by age class (Age from planting)					
				0–4 years	5–9 years	10–14 years	15–24 years	25–44 years	at least 45 years
				1	2	3	4	5	6
Krügeri tuviõun	21.1								
Valge klaarõun	21.2								
Martsipan	21.3								
Pirja	21.4								
Suislepp	21.5								
Katre	21.6								
Sügisdessertõun	21.7								
Koit	21.8								
Krista	21.9								
Lembitu	21.10								
Pärnu tuviõun	21.11								
Melba	21.12								
Sügisjoonik	21.13								
Liivi kuldrenett	21.14								
Tiina	21.15								
Antoonovka	21.16								
Cortland	21.17								
Lobo	21.18								
Orlovski sinap	21.19								
Tartu roosõun	21.20								
Veteran	21.21								
Karksi renett	21.22								
Krameri tuviõun	21.23								
Paide taliõun	21.24								
Põltsamaa taliõun	21.25								
Sidrunkollane taliõun	21.26								
Talvenauding	21.27								
Tellissaare	21.28								
Liivi sibulõun	21.29								
Eva kuld	21.30								
Meelis	21.31								
Spartan	21.32								
Muud	21.33								

E. Arable land

Type of field crop	No row	Area, ha (accuracy 0,01)	Explanation
Cereals			
wheat	22		Cereals for the production of grain Including mixture of cereals Triticale, buckwheat, etc
rye	23		
barley	24		
oats	25		
other cereals	26		
Protein crops			Protein crops for the production of grain (including mixtures of pulses and cereals)
peas, field beans	27		Including vetch
other protein crops	28		
Potatoes	29		
Fodder roots	30		Excluding seeds for sale
Industrial plants			
rape and turnip rape	31		Grown for the production of oil
linseed	32		
flax	33		
aromatic and medicinal plants and herbs	34		Caraway, camomile, melissa, calendula, etc
other industrial crops	35		Mustard, saffron milk cap, chicory, etc
Fresh vegetables and strawberries, outdoor or under low cover			
open field	36		
of which strawberries	37		
market gardening	38		
of which strawberries	39		
Flowers and ornamental plants, outdoor or under low cover	40		Excluding nurseries
Fresh vegetables under glass	41		Crops which for the whole of the period of growth or for the predominant part of it are covered by greenhouses or fixed or mobile high cover (rigid or flexible plastic)
Flowers and ornamental plants under glass	42		
Forage plants			
temporary grass	43		Grass plants for grazing, hay or silage included as a part of a normal crop rotation, lasting less than five years
green maize	44		
other forage plants	45		
Seeds and seedlings for sale	46		Seeds and seedlings of vegetables, fodder roots and hay
Fallow land			
included in the crop rotation system	47		Land that is left to recover, normally for the whole of a crop year (black and green fallow)
no longer used for production purposes (eligible for single area payment)	48		Arable land no longer used for production purposes, maintained in good agricultural and environmental condition and eligible for single area payment
Arable land used for the production of agricultural raw material for non-food purposes (eligible for single area payment)	49		Already shown within arable land. Agricultural products are produced for non-food purposes (rape for biofuel, for instance)

F. Livestock

Animal species, poultry species	No row	Number	Explanation
Bovine animals			
calves (under 1 year old)	50		
bovine animals 1 to 2 years old			
male	51		
female	52		Female bovine animals which have not calved
bovine animals 2 years and over			
dairy cows	53		Calved cows which by reason of their breed are kept to produce milk for human consumption
other cows	54		Cows which by reason of their breed are kept for the production of calves and whose milk is not intended for human consumption
bulls	55		
heifers	56		Female bovine animals which have not calved
Sheep	57		
of which female	58		Ewes and ewe lambs for breeding
Goats	59		
of which female	60		Nanny-goats and kids for breeding
Horses	61		Incl. riding and race horses and horses used only for the holder's own family leisure purposes
Pigs			
piglets	62		Piglets having live weight of under 20 kg
breeding sows	63		Breeding sows weighing 50 kg and over (regardless if they have farrowed or not)
other pigs	64		Pigs with a live weight from 20-50 kg, fattening pigs, breeding boars and cull sows
Breeding female rabbits	65		Female rabbits which have littered
Swarms of bees	66		
Poultry			
broilers	67		Broilers of all ages are included
laying hens	68		Hens and breeding cocks which are kept for production of eggs, incl. growing pullets before point of lay; cull hens
other poultry	69		Geese, ducks, turkeys, ostriches, quails

G. Farm labour force of the holding during 12 months up to the survey day

Data are recorded on all persons at least 17 years old or having completed their compulsory education who carried out farm work on the holding under survey during 12 months up to the survey day.

Farm work — organisation and management (buying, selling, accounting, etc.), field labour, raising of animals, all work carried out on the holding in respect of storage, processing and market-preparation of primary agricultural products, holding own-account transports if carried out by the holding's own labour force, all non-separable non-agricultural secondary activities.

Excluded from farm work are — labour working on the holding but employed by a third party or under mutual-aid arrangements, work for the private household of the holder or manager, any forestry, hunting, fishery or fish farming operation, separable non-agricultural secondary activities (perhaps the processing of agricultural products on the holding), labour not working on the holding.

Working time – the working time actually devoted to farm work for the holding.

Full working time — 1,800 hours (225 working days, 8 hours in each day). If the person has worked more than 1800 per year, her/his working time is also considered to be 1800 hours (100%).

The data on holder and his/her spouse is recorded even if they have not participated in farm work (working time 0%).

The data relating to manager have to be taken into account twice: always in row 71 and secondly in row 70 or in rows from 72 to 76 depending in who is the manager (see question 2).

Other members of holder's family — the relatives of the holder participated in farm work (excl. spouse of the holder), irrelevant whether or not such persons live in the holding, receive a wage or whether they work regularly or not.

Holder, manager and spouse of holder (mark with cross)

No of row	Person	Sex	Age group						Working time in holding (excl. homework), % of the full working time (1800 hours)							
			<25	25-34	35-44	45-54	55-64	>=65	0	>0-<25	25-<50	50-<75	75-<100	100		
			1	2	3	4	5	6	1	2	3	4	5	6		
70	Holder	m f														
71	Manager	m f														
72	Spouse of holder	m f														

Other members of holder's family

(mark the number of family members who have done farm work)

No of row	Sex	Working time in holding (excl. homework), % of the full working time (1800 hours)				
		>0-<25	25-<50	50-<75	75-<100	100
		1	2	3	4	5
73	Female					
74	Male					

Regular employees, non-family labour force

(mark the number of employees)

No of row	Sex	Working time in holding (excl. homework), % of the full working time (1800 hours)				
		>0-<25	25-<50	50-<75	75-<100	100
		1	2	3	4	5
75	Female					
76	Male					

77. Non-regular employees, non-family labour force

Number of employees

Number of working days

78. Farm work done by persons not directly employed by the holding

Work done by agricultural accounting firms and unpaid mutual aid are excluded.

Number of working days

Other gainful activity of family members

Other gainful activity – non-agricultural gainful activity carried out on the holding itself (accommodation, etc.) or on another holding as well as activity in a non-agricultural enterprise (including farm work carried out on another agricultural holding) for remuneration (salary, wages, profits or other payment, including payment in kind).

Non-separable non-agricultural secondary gainful activities on the holding are excluded.

Major occupation – normally an activity which occupies more time than that relating to the farm work done for the agricultural holding under survey. If the respondent is not actually working on the holding, any gainful activity as described above would be considered a major occupation.

Subsidiary occupation – normally an activity which occupies less time than that relating to the farm work done for the agricultural holding under survey. Any other activity of the respondent who declares the agricultural activity of the holding under survey to be his main activity.

79. Does the holder who is also the manager have any other gainful activity?

- 1 Yes, as major occupation 3 No
 2 Yes, as subsidiary occupation

80. Does the holder's spouse have any other gainful activity?

- 1 Yes, as major occupation No
 2 Yes, as subsidiary occupation

81. Number of family members engaged in farm work of the holding who have any other gainful activity

- 1 as major occupation
 2 as subsidiary occupation

H. Other gainful activities in the holding

All gainful activities that do not comprise any farm work but which are directly related to the holding (the resources of the holding (area, buildings, machinery, etc) or products of the holding are used) are recorded. Non-separable gainful activities on the holding are excluded, as well as forestry activities.

No row	Activity	Existence (mark with cross)			Explanation
		Yes		No	
82	Tourism, accommodation	Yes		No	Tourism, accommodation, sport and recreation activities
83	Handicraft	Yes		No	Handicraft manufactured on the holding by the holder or the family or non-family labour force, regardless of how the products are sold
84	Processing of farm products	Yes		No	All processing of primary agricultural products, regardless of whether the raw material is produced on the holding or not (for example processing meat, making cheese, etc)
85	Wood processing	Yes		No	The processing of raw wood for the market (sawing timber, etc)
86	Aquaculture	Yes		No	Production of fish, crayfish, etc
87	Renewable energy production	Yes		No	Wind mills, etc., selling agricultural products, straw or wood to energy production facilities
88	Contractual work	Yes		No	Contractual work by using the equipment of the holding (incl. inside agricultural sector)
89	Other	Yes		No	Raising fur animals, etc

Comments and remarks

Interviewer		Date		Respondent	
name				name	
telephone	signature		telephone	signature	

Täname Teid!

Definitions

Agricultural holding (hereinafter holding) is a single unit both technically and economically, which has single management and which produces agricultural products or maintains the land in good agricultural and environmental condition, where there is:

- 1) at least one hectare of utilized agricultural land or
- 2) less than one hectare of utilized agricultural land but agricultural products are produced mainly for sale or economic size is at least one European Size Unit.

Standard gross margin of the agricultural holding is characterized by its economic size. Standard gross margin is the difference of the holding's output and the value of specific costs and is calculated on the basis of crop area, number of livestock and so-called SGM coefficients. To enable the comparison of the data with the other countries the economic size is expressed in European Size Units. 1 ESU is equal to 1200 EURO (18 768 kroons).

An agricultural holding is defined by the following criteria:

- 1) production of agricultural products or maintaining the land in good agricultural and environmental condition,
- 2) single management,
- 3) common use of labour and means of production (machinery, buildings, land, etc.)

When a holding is for any reasons split up among two or more persons, but still has a single management and it can so be considered to be one economic unit, it is considered as one single unit.

The holder of the holding is the person on whose name the holding is operated and who is legally and economically responsible for the holding and who takes the economic risks of the holding. The holder can own the holding or rent it or be a usufructuary. The holder may have delegated all or part of power of decision of the normal daily financial and production routines of running of the holding to a manager.

If on one holding two or more natural persons carry out the functions of the holder only one of them is shown as such (the one who bears the greatest share of the risk or who takes the main part in managing the holding). If such criteria still fail to pick out one individual the choice should be based on age. All data required for holder is recorded for this person and this person will also be considered to be the manager of holding.

The manager of the holding is the natural person responsible for the normal daily financial and production routines of running the holding concerned. The manager is generally, but not always, the same person as the holder who is a natural person.

The location of the holding is the centre of the holding. The centre of the holding is the permanent place of residence of the holder within holding or the location of the buildings if the holder says so. If there is no centre the location of the major part of land is recorded.

Agricultural products are:

- 1) crop products — cereals, legumes, potatoes, fodder roots, rape seed, linseed, flax fibre, herbs, vegetables, vegetable plants, flowers, ornamental plants, fodder plants, fruits, berries (incl. cultivated forest berries), young plants of trees and bushes;
- 2) livestock products — livestock and poultry, swarms of bees, meat, milk, eggs, wool, honey and wax.

**QUESTIONNAIRE FOR HOLDING OF LEGAL
PERSON**



Please send the fulfilled report to one of the following addresses:

Post Endla 15, 15174 Tallinn

File <https://aruanne.stat.ee>

Fax 625 9141, 662 1531,
662 0816

212081296
Annex of the 23.01.2007 regulation of the Minister of Finance No4
"Confirming reports of official statistical surveys"

AGRICULTURAL STRUCTURE SURVEY agricultural holding of legal person Year 2007

Page 1 (7)

Data of respondent

Commercial register code

Postiaadress

Name of the holding

Location of the holding

Telephone(s)

E-mail

Website

Type of owner

Official statistical report

Reference date is 1 June 2007

To be sent by 15 June 2007

Information about sending the report:
data collection department, tel 6259 110

Information about fulfilling the report:
agricultural statistics department, tel 6259 104

The form of report is available on website of Statistics Estonia
www.stat.ee in the section "Aruandevormid / Aruandevormid 2007 /
Majandus / Põllumajandus"

Please check the data and correct/complete if necessary.

Statistics Estonia guarantees the protection of data

Identification number of unit

A. General data

1. Is the holding located in Natura 2000 area (area with environmental restrictions)?

If the holding is only partially located in Natura 2000 area, it is classified as being within this area if the headquarter of the holding (if there is no headquarter the major part of the land) is located in this area

Yes No

3. Agricultural training of the manager (Mark with cross)

- 1 only practical experiences
2 basic agricultural training – agricultural vocational education or training courses completed at agricultural college
3 full agricultural training – secondary professional education, vocational higher and/or higher education

5. Do the direct sales to final consumers account for more than 50 % of the total sales?

Yes No

B. Land use

Type of land use	No row	Area, ha (accuracy 0,01)	Explanation
Total land tenure (rows 7 + 11 + 13 + 14)	6		Total area of the holding (land ownership (except land leased out), leased land and other tenure)
utilized agricultural area (rows 8 + 9 + 10); (rows from 16 to 48, except 17, 21, 37, 39)	7		Area used or no longer used for production purposes but maintained in good agricultural and environmental condition in the year of survey (incl. arable land, permanent grassland, permanent crops and nurseries)
of which owned	8		Agricultural land in the ownership of the holder
leased	9		Agricultural land leased by the holder
other tenure	10		Other tenure of agricultural land (incl. land, which the holding works free of any charge)
wooded area	11		Wooded area with or without trees
former agricultural areas converted into wooded area	12		Former agricultural areas converted into wooded area or being prepared for afforestation for which the holding is entitled to financial aid for afforestation
unutilized agricultural area	13		Agricultural land which is no longer used for production purposes and not maintained in good agricultural and environmental condition (without single payment)
other land	14		Land occupied by buildings, pleasure gardens, tracks, quarries and inland waters, infertile land (marshland, heaths)

C. Utilized agricultural area

If the report "Areas of agricultural crops 2007" is presented, then from part C only row 21 and from part E only row 49 should be fulfilled.

Type of land use	No row	Area, ha (accuracy 0,01)	Explanation
Permanent grassland used for production purposes	16		Land used permanently (for five years or more) to grow forage plants (sown or self-seeded) and that is not included in the crop rotation on the holding. The land can be used for grazing or mowed for silage or hay
of which eligible for single area payment	17		
no longer used for production purposes	18		Permanent grassland no longer used for production purposes, maintained in good agricultural and environmental condition and eligible for single area payment
Nurseries	19		Areas of young plants (forest trees, fruit trees, bushes and ornamental plants) grown in the open air for subsequent transplantation (excl. noncommercial forest tree nurseries within woodland)
Fruit and berry plantations	20		Fruit trees, bushes and berry plants (excl. strawberries) from the year they are planted; sea-buckthorn plantations; forest berries

21. Are the apples grown for sale in the holding?Yes No

D. Apples for sale

Varieties	No row	Number of trees	Area, ha	Number of trees by age class (Age from planting)					
				0–4 years	5–9 years	10–14 years	15–24 years	25–44 years	at least 45 years
				1	2	3	4	5	6
Krügeri tuviõun	21.1								
Valge klaarõun	21.2								
Martsipan	21.3								
Pirja	21.4								
Suislepp	21.5								
Katre	21.6								
Sügisdessertõun	21.7								
Koit	21.8								
Krista	21.9								
Lembitu	21.10								
Pärnu tuviõun	21.11								
Melba	21.12								
Sügisjoonik	21.13								
Liivi kuldrenett	21.14								
Tiina	21.15								
Antoonovka	21.16								
Cortland	21.17								
Lobo	21.18								
Orlovski sinap	21.19								
Tartu roosõun	21.20								
Veteran	21.21								
Karksi renett	21.22								
Krameri tuviõun	21.23								
Paide taliõun	21.24								
Põltsamaa taliõun	21.25								
Sidrunkollane taliõun	21.26								
Talvenauding	21.27								
Tellissaare	21.28								
Liivi sibulõun	21.29								
Eva kuld	21.30								
Meelis	21.31								
Spartan	21.32								
Muud	21.33								

E. Arable land

Type of field crop	No row	Area, ha (accuracy 0,01)	Explanation
Cereals			
wheat	22		Cereals for the production of grain Including mixture of cereals Triticale, buckwheat, etc
rye	23		
barley	24		
oats	25		
other cereals	26		
Protein crops			Protein crops for the production of grain (including mixtures of pulses and cereals)
peas, field beans	27		Including vetch
other protein crops	28		
Potatoes	29		
Fodder roots	30		Excluding seeds for sale
Industrial plants			
rape and turnip rape	31		Grown for the production of oil
linseed	32		
flax	33		
aromatic and medicinal plants and herbs	34		Caraway, camomile, melissa, calendula, etc
other industrial crops	35		Mustard, saffron milk cap, chicory, etc
Fresh vegetables and strawberries, outdoor or under low cover			
open field	36		
of which strawberries	37		
market gardening	38		
of which strawberries	39		
Flowers and ornamental plants, outdoor or under low cover	40		Excluding nurseries
Fresh vegetables under glass	41		Crops which for the whole of the period of growth or for the predominant part of it are covered by greenhouses or fixed or mobile high cover (rigid or flexible plastic)
Flowers and ornamental plants under glass	42		
Forage plants			
temporary grass	43		Grass plants for grazing, hay or silage included as a part of a normal crop rotation, lasting less than five years Including cereals and protein crops harvested green
green maize	44		
other forage plants	45		
Seeds and seedlings for sale	46		Seeds and seedlings of vegetables, fodder roots and hay
Fallow land			
included in the crop rotation system	47		Land that is left to recover, normally for the whole of a crop year (black and green fallow)
no longer used for production purposes (eligible for single area payment)	48		Arable land no longer used for production purposes, maintained in good agricultural and environmental condition and eligible for single area payment
Arable land used for the production of agricultural raw material for non-food purposes (eligible for single area payment)	49		Already shown within arable land. Agricultural products are produced for non-food purposes (rape for biofuel, for instance)

F. Livestock

Animal species, poultry species	No row	Number	Explanation
Bovine animals			
calves (under 1 year old)	50		
bovine animals 1 to 2 years old			
male	51		
female	52		Female bovine animals which have not calved
bovine animals 2 years and over			
dairy cows	53		Calved cows which by reason of their breed are kept to produce milk for human consumption
other cows	54		Cows which by reason of their breed are kept for the production of calves and whose milk is not intended for human consumption
bulls	55		
heifers	56		Female bovine animals which have not calved
Sheep	57		
of which female	58		Ewes and ewe lambs for breeding
Goats	59		
of which female	60		Nanny-goats and kids for breeding
Horses	61		Incl. riding and race horses and horses used only for the holder's own family leisure purposes
Pigs			
piglets	62		Piglets having live weight of under 20 kg
breeding sows	63		Breeding sows weighing 50 kg and over (regardless if they have farrowed or not)
other pigs	64		Pigs with a live weight from 20-50 kg, fattening pigs, breeding boars and cull sows
Breeding female rabbits	65		Female rabbits which have littered
Swarms of bees	66		
Poultry			
broilers	67		Broilers of all ages are included
laying hens	68		Hens and breeding cocks which are kept for production of eggs, incl.growing pullets before point of lay; cull hens
other poultry	69		Geese, ducks, turkeys, ostriches, quails

G. Farm labour force of the holding during 12 months up to the survey day

Data are recorded on all persons at least 17 years old or having completed their compulsory education who carried out farm work on the holding under survey during 12 months up to the survey day.

Farm work — organisation and management (buying, selling, accounting, etc.), field labour, raising of animals, all work carried out on the holding in respect of storage, processing and market-preparation of primary agricultural products, holding own-account transports if carried out by the holding's own labour force, all non-separable non-agricultural secondary activities.

Excluded from farm work are — labour working on the holding but employed by a third party or under mutual-aid arrangements, any forestry, hunting, fishery or fish farming operation, separable non-agricultural secondary activities (perhaps the processing of agricultural products on the holding), labour not working on the holding.

Working time – the working time actually devoted to farm work for the holding.

Full working time — 1,800 hours (225 working days, 8 hours in each day). If the person has worked more than 1800 per year, her/his working time is also considered to be 1800 hours (100%).

The data relating to manager have to be taken into account twice: always in row 71 and secondly in row 75 or 76.

Manager (mark with cross)

No of row	Person	Sex	Age group						Working time in holding, % of the full working time (1800 hours)						
			<25	25-34	35-44	45-54	55-64	>=65	>0-<25	25-<50	50-<75	75-<100	100		
			1	2	3	4	5	6	2	3	4	5	6		
71	Manager	m f													

Regular employees (mark the number of employees)

No of row	Sex	Working time in holding, % of the full working time (1800 hours)				
		>0-<25	25-<50	50-<75	75-<100	100
		1	2	3	4	5
75	Female					
76	Male					

77. Non-regular employees

Number of employees Number of working days

78. Farm work done by persons not directly employed by the holding

Work done by agricultural accounting firms and unpaid mutual aid are excluded.

Number of working days

H. Other gainful activities in the holding

All gainful activities that do not comprise any farm work but which are directly related to the holding (the resources of the holding (area, buildings, machinery, etc) or products of the holding are used) are recorded. Non-separable gainful activities on the holding are excluded, as well as forestry activities.

No row	Activity	Existence (mark with cross)			Explanation
		Yes		No	
82	Tourism, accommodation	Yes		No	Tourism, accommodation, sport and recreation activities
83	Handicraft	Yes		No	
84	Processing of farm products	Yes		No	All processing of primary agricultural products, regardless of whether the raw material is produced on the holding or not (for example processing meat, making cheese, etc)
85	Wood processing	Yes		No	The processing of raw wood for the market (sawing timber, etc)
86	Aquaculture	Yes		No	Production of fish, crayfish, etc
87	Renewable energy production	Yes		No	Wind mills, etc., selling agricultural products, straw or wood to energy production facilities
88	Contractual work	Yes		No	Contractual work by using the equipment of the holding (incl. inside agricultural sector)
89	Other	Yes		No	Raising fur animals, etc

Fulfiller	Date	Manager	
name		name	
e-mail	telephone	signature	telephone

Thank you!

Comments and remarks

Definitions

Agricultural holding (hereinafter holding) is a single unit both technically and economically, which has single management and which produces agricultural products or maintains the land in good agricultural and environmental condition, where there is:

- 1) at least one hectare of utilized agricultural land or
- 2) less than one hectare of utilized agricultural land but agricultural products are produced mainly for sale or economic size is at least one European Size Unit.

Standard gross margin of the agricultural holding is characterized by its economic size. Standard gross margin is the difference of the holding's output and the value of specific costs and is calculated on the basis of crop area, number of livestock and so-called SGM coefficients. To enable the comparison of the data with the other countries the economic size is expressed in European Size Units. 1 ESU is equal to 1200 EURO (18 768 kroons).

The location of the holding is the centre of the holding. The centre of the holding is the location of the buildings within holding. If there is no centre the location of the major part of land is recorded.

Agricultural products are:

- 1) crop products — cereals, legumes, potatoes, fodder roots, rape seed, linseed, flax fibre, herbs, vegetables, vegetable plants, flowers, ornamental plants, fodder plants, fruits, berries (incl. cultivated forest berries), young plants of trees and bushes;
- 2) livestock products — livestock and poultry, swarms of bees, meat, milk, eggs, wool, honey and wax.

**FORMULAS APPLIED FOR ESTIMATION
METHODS**

Design weight of h th stratum $\frac{N_h}{n_h}$ is adjusted for compensating non-response:

$$\frac{N_h}{n_h} \frac{n_h}{m_h} = \frac{N_h}{m_h}$$

where N_h is the population size, n_h is the sample size and m_h is number of responded units of the h th stratum.

Horvitz-Thompson estimator \hat{t}_π of a population total t :

$$\hat{t}_\pi = \sum_{h=1}^H \frac{N_h}{m_h} \sum_{k=1}^{m_h} y_{hk},$$

where H is the number of strata, y_{hk} is the value of the variable y of the k th element in the h th stratum, n_h is the sample size of the h th stratum.

The variance of the Horvitz-Thompson estimator is $\hat{V}(\hat{t}_\pi) = \sum_{h=1}^H \frac{N_h^2}{m_h} \left(1 - \frac{m_h}{N_h}\right) S_{hs}^2$,

where $S_{hs}^2 = \frac{1}{m_h - 1} \sum_{k=1}^{m_h} (y_{hk} - \bar{y}_{hs})^2$, is the sample variance of y of the h th stratum

and $\bar{y}_{hs} = \frac{\sum_{k=1}^{m_h} y_{hk}}{m_h}$ is the sample mean.

Coefficient of variation

$$CV = \frac{\sqrt{\hat{V}(\hat{t}_\pi)}}{\hat{t}_\pi}.$$