

Farm Structure Survey 2009/2010
Survey on agricultural production
methods 2009/2010

National Methodological Report (NMR)

Member State: HUNGARY

CONTENTS

SUMMARY	4
1. CONTACTS	7
2. SURVEY METHODOLOGY	7
2.1 National legislation	7
2.2 Characteristics and reference period	8
2.2.1 Questionnaires	9
2.3 Survey organisation	10
2.3.1 Organization of management	10
2.3.2 Organization of implementation	11
2.3.3 Pilot survey	12
2.3.4 External and internal communication	13
2.4 Calendar (overview of work progress)	13
2.5 Population and frame	14
2.6 Survey design	15
2.7 Sampling, data collection and data entry	17
2.7.1 Drawing the sample for SAPM	17
2.7.2 Data collection and data entry	20
2.7.3 Use of administrative data sources	22
2.8 Specific topics	25
2.8.1 Common Land	25
2.8.2 Geographical reference of the holding	26
2.8.3 Volume of water used for irrigation	27
2.8.4 Other issues	29
2.9 Response-burden policy	29
3. ACCURACY AND RELIABILITY OF THE DATA COLLECTED	30
3.1 Data processing, analysis and estimation	30
3.1.1 Estimation and sampling errors for SAPM	30
3.1.2 Non sampling errors	30
3.1.3 Methods for handling missing or incorrect data items	31
3.1.4 Control of the data	31
3.2 Evaluation of results	32
3.3 Data Revision Policy	33
4. ACCESSIBILITY AND PUNCTUALITY	34
4.1 Publications	34
4.2 Timeliness and Punctuality	34
5. CONFIDENTIALITY AND SECURITY	35
ANNEXES	35

LIST OF ABBREVIATIONS

AC 2000 – Agricultural Census 2000
CVFP 2001 – Census of Vineyards and Fruit Plantations 2001
EAA – Economic Accounts for Agriculture
EOV – Uniform National Projection System
FSS 2010 – Agricultural Census 2010
FSS 2003, 2005, 2007 – Farm Structure Survey 2003, 2005, 2007
FAO – Food and Agricultural Organisation of the United Nations
HCSO – Hungarian Central Statistical Office
IGCRS – Institute of Geodesy Cartography and Remote Sensing
IACS – Integrated Administrative Control System
ID card – Identification card
IT Department – IT Department of HCSO
LAU – Local Administrative Unit (LAU2 = settlement in Hungary)
NPSDC – National Program of Statistical Data Collection
RA – Register of addresses
RD – Rural development measures
SAPM – Survey on Agricultural Production Methods
RAESD – Rural Development Agricultural and Environmental Statistics Department
VR – Vineyard Register

REGIONS OF HUNGARY

HU10 – Közép-Magyarország (*Central Hungary*)
HU21 – Közép-Dunántúl (*Central Transdanubia*)
HU22 – Nyugat-Dunántúl (*Western Transdanubia*)
HU23 – Dél-Dunántúl (*Southern Transdanubia*)
HU31 – Észak-Magyarország (*Northern Hungary*)
HU32 – Észak-Alföld (*Northern Great Plain*)
HU33 – Dél-Alföld (*Southern Great Plain*)

SUMMARY

The Agricultural Census 2010 (FSS 2010) was implemented by the Hungarian Central Statistical Office (HCSO) between 1 and 21 June 2010 with the reference date of 1st June. The main objectives of the census were to provide the necessary information for the elaboration of the Common Agricultural Policy (CAP), to follow the structural changes in the Hungarian agriculture since the Agricultural Census 2000 (AC 2000) as well as to meet the domestic information needs coming from Hungarian policy makers. The census provides an overall and exact view on the Hungarian agriculture and it determines agricultural statistics over the next 10 years as it serves as a basis updating the farm register.

From 2000 the implementation of the agricultural census is regulated by an Act, thus the Act XXIV of 2010 on the AC provides the regulatory framework for the implementation of the FSS 2010. The annual data collection system is included in the National Program of Statistical Data Collection (NPSDC) approved each year in a Government Decree. In 2010 certain regular surveys on land area and sown area (May) as well as on livestock (June) were not carried out, questions related to these surveys were incorporated into the FSS 2010 questionnaire.

During the preparation phase and following the field survey administrative sources were used more widely than in any case of previous FSSs. Information on land users, farmers receiving subsidy and carrying out organic farming were used to complete the existing farm register information during the preparation of the census frame before the census. After the census, in the data processing phase administrative data on area subject to subsidy payments, on rural development measurements and on organic farming were used to complete the data set. Quality wine area was imputed on the basis of administrative sources. Information on the location of the holding was also produced on the basis of collected data “translated” into geo-coordinates.

For the implementation of FSS 2010 the combination of exhaustive and sample survey was used. All agricultural enterprises¹ and private holdings were observed on full scope, however in compliance with the Regulation (EC) No 1166/2008 the Survey on Agricultural Production Methods (SAPM) was carried out on a sample basis in case of private holdings. The sample covered 3 475 from the total 13 897 enumeration districts of FSS 2010. SAPM information was collected only in the selected enumeration districts parallel with the census questions.

All agricultural enterprises had received the questionnaire by mail, and after completion they send it back to the Szeged Regional Directorate of HCSO responsible for data collection on agricultural statistics. 9 367 agricultural enterprises reported agricultural activity in 2010. In case of private holdings enumerators made face-to-face interviews. They visited more than 2.3 million households and completed 567 629 questionnaires. The census covered 3 174 settlements of Hungary.

The census was implemented by applying the well-proven methods designed by the Rural Development Agricultural and Environmental Statistics Department (RAESD). All the 7 Regional Directorates and 12 County Representatives of the HCSO were involved in the implementation under the management of the RAESD. The staff of the directorates and

¹ Agricultural enterprises are business units included in the Business Register of HCSO.

representatives was responsible for recruiting and training of enumerators and monitoring their work.

Nation wide and local press releases, posters and toll-free telephone lines helped to inform the public. In case of private holdings the rate of refusal was negligible (0.3 percent) due to the well-trained enumerators furnished with communication skills. The successful communication campaign prior to the census also contributed improving the response rate. The survey supervisors with the help of the local authorities managed to convince nearly all the non-respondents to answer, thus legal steps were not taken.

All the data entry applications related to FSS 2010 were developed by the IT Department of HCSO in the framework of uniform Data Entry and Validation System run by the HCSO. The staff of the directorates, representatives and the central office made the data entry. The individual data and the calculated aggregations were confronted with earlier information and statistics from other sources. Estimation related to SAPM, data processing and data of publication tables were produced by the statisticians of the RAESD.

A dissemination plan was prepared for the publication of the FSS 2010 results. The preliminary data were released at a press conference on 1 December 2010 (it can be found on website of the HCSO in pdf format). More detailed but still preliminary data were published in July 2010. Final data is planned to be published in several volumes in 2012. Data will be available mainly on internet. The different aggregations are computed on country, region, county (NUTS1, NUTS2, NUTS3) and some of them at settlement level (NUTS5).

History

The systematic statistical data service on agriculture looks back to more than 100 years of history in Hungary. Before the first census in Hungary only data from some segments of agriculture were collected.

The **first census** was implemented in Hungary in 1895 and covered all characteristics of agriculture (land, livestock, labour force). The **second census** of 1935 also was a comprehensive survey and had a speciality, whereas the indebtedness of farms also was observed. The international recommendations (issued by the predecessor of the FAO, the International Agricultural Institute in Rome) have been taken into account during the implementation of this census.

After the World War II the agriculture and subsequently the system of statistical data collection on agricultural production were undergone a thorough transformation. From the 1970's the small-scale household farming appeared together with the state farms and agricultural co-operative farms established as consequence of nationalisation. Beside the regular observation of large-scale farms, HCSO also collected data on the agricultural production of small-scale household farms.

In the years **between 1956 and 1959 a nation-wide orchard survey**, in 1960 the survey on agricultural machinery, and **between 1961 and 1963 a nation-wide vineyard survey** was carried out by the HCSO.

In 1972 Hungary joined the FAO World Census of 1970 and fulfilled also the international data requirements. For this time censuses were conducted in Hungary at 10-year regular intervals and

between the censuses statistical observation took place through the consistent annual data collection system based on the latest census.

The census of 1981 was also linked with the recommendations of the FAO World Census. In case of the large-scale producers one full scope observation was carried out, while five sample surveys covered the performance of small-scale producers.

In the 90's following the change of political and economical system in Hungary far-reaching changes were taken place in the society and in the agriculture, as well. As a result of the privatization the private farming ousted the earlier overwhelming state ownership and two key groups of farming – the individual and corporate ones – became characteristic for the Hungarian agriculture. In the respect of agricultural statistics it is also a considerable change that the ownership and use of land sharply separated from each other whilst the number of farmers living within city boundaries has increased.

In 1991 HCSO conducted the first census after the change of political system in 1989. Following this census in 1994 a farm structure survey was implemented, but this survey had an incomplete coverage and included only a narrow range of characteristics. The main deficiency of this survey was not covering the farmers living in the urban areas.

The Agricultural Census 2000 (AC 2000) is a historical milestone in the chronicle of Hungarian censuses. This was the first comprehensive survey that, apart from meeting the data needs of FAO, was also compliant with the relevant EU regulations. Based on the results of AC 2000 the data set for the EUROFARM database were compiled and provided to EUROSTAT.

Before the **Census of Vineyards and Fruit Plantations in 2001 (CVFP 2001)**, the land areas of plantations were surveyed on a full-scope basis almost after 40 years.

During the negotiations talks Hungary has committed itself to carry out the **Farm Structure Survey 2003 (FSS 2003)** according to EU relevant regulations. The **FSS 2005** implemented by HCSO in November 2005 was the first survey carried out after the accession of Hungary to the EU. The **FSS 2007** was implemented between 12 and 30 November 2007. After these surveys the micro-data of agricultural holdings were sent into the EUROFARM database handled by EUROSTAT.

The **FSS 2010** was the seventh of its kind and it was the first one implemented by Hungary as an EU member state. The census implementation had two specific feature in 2010, firstly in case of private holdings questions on agricultural production methods (so called modul part of the questionnaire) were collected only in a pre-selected sample, secondly during the preparatory and data production phase administrative sources were more widely used than in case of any previous FSSs.

1. CONTACTS

Contact organisation	Hungarian Central Statistical Office (HCSO)
Contact organisation unit	Rural Development, Agricultural and Environmental Statistics Department (RAESD)
Contact name	Mr. György Lengyel
Contact person function	Methodology, database management, dissemination
Contact mail address	Gyorgy.Lengyel@ksh.hu Keleti Károly utca 5-7. HU-1024 Budapest
Contact email address	Gyorgy.Lengyel@ksh.hu
Contact phone number	00-36-1345-6750

2. SURVEY METHODOLOGY

2.1 National legislation

The regulatory framework of the Agricultural Census 2010 is provided by the Act XXIV of 2010 approved by the Parliament.

According to the act Agricultural Census 2010 should be carried out with the reference date of 1st June 2010 in the territory of Hungary in line with the Regulation 1166/2008/EC. The survey has to cover all units involved in agricultural production over a certain threshold. The list of the main group of the characteristics to be observed is included in the act.

The Hungarian Central Statistical Office is responsible for the implementation of the census. In order to increase coverage HCSO is authorized for using administrative data sources listed in the act and has legal possibility to access them.

Act XLVI of 1993 on Statistics provides the general regulatory framework of surveys implemented in Hungary. All statistical surveys are included in the NPSDC approved annually by a Government Decree. In 2010, regarding agricultural enterprises and private holdings the annual surveys of land use and sown area and livestock (NPSDC 1082, 1087 and NPSDC 1651, 1089) were incorporated into FSS 2010, consequently they were not part of NPSDC.

The respondents are liable to provide adequate data; in case of refusal legal action are to be entailed. Under the Criminal Law enumerators are considered and are entitled to be protected as official person. The HCSO had issued registered identification badges valid only for the duration of the census together with the ID card. This identification tool was provided to each person involved in the implementation of FSS 2010.

In virtue of the Act LXIII of 1992 on protection of personal data and on publicity of the data with generally interest all individual data are qualified as confidential and were treated as such. Survey

data were validated and checked exclusively by the staff of HCSO and each enumerator was responsible for preventing unauthorized access to the questionnaires filled-in.

2.2 Characteristics and reference period

In the design of the questionnaires the peculiarities of the two key groups of respondents – agricultural enterprises and private holdings – were considered. According to the Hungarian practice the agricultural enterprises accomplish their regular reporting obligations towards the HCSO by mail, while the surveys of private holdings are carried out by face-to-face interviews. This procedure was also applied in case of the agricultural census 2010.

The observed FSS characteristics were specified according to the Commission Regulation No 1166/2008 Annex III. and Annex V. All FSS characteristics were included into the AC questionnaires except those ones which are non-significant or non-existing in Hungary (Annex I). **Crops reported as NE are not produced in Hungary due to the climatic conditions. The production of genetically modified crops is not allowed in Hungary. Data for characteristics reported previously as NS also provided.**

However, some questions were included in the questionnaire of FSS 2010 to meet only domestic users' needs, such as a more detailed observation of some FSS indicators. These topics/characteristics and the reasons of their necessity are listed in the following table:

Topics/Characteristics	Description of demand
Purpose of agricultural production	– Ensure the comparability with previous data
Agricultural qualification of each person belonging to the private holding	– Ensure the comparability with previous data
Use of arable land area, buying and selling land area, land area by location	– Necessary for the production of crop supply balance sheets – Necessary for the EAA
More detailed breakdown in case of crops (peas, potatoes, rape seeds, etc.)	– Necessary for the production of crop supply balance sheets
More detailed observation of livestock	– Necessary for domestic users
More detailed observation of indicators on rural development	– Necessary for domestic users
Agricultural services provided	– Necessary for the EAA
Indicators on agro-engineering other than irrigated area	– Necessary for calculations environmental indicators

The reference period of the FSS characteristics was 1st June 2010, except for the following ones:

- Farm labour force, buying and renting land area, non-agricultural activities, SAPM: the 12 month preceding the day of survey;
- Irrigated area and linear elements: last 3 years.
- Rural Development measures: 2008-2010

The definitions applied are the same included in the “Handbook on implementing the FSS and SAPM definitions – revision 8” except the following cases:

a) Irrigation

B_6_2_1
M_8_1_1

Average irrigated area in the last 3 years can be bigger as total irrigable area on the reference day, as irrigable agricultural area might have been bigger in previous years than in the reference day.

From M_8_1_2_1 to M_8_1_2_12:

Reference day for crop areas was 1st June 2010, while the 12-month long reference period for irrigation areas was between 1st June 2009 and 31st May 2010. This resulted in that irrigation areas could be reported for crop areas irrigated in 2009, which area can not be compared to crop areas in 1st June 2010.

b) Buffaloes

During the survey the number of buffaloes was surveyed broken down into two categories, separately from the number of cattle, consequently it was not double-counted.

The number of breeding female buffaloes is included in characteristic C_2_99.

The number of other buffaloes, which number was 1199 heads is not allocated to none of the C_2 subcategories on one hand because of their limited number and lack of experience and additional information to breaking them down into categories on the other hand.

2.2.1 Questionnaires

In 2010 two questionnaires were designed for the implementation of the agricultural census: one for agricultural enterprises and another one for private holdings. While their content was the same, there were differences in the order of the questions asked. In order to simplify the data collection system and reduce the respondents’ burden in 2010 the regular survey questionnaires on Land use and sown area in May and on Livestock in June were incorporated into the questionnaire of agricultural census both for agricultural enterprises and for private holdings.

FSS questionnaire for private holdings

Title: Agricultural census, 2010

Form: 6 pages without SAPM questions and
8 pages with SAPM questions

All relevant FSS characteristics were included in the questionnaire and defined according to the relevant EU regulations. The questionnaire for private holdings was produced in two versions, with and without SAPM questions. The reason for this solution was that SAPM was implemented only in sample of the AC.

The sequence of the questions was worked out to simplify completing the questionnaire during the face-to-face interview. The tables were clearly arranged and the main arithmetical linkage among the cells of tables were specified by formulas appeared on the questionnaire. Moreover, regarding the location of the holding and SAPM tables, brief instructions were included. The two types of questionnaire were printed in two different colours in order to help the work of the enumerators.

FSS questionnaires for agricultural enterprises

Title: Agricultural census, 1 June 2010

Form: 9 pages

All required FSS characteristics were included in the questionnaire completed with the questions on land use and livestock which surveys were not implemented separately in 2010. SAPM questions were asked in case of all agricultural enterprises. The questionnaire was designed on the basis of the same principals as the questionnaire of private holdings concerning the content and format.

All the FSS questionnaires were typographically printed on paper and in Excel format available via Internet, as well. The English versions are attached to this report. (ANNEX II; ANNEX III)

2.3 Survey organisation

2.3.1 Organization of management

In the organisational system of the FSS 2010 the competencies were shared between the RAESD and Szeged Regional Directorate, the unit responsible for agricultural data collections at that time. It means that the tasks concerning the implementation of the FSS 2010 were determined in a contract between them.

The field work was implemented in each 7 statistical region (NUTS 2 level) in Hungary. The regions controlled the work of the county (NUTS 3) representative offices furnished with a very small staff.

The following committees were set up and had a key role in the successful preparation and implementation of FSS 2010 project:

- **Project management:** The project leader, the representatives of the Szeged Regional Directorate, experts from both the Information Technology (IT) and the Finance and Budgeting Department of HCSO were members of this committee. Representatives from the Ministry of Rural Development (responsible also for agriculture) participated, too. Whereas FSS is a rather complex project other statistical experts of RAESD and HCSO were also involved in the work co-ordinated by this team on ad-hoc basis.

The competence of the team was the methodological preparation of the census including the sample design of SAPM. The team approved the questionnaires and other survey documents as well as discussed all other professional aspects of the census including the development of quality standards applied during the implementation of the census. The committee was

responsible for finalising the detailed budget plan, specifying the fees paid for the enumerators and working out the procedures of accounting and financial monitoring.

- ***IT technology, data processing and publication:*** The team was responsible for the management of all aspects related to data entry and data processing of the census including programming, staff required and availability of the necessary hardware background. The committee organised the work related to administrative data use and the publication of the census data.
- ***Preparation and implementation of field work:*** The Szeged Regional Directorate was responsible for the implementation of agricultural statistics within the HCSO including the logistics of the data collection, the management of data capture and budget planning. During the implementation phase this directorate kept continuously contact with other directorates, in particular the directorate responsible for the implementation of household surveys.

2.3.2 Organization of implementation

Private holdings

The implementation structure of the FSS 2010 was hierarchical, where the upper levels controlled the levels below them. The structure was similar to a pyramid, which had the following levels:

- survey team of the RAESD;
 - area agents of the regional directorates;
 - survey supervisors;
 - enumerators.
- ***Survey team of the RAESD:*** The task of the staff involved in the census was to contribute at the trainings for trainers. It served as a basis for uniform understanding of survey characteristics and concepts.
 - ***Area agents of the regional directorates (270 persons):*** The fieldwork was organized and managed by area agents. People selected from the staff of the regional directorates and county representatives were responsible for survey implementation at a specific part of their county. They were involved in setting up the enumeration districts, recruitment and training of the enumerators and survey supervisors, co-ordination of the field-work in the area of their authority.

They co-operated with the survey supervisors, managed the field work, participated in the data entry and in the comprehensive validation before processing, as well as in the quality control after data. They were also responsible for supplying monitoring information to the project management.

- ***Survey supervisors: (2700 persons):*** They controlled and assisted the work of the enumerators including the elimination of misunderstandings and typical mistakes in the questionnaires. They reported on the progress of the census during the implementation period to the area agents. The basic data for financial accounting were provided by them.

- **Enumerators (13 500 persons):** Enumerators visited the respondents within their survey districts during the implementation period (1-21 June 2010). Many of them had a job in the local settlement government.

Agricultural enterprises

The staff of the RAESD, the Szeged Regional Directorate and the IT Department was involved in the implementation of survey on agricultural enterprises.

According to the survey design developed by the RAESD the selection of agricultural enterprises from the Business Register for the purpose of the census was carried out by the IT Department of HCSO. The FSS questionnaires, the attached instructions and a letter (part of the questionnaire) were sent to the respondents by mail centrally. The respondents returned the completed questionnaires to the Szeged Regional Directorate.

2.3.3 Pilot survey

A pilot survey was carried out in August 2009 participating all regional directorates of HCSO. In case of private holdings 137 questionnaires (7-8 questionnaires/regional office) were filled-in with face-to face interview carried out by the regional staff of HCSO, while 36 agricultural enterprises were invited to participate in this action. The private holdings involved in the pilot survey were selected by the RAESD on the basis of FSS 2007 records. The data of the pilot survey are not included into census results.

The objectives of the pilot survey were the following:

- testing the census questionnaire and the instruction prepared;
- registration of the time required for the completion of the questionnaire with and without SAPM questions;
- availability of information on topographical lot numbers or IACS block-identifiers at farm level in order to formulate questions on location of the holding properly.

Results of the pilot survey:

- although the questionnaires and instructions prepared were qualified as adequate, further minor changes were suggested and accepted;
- in case of private holdings the average time required for filling-in a questionnaire without SAPM questions was 26 minutes, with SAPM questions 33 minutes. In case of agricultural enterprises it took 135 minutes;
- 70% of the private holdings and 61% of the agricultural enterprises could provide either topographical lot number or IACS block-identifier. It implied that on the basis of these collected information (topographical lot number or IACS block-identifier), and/or using the holding address the necessary geo-code on the location of the holding could be determined after the census.

2.3.4 External and internal communication

According to the documentation compiled by the project management, announcements about the implementation of FSS 2010 were published in the nation-wide and local media. Articles and interviews relating to the implementation as well as the main features of the survey were published. Posters informing about the survey were placarded in towns and villages.

An in-house on-line information system relating to the FSS 2010 was set up to expedite communication (questions, answers and comments) between the central management and the execution staff, and to spread background information and documentation for the county staff in the period of preparation and implementation. This system enabled a standard handling of the emerging questions and problems reported by the execution staff.

An official letter was sent to the notaries and parish-clerks. They were informed about the legal background, the main objectives of the survey, the method of data collection (house by house) and the data to be collected. They were asked to support the work of the enumerators and the staff of the HCSO regarding the survey preparation and the implementation.

For the information of the general public a toll-free line was available during the period of the census. It proved also to be useful in the communication between the enumerators, the survey supervisors and other staff of the regional directorates and county representatives. It was also a suitable tool to check the identity of the enumerators for respondents and thus increasing the level of trust. Phone calls on the toll-free line were received by the territorially competent regional directorate or county representatives. Each place a person being familiar with all the survey documents in details was appointed to receive and answer the phone calls.

2.4 Calendar (overview of work progress)

Key activities of the survey	Date/period/deadline
Determination the target population, sampling plan	June 2009 – October 2009
Pilot survey	August 2009
Preparation of legal background	June 2009 – December 2009
Finalization the questionnaires, the instructions for enumerators and other survey documents	February 2010
Elaboration the specifications of applications for data capture and EUROFARM database file	31.10.2009
Setting up the AC committees	31.06.2009
Final budget plan	31.10.2009
Recruitment of the enumerators by the regional directorates and county representatives	15.03.2010 – 30.04.2010
Communication campaign	May 2010
Training of the staff involved in survey	30.04.2010 – 30.05.2010
Printing of the questionnaires and other survey documents	from 15.03.2010
Delivery of the questionnaires and other survey documents	15.05.2010
Training of the enumerators	31.05.2010
Setting up the organization of implementation	15.05.2010
Implementation of the census including SAPM	01.06.2010 – 21.06.2010
Survey monitoring	4 times during survey period
Cost accounting and paying fees to the enumerators	from September 2010

Data entry and editing – master enumeration districts	July – August 2010
Data entry and editing – other enumeration districts	until 28.02.2011
Quality check	28.02.2010 – 30.03.2011
Uploading the validated data into the central database	30.07.2010 – 30.03.2011
Producing tables for the preliminary data in HOMBÁR	25.10.2010
Releasing preliminary data at press conference	01.12.2010
Integration of administrative data	29.02.2012
Providing EUROFARM database version 1 to EUROSTAT	09.03.2012
Publication of the final data in two volumes	30.03.2012
Publication of the typology	30.04.2012

2.5 Population and frame

Regulation 1166/2008 of the European Parliament and of the Council specifies coverage criteria and the definition of an agricultural holding. The target population of FSS 2010 in Hungary was determined to comply with this definition including two main groups in Hungary, private holdings and agricultural enterprises.

Private holdings

Private holdings are households engaged in any agricultural activity reaching or exceeding a certain physical threshold at the reference time of the survey. The physical threshold of the FSS 2010 fits to the coverage criteria of the regulation 1166/2008/EC (fixing the threshold at a level that excludes only the smallest agricultural holdings which together contribute 2% or less to the total utilized agricultural area excluding common land and 2% or less to the total number of farm livestock units).

The farm register of private holdings can be updated exhaustively when an agricultural census is carried out. Between the agricultural census 2000 and 2010 the farm register was updated only partially based on the information of the Census of Vineyards and Fruit Plantations 2001 (CVFP 2001), FSSs (2003, 2005, 2007) and regular annual sample surveys. In the preparation phase of FSS 2010 the register was completed with information from the following administrative sources:

- register of land users (kept at the Land Cadastre Offices);
- data of farmers receiving area based subsidies (from IACS);
- farmers involved in organic farming (from Organic Farming Register).

The quality check of the administrative data sources were carried out by HCSO experts. It contained consistency and coherency analysis. In case of lower quality the register was improved by the owner during bilateral consultations. By the end the quality of all administrative sources was adequate.

The implementation of agricultural census 2010 was tightly linked to the preparation of the Population Census to be implemented in October 2011 by HCSO. Whereas FSS 2010 covered all households within the rural and urban areas where keeping livestock is not prohibited, it could provide relevant information for updating the Register of Addresses (RA) for the purpose of the Population Census. In order to fulfil this requirement, the farm register information was matched and completed with those coming from the RA. As a consequence in total about 2,3 million addresses constituted to the census frame in case of private holdings.

The target population of the census was the agricultural holding. According to the physical threshold of the FSS 2010 on 1st June 2010 a unit considered as a private holding

uses at least

- 1500 m² productive land area (including jointly or severally arable land, kitchen garden, orchard, vineyard, meadow, pasture, forest, fish-pond, reed), or
- 500 m² orchards or vineyards, jointly or severally (at least 400 m² of fruit trees and 200 m² of berries or vines), or
- 100 m² land area under cover, or
- 50 m² mushroom area, or

has at least

- one head of bigger animals including cattle, pig, horse, sheep, goat, buffalo, emu, ostrich, donkey, or
- 50 heads of poultry jointly or severally, such as hens, geese, ducks, turkeys, guinea fowls, or
- 25-25 heads of rabbits, furry animals, pigeons for slaughter, or
- 5 bee colonies;

or provides agricultural services.

The same threshold was applied for FSS and for SAPM.

The same definition was used in the previous agricultural census in 2000 and agrees with the definition applied in case of FSSs in 2003, 2005, 2007. The only difference is that agricultural services were not part of it in 2003, 2005 and 2007. The comparison of the different survey data is possible without any problems.

Agricultural enterprises

Agricultural enterprises are legal entities engaged in any kind of agricultural activity regardless of its size. The selection of the agricultural enterprises was based on the information available in the business register updated continuously with data transmitted from the Registry Court.

Agricultural enterprises operated in 2010 formed the census frame. **No threshold was applied, agricultural enterprises carried out agricultural activity as main or secondary activity were included.** Additional agricultural enterprises were added based on administrative records (Register of Land users, data of farmers receiving subsidy and organic farming register). In total the list of about 20 thousand enterprises constituted the survey population of agricultural enterprises.

2.6 Survey design

For the implementation of FSS 2010 the combination of exhaustive and sample survey was applied. According to the Regulation 1166/2008 the farm structure survey in 2010 should be carried out in a form of a census while the survey on agricultural production methods might be carried out as a sample survey. The table below summarises how survey implementation was realised in Hungary in line with this obligation.

Survey design	FSS + RD	SAPM
Private holdings	exhaustive	sample survey
Agricultural enterprises	exhaustive	exhaustive

Private holdings

In case of private holdings the farm structure survey in 2010 was carried out in a form of a census. It covered all households on rural and urban areas where keeping livestock is allowed and farmers living in urban areas with prohibition of livestock keeping based on statistical and administrative information. In total 13 897 survey districts were formed for the purposes of survey implementation of which 12 871 situated in rural and 1 026 in urban areas.

The main task of regional directorates was forming of survey districts during the preparation phase of the census. The list of respondents in each survey district was compiled using the following information:

- Description of the survey districts of the AC 2000;
- Register of addresses maintained by the HCSO;
- Street directorates provided by local municipalities;
- Farm register data;
- Register of land users (from the Land Cadastre);
- Data of farmers receiving area based subsidy (from IACS);
- Organic farming register.

The form of the Field-work check-list provided to the enumerators is in Annex IV.

When the survey districts of the FSS 2010 had been determined, the following principles had been taken into consideration:

- the number of the respondents within a survey district must be harmonized with the length of time for implementation;
- overlapping of districts was not permitted;
- a survey district could not cover more than one settlement;
- usually one enumerator was entrusted to visit one survey district.

The Survey on Agricultural Production Methods was carried out on a sample basis parallel with the census. The sample was selected from the enumeration districts determined for the purposes of FSS 2010.

In case of private holdings two questionnaires were developed: one of them also contained the questions regarding SAPM, the other one did not. SAPM question were asked only in one fourth of the enumeration districts selected for this purposes.

In order to publish the preliminary data as soon as possible one eighth of the enumeration districts of FSS 2010 were selected (so called master districts) and processed immediately after the census.

Agricultural enterprises

Agricultural enterprises were observed on full scope. The questionnaire of agricultural enterprises included SAPM questionnaires, except special land users such as railway companies, municipal administrations, Hungarian Army etc. which organisations received a simplified questionnaire.

2.7 Sampling, data collection and data entry

2.7.1 Drawing the sample for SAPM

In case of private holdings the Survey of Agricultural Production Methods was implemented on a sample base. The enumeration districts served as basis for this sampling: 3 475 enumeration districts were selected from the total 13 897.

Random selection method was applied: before the sampling the enumeration districts were ranked randomly within the counties (NUTS3 region as a stratum) of Hungary of which each fourth was selected for the purposes of agricultural production methods survey. Sampling was carried out by an expert of the RAESD (with Oracle/SQL).

Within the selected survey districts all households were observed and the questionnaire including SAPM questions were filled-in when the household reached the farm threshold. Applying this methodology the results of SAPM can be linked to the data obtained from FSS 2010 at the level of individual holding as it is regulated by the EU legislation. There was no co-ordination with other statistical surveys, because questions regarding SAPM are completely new ones.

NUTS2 regions with more than 10 000 holdings

Crop characteristics, includes common land units

Precision requirements	NUTS2 regions							
	HU10	HU21	HU22	HU23	HU31	HU32	HU33	SUM
Number of holdings in the NUTS2 region	46 323	52 559	61 110	74 967	73 566	143 908	124 375	576 808
UAA, ha of the NUTS2 region	259 574	531 169	524 371	689 440	523 271	1 051 088	1 107 422	4 686 336
Area of cereals in ha in the NUTS2 region	118 101	296 396	300 534	450 797	190 486	474 440	545 735	2 376 490
% Cereals in the UAA of the NUTS2 region	45,5%	55,8%	57,3%	65,4%	36,4%	45,1%	49,3%	50,7%
Area of potatoes and sugar beet in ha in the NUTS2 region	3 171	5 141	3 636	6 460	1 643	4 673	7 523	32 248
% potatoes and sugar beet in the UAA of the NUTS2 region	1,2%	1,0%	0,7%	0,9%	0,3%	0,4%	0,7%	0,7%
Area of oilseed crops in ha in the NUTS2 region	43 366	85 408	95 144	108 542	95 664	154 349	155 624	738 097
% oilseed crops in the UAA of the NUTS2 region	16,7%	16,1%	18,1%	15,7%	18,3%	14,7%	14,1%	15,7%
Area of permanent outdoor crops in ha in the NUTS2 region	11 248	12 119	13 269	18 731	28 225	36 414	31 717	151 723
% permanent outdoor crops in the UAA of the NUTS2 region	4,3%	2,3%	2,5%	2,7%	5,4%	3,5%	2,9%	3,2%
Area of fresh vegetables, melons, strawberries, flowers in ha in the NUTS2 region	3 495	1 115	1 036	2 158	1 602	22 560	25 807	57 774
% fresh vegetables, melons, strawberries, flowers in the UAA of the NUTS2 region	1,3%	0,2%	0,2%	0,3%	0,3%	2,1%	2,3%	1,2%
Area of temporary grass and permanent grassland in ha in the NUTS2 region	42 866	83 092	59 314	62 534	111 660	187 909	191 415	738 791
% temporary grass and permanent grassland in the UAA of the NUTS2 region	16,5%	15,6%	11,3%	9,1%	21,3%	17,9%	17,3%	15,8%

Livestock characteristics:

Precision requirements		NUTS2 regions							SUM
		HU10	HU21	HU22	HU23	HU31	HU32	HU33	
LSU in the NUTS2 region		137 864	268 446	253 094	275 122	163 948	615 832	710 047	2 424 353
Bovine animals (all ages)	Number of Bovine animals in the NUTS2 region, in LSU	42 820	65 798	75 198	57 109	46 030	126 356	112 095	525 405
	% of the LSU in the NUTS2 region	31.1%	24.5%	29.7%	20.8%	28.1%	20.5%	15.8%	21.7%
	% of national share of bovine animals in LSU	8.1%	12.5%	14.3%	10.9%	8.8%	24.0%	21.3%	100.0%
Sheep and goats (all ages)	Number of Sheep and goats in the NUTS2 region, in LSU	8 561	11 497	4 158	11 707	11 057	46 260	36 368	129 607
	% of the LSU in the NUTS2 region	6.2%	4.3%	1.6%	4.3%	6.7%	7.5%	5.1%	5.3%
	% of national share of sheep and goats, in LSU	6.6%	8.9%	3.2%	9.0%	8.5%	35.7%	28.1%	100.0%
Pigs	Number of Pigs in the NUTS2 region, in LSU	43 103	85 112	63 355	132 596	41 362	218 290	209 419	793 237
	% of the LSU in the NUTS2 region	31.3%	31.7%	25.0%	48.2%	25.2%	35.4%	29.5%	32.7%
	% of national share of pigs, in LSU	5.4%	10.7%	8.0%	16.7%	5.2%	27.5%	26.4%	100.0%
Poultry	Number of Poultry in the NUTS2 region, in LSU	43 380	106 039	110 383	73 710	65 500	224 926	352 166	976 104
	% of the LSU in the NUTS2 region	31.5%	39.5%	43.6%	26.8%	40.0%	36.5%	49.6%	40.3%
	% of national share of poultry in LSU	4.4%	10.9%	11.3%	7.6%	6.7%	23.0%	36.1%	100.0%

There are no NUTS 2 regions with less than 10 000 holdings in Hungary.

2.7.2 Data collection and data entry

Data collection

The precise description of the survey district was given to the enumerators and their work was assisted by the Field-work check-list in each district. The function of check-list was to check the completeness of addresses², to update the farm register and to provide information for arranging the payments.

All addresses within each district were printed beforehand including all available and relevant information: the names of holders and the identification code of the known agricultural holdings based on the farm register and names of the persons received from any of the used administrative sources. The list contained more than 2 million addresses in total including the information from the Field-work check-list. The streets within the list was arranged in alphabetical order and by increasing house numbers in order to provide utmost support to the enumerators visiting all addresses house by house within the boundaries of the survey district.

The task of the enumerator was to move house by house and to check whether the address were correct and the persons living there were engaged in agricultural activity or not. Any differences to the pre-printed information had to be indicated by using codes: regarding the address (e.g. precise address, change in the address, new address. etc.) and the function (e.g. house for living, house used for recreation etc.) of them.

The enumerators met three types of respondents concerning agricultural production:

- agricultural holdings;
- households engaged in agricultural activity but under the threshold;
- respondents not engaged in any agricultural activity (for example households without any agricultural activity, churches, shops, schools or other institutes etc.).

The house by house method made it possible that holdings were not printed on LR could be discovered.

One of the following codes was to be used when a holding was found:

Status code	Description
1	The agricultural holding printed beforehand is still exists, no changes
2	The holding is the same, but the holder has changed
3	New agricultural holding
8	Holding can not be contacted
9	Agricultural activity suspended

Questionnaire has to be completed only on private holdings (households reached the threshold on 1st June 2010).

² A special cost-effective requirement towards the AC was to provide updated information regarding addresses with a view of the preparations of the Population Census. This requirement was satisfied in those settlements where all the addresses were visited.

The enumerators also recorded some data of households engaged in agricultural activity under the threshold, too. In order having limited statistical information on the agricultural activity of these units the productive land area, the number of chicken, duck, geese and bee colonies were noted on the Field-work check-list.

Questions had to be asked from an adult person (holder, spouse or family member of holder, manager) being able to give reliable answers. If the enumerator did not find anybody on the spot who could answer properly, he/she had to fix another date for the visit. If the respondent was not at home, the enumerator left a note with the date of his next visit. After three unsuccessful visits he/she had to report the case to the supervisor, just like cases when the respondents refused to answer.

Finally, 568 thousand questionnaires were completed and the enumerators visited altogether around 2.3 million addresses during the implementation period. The difference can be accounted as follows:

- 1 111 thousand households were below farm threshold but carried out some agricultural production;
- 635 thousand households did not carry out any agricultural activity.

More than 16 500 agricultural enterprises returned the census questionnaire to the Szeged Regional Directorate. About 10 300 of them carried out agricultural activity in 2010; the rest had no agricultural activity at all. There are several reasons that agricultural enterprises did not returned the questionnaires: a part of them stopped agricultural activity or being liquidated, others had registered agricultural activity to the Registry Court but were not involved in such activity in the survey date/period.

Both agricultural enterprises and private holdings could accomplish the questionnaire via internet (XML).

Data entry

A uniform Data Entry and Validation System is run by HCSO having the following main features:

- application in ORACLE form;
- data stored in the Central Database;
- integrated with other systems (e.g. Meta-Database. Survey Control System. XML system);
- ensuring flow control.

All data entry applications were developed by the IT Department of HCSO according to the specifications elaborated by the RAESD and Szeged Directorate.

The staff of the RAESD, the Szeged Regional Directorate and the IT Department tested the data entry applications. During the test period there was direct and continuous communication with the soft-ware developers, so the detected problems, mistakes could be corrected immediately and suggestions on modifications were built in the applications continuously.

Before data entry of the questionnaires the information of the LR's had to be entered. The register codes of the holdings controlled the data entry of the questionnaires. In case of a new holding a

new register code was defined first, and only after it – practically the following day – the entry of the questionnaire was possible.

First the questionnaires of the 1 738 enumeration districts selected for the purpose of preliminary data production were entered.

The logical and arithmetical coherency within and between the tables was incorporated in the data entry program. Besides entering the data, the application could produce different check lists: number of entered questionnaires per counties per days, number of questionnaires entered with an error, list of errors, aggregated data per tables per counties, statistics about the staff keying the data. These lists helped to monitor the whole process of data entry carried out by the staff of the regional directorates and county representatives as well as the central staff of HCSO.

Data were entered into Oracle database designed similarly as the tables of the questionnaires. Estimations, data processing and data for the publication tables were produced by the staff of RAESD.

2.7.3 Use of administrative data sources

Act XXIV of 2010 on the implementation of FSS 2010 authorises HCSO for using administrative data sources. The data were provided to the HCSO in an electronic format suitable for statistical use.

A. ORGANIC FARMING REGISTER

The organic farming register is managed by two organizations in Hungary: the Biokontroll Hungária Nonprofit kft, and the Hungarian ÖKO Garancia. Both are organisations for public benefit. Only these organisations are authorised to certify organic farming activity and products, and able to maintain organic farming register in Hungary.

Characteristics collected from organic farming register

Eurofarm code	Name of the characteristics
A_3_2_1	The total utilized agricultural area of the holding on which organic farming production methods are applied according to European Community rules
A_3_2_2	The total utilized agricultural area of the holding that are under conversion to organic farming production methods
A_3_2_3; A_3_2_3_1 to A_3_2_3_8; A_3_2_3_99	Area of the holding on which organic farming production methods according to national or European community rules are either applied and certified or under conversion to be benefit
A_3_2_4_1 to A_3_2_4_5	Organic production methods applied to animal production and certified according to national or European community rules

Relevance and comparability

Due to previously carried out projects³ there are no differences between the register definitions and Eurofarm definitions. The link between the organic farm register and the holdings surveyed is created by the statistical ID Code in case of the economic organisations and by the name and address in case of the private holdings.

Clarity

Legal base: Council Regulation (EC) 473/2002
Ministerial Regulation (MARD) No 140/99
Ministerial Regulation (MARD-EM) No 2/2000

Completeness

The organic farming register maintained by Biokontroll Hungária Nonprofit kft. covers the majority of the organic farms in Hungary (about 95% of the certified production). Data on the remaining data of organic farms (5%) are collected by the Hungarian ÖKO Garancia.

Integration of the administrative data into the FSS

Inserted directly to the survey.

B. INTEGRATED ADMINISTRATIVE AND CONTROLL SYSTEM (IACS)

Characteristics collected from IACS

Eurofarm code	Name of the characteristics
B_1_12_2	Fallow land subject to the payment of subsidies, with no economic use
B_3_3	Permanent grassland no longer used for production purposes and eligible for the payment of subsidies
B_6_3_1	Energy crops (for the production of biofuel or other renewable energy)
G_1_1 to G_1_7; G_1_8; G_1_8.1; G_1_9 to G_1_9_11	Support for rural development

Relevance and comparability

The definitions used are in line with the concerning EU definitions. The link between IACS and the statistical unit is created by the statistical ID code in case of agricultural enterprises and by the name and address in case of private holdings.

Clarity

Legal base: Council Regulation (EEC) 1782/2003

³ Several Grant-projects between 2004 and 2008 aimed the harmonisation of the organic farming information and the statistical needs, as well as establishment of the Organic Farming Register.

Completeness

Holdings receiving direct support in line with the EU schemes are registered exhaustively.

Integration of the administrative data into the FSS

Inserted directly to the survey.

C. VINEYARD REGISTER

Characteristic collected from vineyard register

Eurofarm code	Name of the characteristics
B 4 1 1	Quality wine area

Based on the Census of Vineyards and Fruit Plantations in 2001 the Vineyard Register (VR) was established and for that time it is updated regularly by the National Council of Wine Communities (NCWC). The wine communities are obliged to follow the annual grubbing and plantation of stock, as well as the production. They represent 85 % of the Hungarian vineyards.

Relevance and comparability

There are no differences between the register definitions and Eurofarm definitions, however area data on quality vine is available only by wine growing regions.

Clarity

Legal base: Council Regulation (EEC) 479/2008
Council Regulation (EEC) 436/2009

Integration of the administrative data into the FSS

Data imputation

In the FSS land area data are collected only vineyards according to the main use (for wine, table, other). In order to split the quality wine grapes the following method was used:

1. the land area of quality and other wines by wine communities have been received from the NCWC, from which a ratio among them was calculated on the lowest available level,
2. the list of municipalities for each wine community is available,
3. the holdings cultivating vineyards were linked to the regarding wine community using the names (codes) of the settlements,
4. the vineyard area of each farmer in the regarding wine community was split among the quality and other wine categories according to the calculated ratio,
5. the vineyards outside the wine communities are considered as other wines, because legally quality wines are not to be produced on areas outside the wine communities,
6. the calculated quality/other wine area figures were inserted into the EUROFARM database.

D. GEO-COORDINATES

Characteristics collected from ETRS89 system

Eurofarm code	Name of the characteristics
A_1_1; A_1_2; A_1_3	Location of the holding

Relevance and comparability

Data regarding the location of the agricultural holding is created on the basis of the collected information (topographical lot number or IACS block identifier of the place where the main agricultural production is carried out) or where it was suitable on the address of the holding. These questions were included in the AC questionnaire.

Clarity

Legal base: Council Regulation (EEC) 1765/92
Council Regulation (EEC) 3508/92
Council Regulation (EEC) 3887/92

Completeness

All territory of Hungary is covered.

Integration of the administrative data into the FSS

Inserted directly to the survey.

2.8 Specific topics

2.8.1 Common Land

During previous FSSs (2000-2007) manuals indicated regarding common land: “*Grazing on common grassland is not considered as the use of the land*”. There were not any instructions concerning the observation of common land area in AC 2000 in Hungary. In 2003, 2005 and 2007 common grassland was not considered as the use of the land. In 2007 common land used by forestry units were observed but their area were not counted as part of agricultural area.

Data on common land exclusively used by a holding was not **defined as common land**. However data on common land was collected on a simplified questionnaire from the following organisations:

- Local municipality governments;
- Educational and social institutions, parks of municipality governments;
- Ministry of Defence;

- Hungarian railway (MÁV Group);
- National Land Fund Management Organisation (NFA)
- Parishes.

Data were collected by mail. Data on common land area related to permanent grassland and meadow - rough grazing, forestry and unutilised agricultural area.

(The question asked:

Do you have permanent grassland and meadow - rough grazing area which can be used by anyone free of charge? If yes: ha, m²)

The aggregated data at NUTS3 level was provide as an “artificial” holding.

2.8.2 Geographical reference of the holding

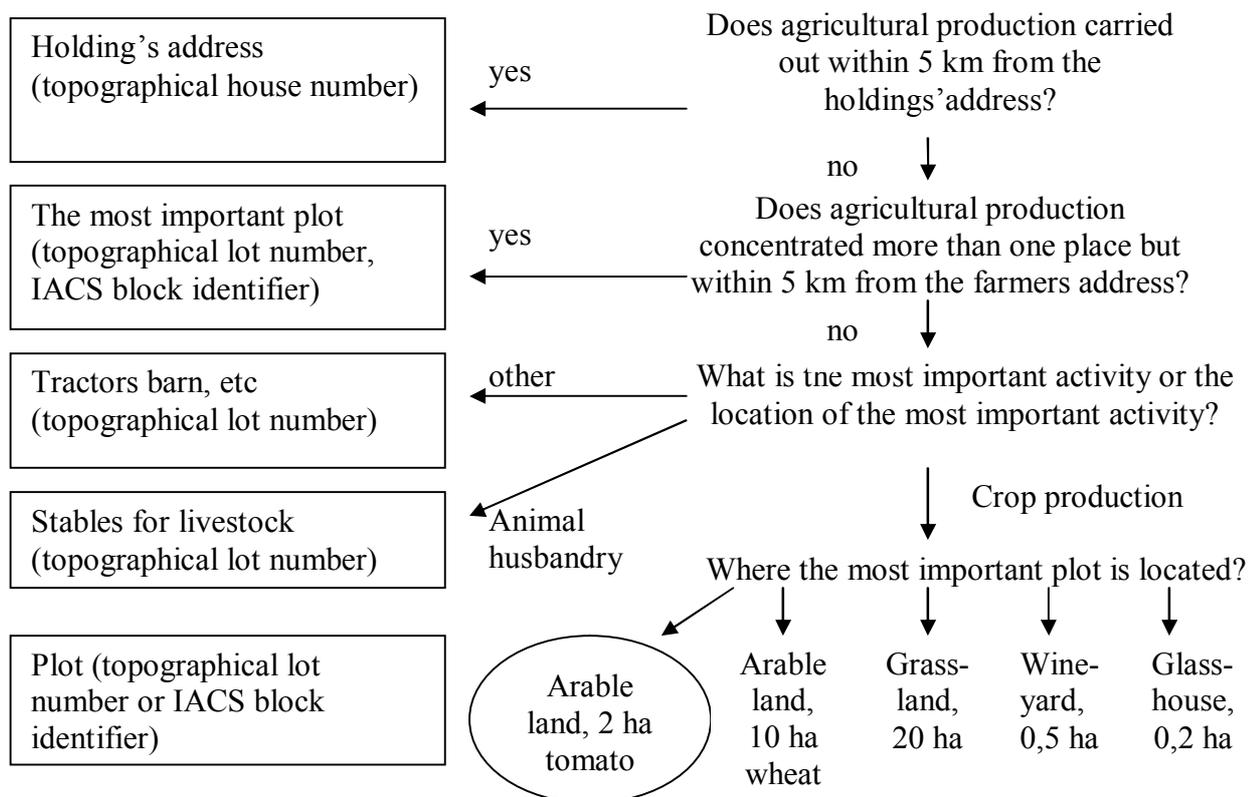
From 2010 the agricultural holding is located where main part of or all agricultural production takes place. **The location specified by longitude and latitude coordinates was provided.** It is not possible to ask this kind of information directly from the holders in Hungary, instead – as the result of the pilot survey of FSS 2010 implied – the location of the holding could be determined by using indirect data and administrative tools.

Data regarding the location of the holding is based on the so called EOVS (Uniform National Projection System) which is maintained by the Institute of Geodesy Cartography and Remote Sensing (IGCRS) in Hungary. The EOVS coordinates of the statistical unit is created on the basis of the following questions included into the FSS 2010 questionnaire:

- topographical lot number or,
- IACS block identifier of the place where the main agricultural production is carried out,
or
- address of the holding.

Sometimes, when the main part of activity is in different settlement than the farmer lives and only the name of this settlement was available we were not able to specify the exact location. In these cases the coordinates refer to the center point of the settlement concerned.

The enumerators have to take into consideration the following steps in the determination of the location of the holding:



The transformation of EOVS coordinates into ETRS 89 coordinates is ensured by an application developed by IGCRS and available for the public on its website. Coordinates were calculated without rounding hence these are confidential.

Basis of identification

Basis of identification	Number of holdings
Topographical house number	34 219
IACS block identifier	33 212
Address of the holding	509 357
Administrative centre of NUTS3 region	20
Total	576 808

2.8.3 Volume of water used for irrigation

Hungary was involved in the Pilot Studies on Estimating the Volume of Water Used for Irrigation (Eurostat Grants for 2008). The main goal of the project was to develop a comprehensive statistical methodology for measuring the volume of water used for irrigation at farm level in order to ensure adequate and high quality data. One of the main conclusions, based on the pilot survey carried out by HCSO was that volume of water used for irrigation should not be asked from the holders; instead an estimation model should be used.

On the basis of the results of the pilot survey the volume of water used for irrigation in 2010 was estimated by the HCSO with the assistance of the Research Institute for Agricultural Economics.

Volume of precipitation on farm's location was estimated by using local meteorological data: figures from 100 stations were extrapolated to LAU2 level and linked to holdings. Having the monthly precipitation data at farm level, rainfalls in growing season of each crops are easy to calculate.

Volume of water used for irrigation for each group of crops was calculated on a monthly basis. For each crop volume of irrigation was estimated only for the period of their growing season between middle of March and end of September.

For crop "i" produced on the farm the volume of water used for irrigation was estimated by using the following formula:

$$V_i = 10A_i \frac{(C_i D_i - R_i) + G_i}{2}$$

The total irrigation water on farm was calculated:

$$V = \sum V_i$$

V_i : monthly volume of water used for irrigation for crop_i (m^3)

A_i : area of crop_i (ha)

C_i : coefficient for irrigation, proportion of water demand of crop_i to be compensated by irrigation ($0.6 \leq C_i \leq 1$)

D_i : monthly water demand of crop_i in growing season (mm)

R_i : monthly rainfall in growing season of crop_i at farm's location (mm)

G_i : monthly usual irrigation of crop_i in Hungary (mm)

V : total volume of water used for irrigation for crop_i on the farm (m^3)

Parameters used in the estimation

Crop	Irrigation (G_i)*	Water demand	Coefficient (C_i)	Start of growing	End of growing
	<i>mm</i>	<i>mm</i>	-	<i>month</i>	<i>month</i>
Grain maize and maize for silage	10 0	55 0	0.8	3	9
Rice	70 0	12 00	0.9	3	9
Cereals (excluding grain maize and rice)	80	60 0	0.8	9	6
Dry pulses	90	40 0	0.7	3	6
Potatoes	15 0	55 0	0.8	3	9
Sugar beet (without seed)	15 0	50 0	0.7	3	9
Rape	20	50 0	0.8	9	5
Sunflower	20	50	0.8	3	9

		0			
Textile crops (hemp and flax)	20 0	37 5	0.6	3	8
Vegetables and strawberry on open field	20 0	55 0	0.8	2	10
Other arable crops	10 0	55 0	0.8	3	9
Grassland (temporary and permanent)	50	60 0	0.6	3	8
Orchards	15 0	45 0	0.9	3	9
Vineyards	80	30 0	0.7	3	9

* Usual irrigation in Hungary on the basis of literature

The figures regarding irrigated areas (A_i) were collected by FSS 2010. Parameters used in the estimation were established for each crop “i”. The usual irrigation (G_i), water demand (D_i) and start/end of growing season were set according to academic literature (published data of agricultural science universities, research institutes etc.), while coefficients (C_i) are based on experts’ estimation fine-tuned during the model runs. The volume of water used to irrigation of kitchen gardens and greenhouses is not included.

2.8.4. Other issues

In June 2010 the weather conditions were very extreme with heavy floods in the north part of Hungary. Not only the agricultural fields but villages were covered with water, thus finishing AC extended by one week. There is a risk of floods in these areas which had serious impact on agricultural information.

2.9 Response-burden policy

Private holdings

The intensive communication campaign contributed to improving the response rate. The survey supervisors with the help of the local authorities managed to convince nearly all the non-respondents, thus legal steps were not taken. In case of holders could not be contacted, the enumerator left a note to inform the holder about the time of his/her next visit.

Agricultural enterprises

The RAESD has laid particular emphasis on ensuring the completeness. After the deadline the agricultural enterprises were urged by the colleagues of the Szeged Regional Directorate to return the questionnaires. In case of any mistakes or missing data the staff clarified the problems by phone. Finally 25 (0.1%) enterprises refused to complete the questionnaire.

3. ACCURACY AND RELIABILITY OF THE DATA COLLECTED

3.1 Data processing, analysis and estimation

3.1.1 Estimation and sampling errors for SAPM

For the purposes of SAPM each fourth enumeration district was selected randomly. The questionnaire with SAPM questions were completed for all agricultural holding in the given enumeration district. SAPM data were produced with the methodology of estimation of total value. Formulas applied for estimation methods is provided in Annex V.

3.1.2 Non sampling errors

Private holdings

The survey population exceeded the target population, whereas in case of private holdings there is no fully updated farm register available between censuses. As a consequence a house by house method should have been applied in order to cover all agricultural holding.

A number of measures were taken to reduce the survey errors. Particular stress was laid on the training of survey participants and the design and implementation of a multilevel quality assurance system. It was among the task of survey supervisors to carry out repeated interviews covering 1% of the addresses in each enumeration district, but at least 2 questionnaires per surveyor.

The rate of non-response amounted to 0.3%. The item non-response was negligible as during the face-to-face interviews the appropriate tables of the questionnaires have been completed by the enumerator.

As many validation rules as possible were incorporated in the data entry application and after data entry the micro- and macro-data were analysed thoroughly, and confronted with other agriculture statistics.

Agricultural enterprises

Enterprises not involved in agricultural production in 2010 did not complete the questionnaire but sent it back with a comment regarding the reason. The unit non response rate was 19 % in 2010, of which 35% of them were being liquidated, 54 % had stopped their activity and 27% can not be reached. The staff of Regional Directorate have not managed to get contact with this latest group (counts about 1 000 enterprises). There is not available any information about these units from other statistical surveys. It can be assumed that they have no agricultural activity at all.

The Business Register is updated with this information.

Relative Standard Error, per cent

Region	Cereals, ha	Oilseed crops, ha	Permanent grassland, ha	Bovine animals, heads	Pigs, heads	Poultry, heads
--------	-------------	-------------------	-------------------------	-----------------------	-------------	----------------

HU10	2.98	3.83	7.16	2.82	1.54	4.00
HU21	1.99	2.83	4.22	2.41	2.67	7.09
HU22	1.80	2.69	3.58	2.82	3.82	8.88
HU23	1.62	2.02	5.31	3.71	1.57	6.18
HU31	2.22	3.09	3.58	4.14	2.12	8.47
HU32	1.54	2.17	2.93	3.12	0.67	2.58
HU33	1.36	2.09	2.93	2.83	1.99	4.77

3.1.3 Methods for handling missing or incorrect data items

Private holdings

As the survey was implemented by enumerators who collected all the necessary information, the item non-response may not have occurred and the unit non-response was negligible, thus no procedure was necessary to handle this problem.

Agricultural enterprises

In unambiguous cases the missing data (e.g. missing of total values) were fixed by the colleagues of the Szeged Regional Directorate. If it was not possible, they contacted the concerned enterprise.

3.1.4. Control of the data

During the implementation a multilevel quality assurance system was applied in which the upper levels controlled the levels below. Enumerators were familiar with the survey districts they worked, their training contributed to the high quality of the data to a great extent.

The FSS-team compiled the instructions for surveyors containing the unambiguous description of the agricultural concepts. A quality assurance system were developed which main element was the list of the most important validation rules to be applied by supervisors during the assessment of the questionnaires. If the questionnaires included any kind of unreliable or erroneous items, the survey supervisors had to give it back to the enumerator for correction.

Considering the fast data entry, it was unnecessary to stop the work in every case for correcting mistakes; the verification could be done later on. Four categories of error flags were used during data entry phase as follows:

- less serious ones only for information;
- errors can be accepted, but justification is needed;
- serious errors can be accepted only by the authorized survey administrators;
- unacceptable errors must be corrected immediately, the data entry only can be carried on after correction.

The data entry system stores the identification code of the person who carried out the data entry. By that it is possible to monitor the quality of data entry per persons. Only correct questionnaires were accepted in the central database.

The rules in the Data Supplier Manual were used.

Further verification applications were developed according to the specification of the FSS-team, which aimed at picking up extreme values and examining further – not obligatory – coherency of data. Data validation following data entry was implemented by the staff of the Szeged Regional Directorate with the management of the RAESD.

3.2 Evaluation of results

Validation of the data was made from several aspects. Data were compared with the results of the AC 2000, FSS 2003, 2005, 2007 and other statistical surveys such as crop and livestock surveys, institutional labour survey of enterprises and budgetary institutions. The results met the expectations.

The FSS 2010 results have proved to be of good quality, however, the aggregates of different land areas cover only the area that can be connected to the agricultural holdings. (At the same time the current statistics covers the land area unidentifiable with holdings as well, which means that the published aggregates contain and reflect additional expert estimations.)

Number of surveyed units

	Survey		
	FSS (excl. OGA in case of sample survey)	OGA (if sample survey)	SAPM (if sample survey)
Initial list of units	1 073 081	NR	269 326
Initial sample	NA	-	-
Number of holdings with completed questionnaires (incl. eventual imputed questionnaires):	576 788	NR	148 219
Number of units under the threshold applied	1 100 372	NR	283 208
Holdings with ceased activities:			
- (If information is available) of which definitely ceased, i.e. the land is abandoned	-	-	-
- (If information is available) of which holdings with change of the manager	-	-	-
Unit Non-response:			
- Refusals – not corrected	1 768	NR	
- Refusals – corrected (imputed)	-	-	-
Number of records transferred to Eurostat	576 808	NR	148 239
Common land units	20	NR	NA

Comments on major trends from FSS 2007 to FSS 2010

	From FSS 2007	From FSS 2010*	Difference in %	Comments
Number of holding	626 321	576 788	-8	Decreased due to concentration of holdings
UAA, ha	4 228 581	4 612 361	9	Due to significant structural changes in Hungarian agriculture data of 2007 (based on results AC 2000) should be handled carefully. Statistically they are correct but as they were not full scope information available regarding the whole population, the reality could differ from the aggregated figures. Part of the permanent grassland reported in 2007 as unutilised agricultural area could be reused again due to economical reasons.
Arable land, ha	3 567 527	3 796 922	6	
Permanent grassland, ha	504 145	646 923	28	
Permanent crops, ha	155 402	151 723	-2	
Wooded area, ha	1 362 875	1 522 437	12	Area increased due to subsidy payments provided to farmers
Unutilised agricultural area, ha	142 347	84 839	-40	Area decreased by 33% in case of agricultural enterprises and 52% in case of private holdings
Fallow land, ha	159 814	260 041	63	Area destroyed by heavy rain and flood in May 2010 which are reported here
LS in LSU	2 409 334	2 483 785	3	
Cattle, head	703 504	707 396	1	
Family Labour force – persons	1 186 828	1 062 291	-10	Decreased due to concentration of holdings
Family Labour force – AWU	312 239	325 052	4	
Non family labour force – persons	96 943	99 819	3	
Non family labour force – AWU	83 188	87 075	5	

* Common land units excluded

3.3 Data Revision Policy

No data revision policy applied.

4. ACCESSIBILITY AND PUNCTUALITY

4.1 Publications

The dissemination and communication tasks of the FSS 2010 were fulfilled by the staff of the RAESD. Beyond the data tables the publications contain methodological remarks including detailed definitions connected to the published data and general information about the implementation of the census. Publications are also produced in English language.

The following publications were or planned to be produced:

Title of publication	Internet	Date	Content
Agriculture in Hungary, 2010 preliminary data	X	Dec. 2010	Number of holdings, aim and type of production, land use, livestock, labour force Data on country and regional level
Agriculture in Hungary, preliminary data II.	X	Sept. 2011	Main characteristics of FSS 2010, aim and type of production, size of agricultural holdings Data on country and regional level
Agriculture in Hungary, 2010 Final data	X	March 2011	Number of holdings, Standard Output value, land use, agricultural production methods, livestock, farm labour force, non agricultural activities in the holding Data on country and regional level
Typology of holdings, 2010	X	April 2012	Results according to the typology system of the EU
Land use in Hungary, 2010 Data by settlements	X	May 2012	Land use by ownership and land use categories Data on settlement level
Livestock, 2010 Data by settlements	X	May 2012	Livestock by age and sex Data on settlement level

4.2 Timeliness and Punctuality

The publication dates are included in the Dissemination Plan of the HCSO prepared annually.

Time lag first results: t+6; t+15

Punctuality for delivery and publication: t+6; t+15

Time lag final results: t+21; t+22; t+23

Punctuality for delivery and publication: not relevant

5. CONFIDENTIALITY AND SECURITY

The protection of personal data and on publicity of the data with generally interest are ruled by the following Acts in Hungary:

- Act XLVI of 1993 on Statistics;
- Act LXIII of 1992 the Protection of Personal data and Public Access to Data of Public Interest;
- Act CXII of 2011 on International Self-Determination and Freedom of information.

The access of anonymised microdata is possible according to the current laws. Anonymisation criterias used in Hungary are the followings:

- removing the direct identifications,
- removing a dimension (eg. column),
- sub-sampling based on micro data,
- local cellsupression.

Within the framework of a project a research room was established in the HCSO financed by the EU and the Hungarian State. The purpose of the project was to establish an access to the micro level unanonymised statistical data for research purposes. Concerning the Farm Structure Surveys data of 2000, 2005 and 2007 are already accessible and that of 2010 is planned to be accessible for researchers.

The procedure regarding the research activity is ruled by the instruction No. 24 of 2011 by the President of HCSO. According to the document researchers have to fill an application and submit it to HCSO. When the application is accepted by the HCSO it is possible to elaborate the research work in the room situated in the territory of HCSO. The results obtained are controlled by the experts of RAESD. Data can not be published if there are less than 3 data suppliers in the output tables for a given cell.

ANNEXES

Annex I: NE and NS characteristics in Hungary

Annex II: FSS questionnaire for private holdings

Annex III: FSS questionnaire for agricultural enterprises

Annex IV: Field-work check-list

Annex V: Formulas applied for SAPM