

Farm Structure Survey 2009/2010  
Survey on Agricultural Production Methods  
2009/2010

**National Methodological Report (NMR)**

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Member State: SLOVENIA

# FARM STRUCTURE SURVEY 2009/2010

## SURVEY ON AGRICULTURAL PRODUCTION METHODS 2009/2010

### NATIONAL METHODOLOGICAL REPORT

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## ABBREVIATIONS USED:

SURS	Statistical Office of the Republic of Slovenia
FSS	Farm Structure Survey
AC	Agricultural Census
SAPM	Survey on Agricultural Production Methods
LSU	Livestock unit
MAFF	Ministry of Agriculture, Forestry and Food
SFR	Statistical Farm Register

## SUMMARY

In Slovenia only two independent censuses of agricultural holdings, or farm structure surveys, were conducted before the year 2000 – the first one in 1930 and the second one in 1960. However, due to political and economic changes in this period, it is difficult to compare them. In 1969 a sample census of agricultural holdings was conducted, and in 1971, 1981 and 1991 censuses of agricultural holdings were conducted within population censuses. However, due to a limited number of questions related to agriculture, these data do not provide complete and comparable information on the structure of agricultural holdings in Slovenia. In 1997 the first Farm Structure Survey, harmonized with EU legislation, was carried out. The EU comparable definition of agricultural holding and the threshold were set up. The Farm Structure Survey 1997 was also treated as a pilot survey for the Agricultural Census 2000.

After the Agricultural Census 2000 we followed the EC program of Farm Structure Surveys (FSS) regarding the list of characteristics as well as the time table. We conducted sample FSS surveys in 2003, 2005 and 2007.

Based on the AC data from 2000, the Statistical Farm Register (SFR) was established in Slovenia in 2004. The SFR was later on updated with every statistical survey that was conducted in Slovenia and with all reliable administrative sources of data.

Preparations for the AC 2010 and the SAPM started at the beginning of 2009 and will ended with the publication of final results on 5 July 2012 for the Agricultural Census and on 21 December 2012 for the SAPM. The 2010 Agricultural Census met its purpose; farmers were mostly well prepared for the census, they took it very seriously and thus greatly facilitated the work of fieldwork interviewers.

This was the second agricultural census in the independent Republic of Slovenia and the second Agricultural Census which followed the EC program of Farm Structure Surveys. The survey reference date was 1 June 2010. For data on labour force characteristics, the period of 12 months ending on the reference day was taken and for data on rural development measures, the period of three years ending on the reference day was taken.

For field data collection we hired an external contractor, who with our methodological instructions and the required quality standards collected the necessary information on the field. All subsequent corrections and imputations were carried out by SURS. The Agricultural Census and the Survey on Agricultural Production Methods (SAPM) 2010 were conducted together as computer assisted personal interviewing (CAPI) in combination with administrative data sources. Fieldwork was conducted by about 600 interviewers and they finished their fieldwork on 15 July (from 1 June). Telephone interviewing of some agricultural holdings continued until 25 July

2010, the purpose being to check the correctness of entered data. In this way we checked the work done by fieldwork interviewers and the correctness of data entered into the computer application. For sampling, data verification, imputations and estimation of sampling errors, SAS program was used.

The list of farms that was included in the AC was determined from the SFR. The AC covered 94,686 agricultural holdings. For the SAPM we had a sample survey with 9,863 agricultural holdings. We collected a part of the data with fieldwork but some of the data had been also obtained from administrative sources kept by the Ministry of Agriculture, Forestry and Food (MAFF).

The purpose of the Agricultural Census was to collect data on the situation on all agricultural holdings at a specified time and thus provide the data basis for further statistical monitoring and to show structural changes in agriculture in the last 10 years, i.e. since the previous census.

The following data were collected in the AC 2010 and the SAPM:

- land owned and land used by agricultural holdings
- crop areas
- horticulture
- irrigation
- number of livestock by categories
- labour force
- other gainful activities
- forestry
- machinery and equipment
- support for rural development
- data on agricultural production methods

The list of characteristics follows the EC program of Farm Structure Surveys as well as national needs. National needs were discussed with main users represented in the Agricultural, Forestry and Fishery Statistics Committee, which is an advisory body of SURS.

The observation units in the survey were agricultural holdings in the territory of the Republic of Slovenia, which are divided into:

- agricultural enterprises
- family farms

Agricultural holdings should apply to the following threshold:

- at least one hectare of utilised agricultural area, or
- less than one hectare of utilised agricultural area, but:
  - at least 0.1 hectare of utilised agricultural area and 0.9 hectare of forest, or
  - at least 0.3 hectare of vineyards and/or orchards, or
  - two or more livestock units (LSU), or
  - 0.15 to 0.3 hectare of vineyards/orchards and 1 or 2 LSU, or
  - more than 50 beehives, or
- are market producers of vegetables, herbs, strawberries, mushrooms, flowers or ornamental plants.

Results are published and are available in SURS's SI-STAT database ([www.stat.si](http://www.stat.si)).

## 1. CONTACTS

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## 2. SURVEY METHODOLOGY

### 2.1 National legislation

The legal bases for conducting the AC 2010 are three acts:

- National Statistics Act (OJ RS No. 45/95 and No. 9/01)
- National Programme of Statistical Surveys (OJ RS No [114/08](#), [35/09](#) and [51/09](#)), which deals with all statistical surveys and work to be done in 2009
- National Programme of Statistical Surveys (OJ RS No [93/09](#), [19/10](#), [50/10](#) and [72/10](#)), which deals with all statistical surveys and work to be done in 2010

The [National Statistics Act](#) defines the following fundamental principles:

- Professional and institutional independence
- Statistical confidentiality
- Availability, accessibility and clarity of information
- International comparability
- Transparency of methodology
- Rational use of resources
- Access to administrative data sources

In the National Programme of Statistical Surveys the following issues are dealt with:

- Responsible institution: Statistical Office of the Republic of Slovenia
- Content of the survey
- Scope of the survey:
  - collecting data on the structure of agricultural holdings
  - ensuring data on agricultural holdings comparable with other EU Member States
- Frequency of the survey: every 10 years
- Reference date/period: 1 June 2010 and reference period of 12 months ending with the reference day.
- Who should provide the data and when:
  - all agricultural holdings performing agricultural activity;
  - Ministry of Agriculture, Forestry and Food (administrative data)
  - Tax Administration of the Republic of Slovenia (administrative data)
  - Agricultural holdings and governmental institutions should provide data from 1 June to 30 June 2010
- Deadline for publishing final results: 31 March 2012
- Harmonisation with EU legislation (partially /fully): Fully

Tasks in 2009 according to the National Programme of Statistical Surveys were the following:

- preparation of the questionnaire and methodology
- survey implementation

Tasks in 2010, 2011 and 2012 according to the National Programme of Statistical Surveys were the following:

- data processing
- calculation of SO coefficients
- preparation of EUROFARM file
- calculation of other characteristics (e.g. LSU, AWU, type of farming)
- publishing of provisional and final results

National legislation does not deal with financial resources needed for the implementation of the AC 2010 or with identification, protection and obligations of enumerators.

## 2.2 Characteristics and reference period

The following groups of questions were included in the questionnaire for Agricultural Census 2010:

- Chapter A: Address of the holding – questions enable us to update the address of the agricultural holding in the Statistical Register of Agricultural Holdings
- Chapter B: Number of livestock
- Chapter C: Whole land section
- Chapter D: Irrigation
- Chapter E: Horticulture census
- Chapter F: Machinery and equipment
- Chapter G: Labour force on family farms, supplementary activities
- Chapter H: Labour force in agricultural enterprises
- Chapter I: Forestry
- Chapter J: SAPM characteristics, (except irrigation which is in chapter D)

Some of the characteristics were added to the questionnaire for national purposes only:

- use of permanent grassland (number of harvests);
- some categories of livestock and crops are more detailed than needed since the Survey on the Areas Sown was carried out in the frame of the census;
- number of trees in extensive orchards and number of vines in vineyards – needed for calculation of production;
- horticultural census was carried out together with agricultural census, hence only 2% of all agricultural holdings have market gardening, we included them in the AC 2010;
- machinery and equipment was gathered in the AC 2010, because this was the perfect time to get all the machinery on agricultural holdings and also for the comparison with the AC 2000;
- labour force on family farms: we collected data for all persons in the household not only for those working on family farms (in order to insure data comparability with previous FSSs). Data on more detailed other gainful activities were gathered (also for all persons);
- forestry: (removals, services in forestry) on request of researchers. FSS is the only source of data on forestry on family farms.

Hence the definition of Energy crops: “the production area of energy crops benefiting from the following support schemes under Council Regulation (EC) No 1782/2003” and since the CAP health check (Council Regulation (EC) No 73/2009) the area payment supports have been dropped from 2010, Energy crops were voluntary to collect in each country. We decided that data on “2.06.03 Energy crops” and “2.06.03.01 Energy crops on set-aside area” **will not be collected**. The characteristics are filled with zeros, because by the definition there were no such areas that benefited from schemes under Council Regulation (EC) No 1782/2003.

In 2010 there were no genetically modified crops (GMC) recorded, that is why all fields are set to zeros.

According to paragraph 3 of Article 7 of the proposed basic legal framework for the farm structure surveys and the survey on agricultural production methods, we informed the Commission about characteristics which are intended to be excluded from the future data collection.

**Table 1:** The following characteristics have been considered as non-significant (NS) or non-existing (NE) in Slovenia in the Agricultural Census 2010:

Code in the handbook	Description	Explanation	NS/NE
1.03.01.03 <sup>1</sup>	Agricultural area utilised for shared farming or other modes	We do not have area for "share farming or other modes". "1.03.01.03" does not exist in Slovenia	NE
1.03.02.03.04	Organic farming - sugar beet	Slovenia gave up its quota for sugar beet production (see COUNCIL REGULATION (EC) No 320/2006). In 2007 only 6 hectares of sugar beet were recorded in the FSS.	NS
1.03.02.03.09	Organic farming - citrus fruit	Climatic conditions do not permit cultivation of these crops for income	NE
2.01.01.02	Durum wheat	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NS
2.01.01.07	Rice	Climatic conditions does not permit cultivation of this crops for income	NE
2.01.04	Sugar beet	Slovenia gave up its quota for sugar beet production (see COUNCIL REGULATION (EC) No 320/2006). In 2007 only 6 hectares of sugar beet were recorded in the FSS.	NS
2.01.06.01	Tobacco	Climatic conditions do not permit cultivation of these crops for income	NE
2.01.06.03	Cotton	Climatic conditions do not permit cultivation of these crops for income	NE
2.01.06.05	Sunflower	Sunflower in total covers only 0.05% of UAA	NS
2.01.06.06	Soya	Soya in total covers only 0.025% of UAA	NS
2.01.06.07	Linseed (oil flax)	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NS
2.01.06.09	Flax	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NS
2.01.06.10	Hemp	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NS
2.01.06.11	Other textile crops	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NE
2.01.06.12	Aromatic, medicinal and culinary plants	Aromatic plants, medicinal and culinary plants in total cover only 0.003% of UAA	NS
2.01.06.99	Industrial plants not mentioned elsewhere	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NE
2.01.10	Seeds and seedlings	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NS
2.01.11	Other arable land crops	Other arable land crops in total cover only 0.002% of UAA	NS

<sup>1</sup> We considered common land to be put under »Agricultural area utilised for shared farming or other modes«.



2.01.12.02	Fallow land subject to payment of subsidies with no economic use	No occurrence due to non-existent interventions. We checked with the Ministry of Agriculture.	NE
2.03.03	Permanent grassland and meadow - no used for production, eligible for subsidies	No occurrence due to non-existent interventions. Slovenia does not have payments of subsidies for Permanent grassland (no longer used for production purposes). We checked with the Ministry of Agriculture.	NE
2.04.01.01.02	Fruit species of subtropical climate zones	Climatic conditions do not permit cultivation of these crops for income	NE
2.04.01.03	Fruit and berry plantations - nuts	Nuts in total cover only 0.019% of UAA	NS
2.04.02	Citrus plantations	Climatic conditions do not permit cultivation of these crops for income	NS
2.04.03.01	Olive plantations - table olives	Only small quantities of olives are used as table olives (also varieties grown are primarily for oil)	NS
2.04.04.03	Vineyards - table grapes	No grapes (grape varieties) are grown which are used for production of raisins and small amount is grown for fresh grapes	NS
2.04.04.04	Vineyards - raisins	No grapes (grape varieties) are grown which are used for production of raisins and small amount is grown for fresh grapes	NE
2.04.06	Other permanent crops	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NE
2.04.07	Permanent crops under glass	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NE
2.05.02.01	Wooded area - with short rotation	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NS
2.06.01	Mushrooms	Due to low occurrence, crops were not included in our previous survey's questionnaires individually (however occurrence under "other" was lower than 10 ha)	NS
3.05.03.99	Other poultry, not mentioned elsewhere	With the number of other poultry around 40,000, estimated meat production is around 100 tons, which represents less than 0.1% of total GIP of meat. Not to be provided in 2010!!!	NS
3.06	Rabbits (breeding females)	With the number of breeding females 22,200, estimated rabbit meat production is around 400 tons, which represents less than 0.3% of total GIP of meat	NS
3.99	Other livestock not mentioned elsewhere	Under category 3.99 (Livestock not mentioned elsewhere) could mainly be included fallow deer (dama dama). This represents less than 0.3% of total GIP of meat.	NS
8.01.02.03	Area irrigated in the previous 12 months: rice	Climatic conditions do not permit cultivation of these crops for income	NE
8.01.02.06	Area irrigated in the previous 12 months: sugar beet	Slovenia gave up its quota for sugar beet production (see COUNCIL REGULATION (EC) No 320/2006). In 2007 only 6 hectares of sugar beet were recorded in the FSS.	NE
8.01.02.08	Area irrigated in the previous 12 months: sunflower	Sunflower in total covers only 0.05% of UAA, so it is expected that also the irrigated part will be NS	NS
8.01.02.09	Area irrigated in the previous 12 months: textile crops	Flex and hemp cover less than 10 ha in total, other fibre crops are NE, so it is expected that also the irrigated part will be NS	NS
8.01.02.11	Area irrigated in the previous 12 months: Temporary and permanent grass	It is not common for this crop to be irrigated; in the pilot project survey less than 0.3% of all irrigated area	NS

8.01.02.14	Area irrigated in the previous 12 months: citrus plantations	Climatic conditions do not permit cultivation of these crops for income	NE
8.01.02.15	Area irrigated in the previous 12 months: olive plantations	It is not common for this crop to be irrigated; in the pilot project survey less than 0.3% of all irrigated area	NS
8.01.02.16	Area irrigated in the previous 12 months: vineyards	It is not common for this crop to be irrigated; in the pilot project survey less than 0.3% of all irrigated area	NS

In Slovenia we considered 16 characteristics that are 'NE' and 25 characteristics that are 'NS'. However, we collected most of the NS characteristics anyway, because of the opportunity to check again the prevalence of individual characteristics. The results show that in the next FSS those characteristics will not be put into the questionnaire due to explanations written above.

The reference date of the Agricultural Census was 1 June 2010. For data on labour force characteristics, the period of 12 months ending on the reference day was taken and for data on rural development measures, the period of three years ending on the reference day was taken.

We implemented the Handbook on implementing the FSS and SAPM definitions – revision 7 (January 2010). There are no differences between EU and national concepts.

There are also no important changes in definitions of characteristics or reference time or measurement which would affect the comparability with previous census/FSS data. There is only one important methodological change – the new EU methodology for calculating economic size and typology of agricultural holdings based on Standard Output coefficients (SO).

### 2.3 Survey organization

SURS was the responsible body for conducting the AC 2010. Preparations for the AC 2010 and the SAPM started at the beginning of 2009 and ended with the publication of final results on 5 July 2012. Data on the SAPM were finished until the end of 2012.

No special Census Committee was formed for the AC 2010, but the Agricultural, Forestry and Fishery Statistics Advisory Committee (ASC) acted its role (different working groups were established). It is an advisory body of SURS in which there are represented different ministries, research institutes and other governmental and non-governmental bodies having an interest in agricultural statistics. The changes of methodology are discussed within the ASC. The ASC discussed the questionnaire and methodology aspects of the AC 2010.

SURS was also responsible for promotion of the AC 2010 and is responsible for dissemination of the results.

For field data collection we hired an external contractor, who with our methodological instructions and the required quality standards collected the necessary information on the field. All subsequent corrections and imputations were carried out by SURS. The Agricultural Census and the Survey on Agricultural Production Methods (SAPM) 2010 were conducted together as computer assisted personal interviewing (CAPI) in combination with administrative data sources. Fieldwork was conducted by about 600 interviewers and they finished their fieldwork on 15 July (from 1 June). Telephone interviewing of some agricultural holdings continued until 25 July 2010, the purpose being to check the correctness of entered data. In this way we checked the

work done by fieldwork interviewers and the correctness of data entered into the computer application. For sampling, data verification, imputations and estimation of sampling errors, SAS program was used.





## 2.5 Population and frame

- **Population**

The population of the survey was agricultural holdings performing agricultural activity.

The definition of agricultural holdings and the threshold were established at the AC 2000. The definition changed with the new Regulation for the AC 2010, but did not in any way influence the population frame in the AC 2010 in Slovenia. The data are fully comparable between the AC 2000 and the AC 2010.

- **Definition of AH 2000:** agricultural holding is a single unit, both organisational and operating, of agricultural area utilised, forests, buildings, equipment and labour force, which has a single management and which is engaged in agricultural production.

- **Definition of AH till 2010:** agricultural holding is a single unit, both technically and economically, which has a single management and which undertakes agricultural activities within the economic territory of the European Union, either as its primary or secondary activity.

### **Agricultural production includes:**

- crop production:
  - production of cereals, other arable crops and grassland
  - production of vegetables, ornamental plants, seeds and seedlings
  - wine and fruit growing
  - mushroom production
- livestock breeding:
  - cattle
  - pigs
  - poultry
  - sheep
  - horses
  - beekeeping
  - breeding of other animals for human consumption

### **Agricultural production does not include:**

- processing of agricultural products produced on agricultural holdings or agricultural products bought
- agriculture services
- forestry
- fish farming and fishery
- raising horses for recreation, if all fodder is bought

- **European comparable agricultural holdings (threshold) are those having**

- at least one hectare of utilised agricultural area, or
- less than one hectare of utilised agricultural area, but:
  - at least 0.1 hectare of utilised agricultural area and 0.9 hectare of forest, or
  - at least 0.3 hectares of vineyards and/or orchards, or
  - two or more livestock units (LSU), or
  - 0.15 to 0.3 hectare of vineyards/orchards and 1 or 2 LSU, or
  - more than 50 beehives, or

- are market producers of vegetables, herbs, strawberries, mushrooms, flowers or ornamental plants.

The threshold was applied for the 2000 census and it stayed the same for all FSS surveys and censuses.

All the statistics of agriculture correspond to this threshold and it is consistent with Articles 2 and 3 of Regulation (EC) 1166/2008.

- **Frame <sup>(2)</sup>**

The list of agricultural holdings was fully obtained from the Statistical Farm Register (SFR), but the SFR was also fully updated before the list was made. All agricultural holdings in Slovenia were surveyed.

There was no sampling involved for the agricultural census, therefore no description of the frame can be given. The SAPM was a sample survey and details are given under section 2.7.1.

The Statistical Farm Register was established after the AC 2000 in order to have a stable sampling frame for all agricultural surveys. It has been operational since 2004. The register is updated twice a year (February/September), which enables us to have an updated sampling frame for the surveys in June and December. Results of statistical surveys as well as IACS data are used for updating the register.

All the addresses of the holdings were updated using the Register of Territorial Units.

SURS put a lot of effort into using all available statistical and administrative sources for updating the SFR. We minimize errors for agricultural holdings applying for supports by using data from the IACS. All new farms from administrative sources are added just before any survey starts, so we are up to date.

From 2000 till the beginning of the 2010 census we managed to get a very clear list of agricultural holdings in Slovenia. Most of the duplicates were removed, and the connection with administrative data is now almost full (approximately 95% data can be directly linked with administrative sources). Because of the good connection with administrative sources, updating with national surveys and continuous checking of the summands, we believe the SFR is in very good shape for conducting samples.

## **2.6 Survey design**

The Agricultural Census 2010 was an exhaustive survey (census), and the SAPM was a stratified random sample survey.

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<sup>(2)</sup> The *frame* is the listing or listings of units that delimit, identify, and allow access to the elements or sets of elements of the target population.

## 2.7 Sampling, data collection and data entry

### 2.7.1 Drawing the sample – for SAPM and/or OGA, if applicable

The Survey on Agricultural Production Methods (SAPM) 2010 was conducted together with the Agricultural Census as a sample survey. The sample size was decided regarding the precision table as set down in Annex IV to Regulation (EC) No 1166/2008. There were 9,863 agricultural holdings included in the SAPM. We used stratified sampling with systematic random selection of units in the stratum. Strata were defined as a combination of two NUTS2 regions and four production size classes. In Slovenia the distribution of farms by NUTS2 regions is not very uniform (NUTS2=1 has ~ 70% of agricultural holdings NUTS2=2 ~ 30% of agricultural holdings), but the precision requirements are defined at the NUTS2 level. Consequently an over-proportional number of agricultural holdings from NUTS2=2 region are selected to achieve the optimal stratum allocation. As the sample size was quite large and to get more efficient weights, weighting classes were defined at the lower level (in this case at NUTS3 \* production size class) than stratification groups for sampling.

Statistical program used in the sample selection: SAS

All agricultural companies were included in SAPM sample survey as **strata 0**.

All agricultural holdings with specific *farm type* were included in **strata 1**:

Farm Type	Description
2011	Specialist market garden vegetables-outdoor
2012	Specialist market garden vegetables-under glass
2013	Specialist market garden vegetables, outdoor and under glass combined
2021	Specialist flowers and ornamentals-outdoor
2022	Specialist flowers and ornamentals-under glass
2023	Specialist flowers and ornamentals, outdoor and under glass combined
2031	General market garden cropping-outdoor
2032	General market garden cropping-under glass
2033	Specialist mushrooms
2034	Various market garden crops combined
5011	Specialist pig rearing
5012	Specialist pig fattening
5013	Pig rearing and fattening combined
5021	Specialist layers
5022	Specialist poultry-meat
5023	Layers and poultry-meat combined
5031	Pigs and poultry combined
5032	Pigs, poultry and other granivores combined



All other family farms were stratified regarding the production size classes:

	<b>Strata 1</b>	<b>Strata 2</b>	<b>Strata 3</b>	<b>Strata 4</b>
UAA	$\geq 20$	$8 < 20$	$5 < 8$	$> 0 < 5$
Arable land	$\geq 6$	$3 < 6$	$1 < 3$	$> 0 < 1$
Cereals	$\geq 6$	$3 < 6$	$1 < 3$	$> 0 < 1$
Number of trees in the extensive orchard	$\geq 150$	$100 < 150$	$50 < 100$	$> 0 < 50$
Vineyard	$\geq 5$	$3 < 5$	$1 < 3$	$> 0 < 1$
Intensive orchards+ olive plantations	$\geq 2$	$1 < 2$	$0.5 < 1$	$> 0 < 0.5$
Potatoes	$\geq 1$	$0.5 < 1$	$0.25 < 0.5$	$> 0 < 0.25$
Hops	$\geq 5$	$3 < 5$	$1 < 3$	$> 0 < 1$
Oil crops	$\geq 2$	$1 < 2$	$0.5 < 1$	$> 0 < 0.5$
Cattle	$\geq 40$	15 - 39	5 - 14	1 - 4
Pigs	$\geq 40$	20 - 39	4 - 19	1 - 3
Sheep-breeding females + Goats-breeding females	$\geq 30$	20 - 29	10 - 19	1 - 9
Poultry – broilers	$\geq 1000$	100 - 999	50 - 99	1 - 49
Laying hens	$\geq 1000$	100 - 999	50 - 99	1 - 49
Horses	$\geq 20$	10 - 19	5 - 9	1 - 4
Intensive poultry breeder	Yes	/	/	/

Number of agricultural holdings in individual strata:

<b>STRATA</b>	<b>Number of agricultural holdings</b>
0	521
1	3013
2	1468
3	2361
4	2500
Total	9863

The SAPM sample was selected independently; hence it was the “one time thing” with the Agricultural Census 2010.

Elements related to the precision requirements stipulated in Annex IV "Precision Requirements" of Regulation 1166/2008 for the SAPM:

NUTS2 regions with more than 10,000 agricultural holdings

**Crop characteristics:**

Precision requirements	Field codes	NUTS2 regions	
		SI01	SI02
Number of holdings in the NUTS2 region		51550	21206
UAA, ha of the NUTS2 region	A_3_1	333881	141493
Area of cereals in ha in the NUTS2 region	B_1_1	84650	8316
% Cereals in the UAA of the NUTS2 region		25.4%	5.9%
Area of potatoes and sugar beet in ha in the NUTS2 region	B_1_3 + B_1_4	2320	1604
% potatoes and sugar beet in the UAA of the NUTS2 region		0.7%	1.1%
Area of oilseed crops in ha in the NUTS2 region	B_1_6_4 + B_1_6_5 + B_1_6_6 + B_1_6_7 + B_1_6_8	11051	280
% oilseed crops in the UAA of the NUTS2 region		3.3%	0.2%
Area of permanent outdoor crops in ha in the NUTS2 region	B_4 - B_4_7	16312	9505
% permanent outdoor crops in the UAA of the NUTS2 region		4.9%	6.7%
Area of fresh vegetables, melons, strawberries, flowers in ha in the NUTS2 region	B_1_7 + B_1_8	660	673
% fresh vegetables, melons, strawberries, flowers in the UAA of the NUTS2 region		0.2%	0.5%
Area of temporary grass and permanent grassland in ha in the NUTS2 region	B_1_9_1 + B_3	194508	111525
% temporary grass and permanent grassland in the UAA of the NUTS2 region		58.3%	78.8%

**Livestock characteristics:**

Precision requirements	Field codes	NUTS2 regions		
		SI01	SI02	
LSU in the NUTS2 region		388640	144107	
Bovine animals (all ages)	Number of Bovine animals in the NUTS2 region, in LSU	$C_{2\_1} \cdot 0.4 + C_{2\_2} \cdot 0.7 + C_{2\_3} \cdot 0.7 + C_{2\_4} + C_{2\_5} \cdot 0.8 + C_{2\_6} + C_{2\_99} \cdot 0.8$	233901	106176
	% of the LSU in the NUTS2 region		60.2%	73.7%
	% of national share of bovine animals in LSU		68.8%	31.2%
Sheep and goats (all ages)	Number of Sheep and goats in the NUTS2 region, in LSU	$C_{3\_1} \cdot 0.1 + C_{3\_2} \cdot 0.1$	11129	6107
	% of the LSU in the NUTS2 region		2.9%	4.2%
	% of national share of sheep and goats in LSU		64.6%	35.4%
Pigs	Number of Pigs in the NUTS2 region, in LSU	$C_{4\_1} \cdot 0.027 + C_{4\_2} \cdot 0.5 + C_{4\_99} \cdot 0.3$	85182	8973
	% of the LSU in the NUTS2 region		21.9%	6.2%
	% of national share of pigs in LSU		90.5%	9.5%
Poultry	Number of Poultry in the NUTS2 region, in LSU	$C_{5\_1} \cdot 0.007 + C_{5\_2} \cdot 0.014 + C_{5\_3} \cdot 0.030$	45790	15886
	% of the LSU in the NUTS2 region		11.8%	11.0%
	% of national share of poultry in LSU		74.2%	25.8%

## 2.7.2 Data collection and data entry

The Agricultural Census and the Survey on Agricultural Production Methods (SAPM) 2010 were conducted together as **computer assisted personal interviewing (CAPI) in combination with administrative data sources**. We also used telephone interviewing of some agricultural holdings (about 0.6% of units) after fieldwork; the purpose was to check the correctness of entered data. In this way we checked the work done by fieldwork interviewers and the correctness of data entered into the computer application. For sampling, data verification, imputations and estimation of sampling errors, SAS program was used.

## 2.7.3 Use of administrative data sources

We used administrative data sources in the Farm Structure Survey 2010 according to Article 4 of Regulation (EC) No. 1166/2008 of the European Parliament and of the Council of 19 November 2008 on farm structure surveys and the survey on agricultural production methods and repealing Council Regulation (EEC) No. 571/88.

According to Article 4, paragraph 1, we used the following administrative data sources:

1. **System for the Identification and Registration of Bovine Animals**
2. **Organic Farming Register**
3. **Register of Genetically Modified Crops (There were no GMC in Slovenia in 2009/2010)**
4. **Rural Development Measures**
5. **Information from the Integrated Administration and Control System (IACS), which includes the following data sets:**
  - a. Register of Farms (locations of agricultural holdings)
  - b. Register of Fruit Producers in Intensive Orchards
  - c. Register of Producers of Olives
  - d. Register of Fruit Producers in Extensive and/or Meadow Orchards
  - e. Grape and Wine Producers Register and Vineyards Cadaster
  - f. Register of Producers of Hops
  - g. Register of Common Land
  - h. Subsidies for 2010
  - i. Data set on gainful activities

According to Article 4, paragraph 2, we also used the administrative data source other than those specified in paragraph 1. This is:

## 6. Register of Beehives

### 1. System for the Identification and Registration of Bovine Animals

- **Register of Bovine Animals** is regulated with Regulation “OJ. RS, No. [16/2003](#)”, legislation “OJ. RS, No. [45/2008](#)” and “OJ. RS, No. [18/2002](#)”.
- All characteristics are defined according to EU legislation. There is no difference in the definitions. The register is updated all the time, when changes are reported.
- Key for data linkage was ID of agricultural holding established by the MAFF. Each agricultural holding in the Statistical Register of Agricultural Holdings has also ID number of the MAFF. The data on bovine animals are complete; there were no mismatching cases (unless those under the threshold).
- From the Bovine Register data on age and sex of the animals can be obtained. Also the identification on cows is available. This is sufficient in FSS for all male bovine animals and

for female bovine animals under two years old. According to the regulation, cows should be broken down to dairy cows and other cows. Since these data are not available in the register, data were collected by the survey (**characteristics C\_2 to C\_2\_99**).

- The data on bovine animals are complete, only breakdown to dairy cows and other cows was gathered from the survey. No duplicates can be derived.
- The data on bovine animals are gained only from administrative data, where no duplicate counting is possible. Data can be used directly from the register without further analysis or calculations.
- Administrative data were used instead of the survey and were put directly into the database. SURS already used data from register of beehives for the Farm structure survey in 2007.

## 2. Organic farming register

- **Organic Farming Register** is regulated with Regulation “OJ. RS, No. [56/2001](#)” and changes “OJ. RS, No. [63/2002](#)”, legislation “OJ. RS, No. [45/2008](#)” and “OJ. RS, No. [18/2002](#)”.
- All characteristics are defined according to EU legislation. There is no difference in the definitions. The register is updated when the holding is visited by the control organization. That is why the number of animals under organic farming was taken from the combination of survey and administrative data. For the same reason also the data on kitchen gardens and “Fresh vegetables, melons, strawberries” were taken from the survey.
- Key for data linkage was ID of agricultural holding established by the MAFF. Each agricultural holding in the Statistical Register of Agricultural Holdings has also ID number of the MAFF. The data on organic farming are complete; there were no mismatching cases (unless those under the threshold).
- The Organic Farming Register is complete. No duplicates can be derived.
  - The data on organic farming are gained from administrative data – except the number of animals and the area of kitchen gardens, which are gained from the combination of survey and administrative data. Data from the Organic Farming Register can be used directly from the register without further analysis or calculations.
- Administrative data were used instead of the survey and were put directly into the database. SURS already used data from the Organic Farming Register for the Farm Structure Survey in 2007.

Data were gained fully from the register, for characteristics:

<i>A_3_1_1</i>	<i>Agricultural area utilised for farming by owner</i>
<i>A_3_1_2</i>	<i>Agricultural area utilised for farming by tenant</i>
<i>A_3_1_3</i>	<i>Agricultural area utilised for shared farming or other modes</i>
<i>A_3_2_1</i>	<i>Farming system - organic farming certified</i>
<i>A_3_2_2</i>	<i>Farming system - conversion to organic farming</i>
<i>A_3_2_3</i>	<i>Farming system - conversion to organic farming or certified</i>
<i>A_3_2_3_1</i>	<i>Organic farming - cereals</i>
<i>A_3_2_3_2</i>	<i>Organic farming - dried pulses</i>
<i>A_3_2_3_3</i>	<i>Organic farming - potatoes</i>
<i>A_3_2_3_4</i>	<i>Organic farming - sugar beet</i>
<i>A_3_2_3_5</i>	<i>Organic farming - oil crops</i>
<i>A_3_2_3_7</i>	<i>Organic farming - pasture and meadow, excl. rough grazing</i>
<i>A_3_2_3_8</i>	<i>Organic farming - fruit and berry</i>
<i>A_3_2_3_9</i>	<i>Organic farming - citrus fruit</i>
<i>A_3_2_3_10</i>	<i>Organic farming - olives</i>
<i>A_3_2_3_11</i>	<i>Organic farming - vineyards</i>

*A\_3\_2\_3\_99                      Organic farming - other crops*

- With the combination of survey and administrative data:

*A\_3\_2\_3\_6                      Organic farming - fresh vegetables, melons, strawberries*

*A\_3\_2\_4\_1                      Organic farming - bovine animals*

*A\_3\_2\_4\_2                      Organic farming - pigs*

*A\_3\_2\_4\_3                      Organic farming - sheep and goats*

*A\_3\_2\_4\_4                      Organic farming - poultry*

*A\_3\_2\_4\_5                      Organic farming - other animals*

### **3. Register of Genetically Modified Crops**

- SURS checked with the MAFF and there were no genetically modified crops grown in Slovenia in 2009/2010.

#### 4. Rural Development Measures

**Table 3: Register of Rural Development Measures** is regulated with the legislation “OJ. RS, No. [45/2008](#)” and “OJ. RS, No. [18/2002](#)” and regulations:

Use of advisory services	Article 24 of Council Regulation (EC) No 1698/2005: Use of advisory services.
Modernization of agricultural holdings	Article 26 of Council Regulation (EC) No 1698/2005: Modernization of agricultural holdings.
Adding value to agricultural and forestry products	Article 28 of Council Regulation (EC) No 1698/2005: Adding value to agricultural and forestry products.
Meeting standards based on Community legislation	Article 31 of Council Regulation (EC) No 1698/2005: Meeting standards based on Community legislation.
Participation of farmers in food quality schemes	Article 32 of Council Regulation (EC) No 1698/2005: Participation of farmers in food quality schemes.
Natura 2000 payments for agricultural area	Article 38 of Council Regulation (EC) No 1698/2005: Natura 2000 payments.
Payments linked to the Water Framework Directive	Article 38 of Council Regulation (EC) No 1698/2005: Payments linked to Directive 2000/60/EC.
Agri-environment payments	Article 39 of Council Regulation (EC) No 1698/2005: Agri-environment payments.
of which in the framework of organic farming	Article 39 of Council Regulation (EC) No 1698/2005: Agri-environment payments and where the holding practices agriculture according to certain set standards and rules specified in Council Regulation (EC) No 834/2007.
Animal welfare payments	Article 40 of Council Regulation (EC) No 1698/2005: Animal welfare payments.
Diversification into non-agricultural activities	Article 53 of Council Regulation (EC) No 1698/2005: Diversification into non-agricultural activities.
Encouragement of tourism activities	Article 55 of Council Regulation (EC) No 1698/2005: Encouragement of tourism activities.

- All characteristics are defined according to EU legislation. There is no difference in the definitions. For data on rural development measures, the period of three years ending on the reference day was taken. The agricultural holding included; agricultural holdings that got the approved support for rural development in the above mentioned period.
- Key for data linkage was ID of agricultural holding established by the MAFF. Each agricultural holding in the Statistical Register of Agricultural Holdings has also ID number of the MAFF. The data on rural development measures are complete; there were few mismatch cases. Some of those under the threshold and some that probably changed the ID number in the period of three years. There were approximately 2.5% of agricultural holdings not matched because of the reason mentioned above.
- The data on rural development measures are gained only from administrative data, where no duplicate counting is possible. Data can be used directly from the register without further analysis or calculations. Data were gained fully from the register, for characteristics G\_1\_1 to G\_1\_11.
- The data on support for rural development are complete. No duplicates can be derived.
- Administrative data were used instead of the survey and were put directly into the database.

#### 5. Information from the Integrated Administration and Control System (IACS):

- IACS is regulated with Regulation “(EC) No [1782/2003](#)”, legislation “OJ. RS, No. [45/2008](#)” and “OJ. RS, No. [18/2002](#)”.

- Key for data linkage was ID of agricultural holding established by the Ministry of Agriculture, Forestry and Food (MAFF). Each agricultural holding in the Statistical Register of Agricultural Holdings has also ID number of the MAFF.
- For the purpose of control of subsidies applications (and registers), Slovenia had to introduce graphical control of subsidies applications for areas. Since the Land Cadaster is not updated, Slovenia introduced in 2005 a new system of land use called GERK (graphical units of land use) – GERK refers to so called “farm’s block” in IACS legislation. All areas in registers are based on the GERK system.
  - Register of Farms (locations of agricultural holdings). The MAFF manages the farm register for administrative purposes. It also contains data on holders’ addresses and location of agricultural holdings.
  - Register of Fruit Producers in Intensive Orchards. SURS tried to avoid double data collection. Data on fruit and berry plantations in intensive orchards were fully gained from the register and the question was not in the survey.
  - Register of Producers of Olives. Data on olive groves were partially gained from the register. Those agricultural holdings that didn’t have data in registers were asked about the area of olive groves during the survey.
  - Register of Fruit Producers in Extensive and/or Meadow Orchards. Data on extensive orchards were partially gained from the register. Those agricultural holdings that didn’t have data in registers were asked about the area of extensive and/or meadow orchards during the survey.
  - Grape and Wine Producers Register and Vineyards Cadaster. Data on vineyards were partially gained from the register. Those agricultural holdings that didn’t have data in registers were asked about the area of vineyards during the survey.
  - Register of Producers of Hops. Data on hops were fully gained from the register and the question was not in the survey.
  - Register of Common Land. Data for common land were fully gained from the register and the question was not in the survey.
  - Subsidies for 2010. Data from subsidies were taken for holdings applying for subsidies. Data for holdings not applying for subsidies were obtained with a statistical survey. Data for some characteristics (which are not subject of subsidies) were collected with a statistical survey. SURS already uses data from subsidies for the annual survey on areas sown.
  - Data set on gainful activities includes only holdings with registered gainful activity. Data were used to check the data gained from the statistical survey.

## 6. Register of Beehives

- **Register of Beehives** is regulated with Regulation “OJ. RS, No. [117/2008](#)”, legislation “OJ. RS, No. [45/2008](#)” and “OJ. RS, No. [18/2002](#)”.
- All characteristics are defined according to EU legislation. There is no difference in definitions. The data are by the regulation gathered on two dates (30 October and 15 April), but also some of the data are gathered on dates between those two. We gathered the data that were the nearest to the census reference date (1 June), and as such put into the database.
- Key for data linkage was ID of agricultural holding established by the MAFF. Each agricultural holding in the Statistical Register of Agricultural Holdings has also ID number of the MAFF. The data on beehives are complete; there were no mismatching cases (unless those under the threshold).
- Data were gained fully from the register; characteristic C\_7.

- The data on beehives are gained only from administrative data, where no duplicate counting is possible. Data can be used directly from the register without further analysis or calculations.
- Administrative data were used instead of the survey and were put directly into the database. SURS already used data from the Register of Beehives for the Farm Structure Survey in 2007.

## 2.8 Specific topics

### 2.8.1 Common Land

- Common land is by definition “utilized agricultural area used by the agricultural holding but not belonging directly to it”. As agreed during the FSS Working Group meeting on 21-22 September 2009, the common land area could be recorded in three ways. We decided to use the first method:  
*“In proportion to the use by each holding. In this option the area of common land used by a specific holding should be included in the UAA area of this holding. The area assigned to a particular holding should be determined proportionally (on acreage or LSU basis). This option can be used if there is a guarantee of no double counting of the area.”*
- The area of common land was not double counted, because the data on common land were gathered from administrative data, and divided in proportion to each holding (on the basis of the LSU). Holders reported land use without common land. The area of common land consists only of pastures (rough grazing).
- Area of common land was put under variable “A\_3\_1\_3-Agricultural area utilised for shared farming or other modes” and under “B\_3\_2-Permanent grassland and meadow - rough grazings”.
- **Until 2010 no common land was included in UAA that was sent to Eurostat.** In the national publications there was always a comment about the area of common land in the country. It is very difficult to provide the data on common land on each agricultural holding when conducting sample surveys. That is why only the data at national level were published.
- For future FSS surveys (2013, 2016) the data on common land could only be provided at country level (because of the sample errors).

**Table 4:** The total common land in different FSS years:

2000	2003	2005	2007	2010
22,786 ha	22,786 ha	22,786 ha	9,062 ha	8,221 ha

### 2.8.2 Geographical reference of the holding

- The MAFF has the statistical farm register for administrative purposes, and has also data about holders’ addresses and location of agricultural holdings.
- Agricultural holdings are primarily located to the coordinates of the centroid of the building of permanent address of the agricultural holding in D48/GK as in the Register of Spatial Units. Coordinates were transformed to Lon/Lat degrees by SiTra, software recommended by the Mapping Agency. These coordinates were then relocated to the



nearest 5' arc (5' grid was created and these coordinates were assigned the nearest centroid of each 5' grid cell).

- Where in each 5' grid cell there was only one agricultural holding, we relocated it into the neighbouring 5' grid cell. Even though there is no rule that relocation should be to the same NUTS 3 region, we secondarily relocated holdings to the nearest 5' arc in the same NUTS 3. 112 agricultural holdings that could not be assigned to coordinates from the Register were primarily located by means of street ID. Lon/Lat values are transformed to ETRS89 coordinate.

### **2.8.3 Volume of water used for irrigation**

The IRRFIB agrometeorological irrigation need prognostic model was developed at the Agrometeorological Department of the Meteorological sector of the Slovenian Environment Agency in the 1990s as a tool to help agricultural producers in irrigation planning. It is adapted to FAO computer program for assessment of water consumed by crops. It can be used for a daily soil water balance, for a 3-7 days irrigation demand prediction or for the assessment of water lack in soil for crops in drought period. It can be also used to analyse water conditions for crops and water use for irrigation in the past periods.

Input data of the IRRFIB model comprise climatological data, crop data and soil data:

- daily reference evapotranspiration (ET<sub>0</sub>): evapotranspiration of the reference area – refers to grass of 0.12 m height, superficial resistance 70 sm<sup>-1</sup> and albedo 0.23. For its calculation with the Penman-Monteith method, meteorological data on radiation, temperature, area humidity and wind are needed;
- data on crop: phenological phase, root system depth, crop coefficient;
- data on soil: water retention soil attributes, field capacity and wilting point are needed to define the size of the soil water reservoir in the root range. Roots can pump water from soil to the point where forces which connect water with the solid faze become bigger than the energetic capability of roots to pump water, which is called wilting point. Field capacity is the upper limit of water quantity in the soil which can be held without loss due to gravitation. With the IRRFIB model water, soil and crop balance can be calculated in different time scales for the period of one day, vegetation period or for the whole year. Thus daily water consumption in soil and crops is assessed as the possible water deficit for crops.

To define the allowed decrease in soil water quantity, the plant available water by boundary conditions wilting point and field capacity in a certain soil depth are considered. The area covered by a specific crop is limited by soil type; for surfaces containing different soil types, the average soil water characteristic guides the calculation of the soil-water balance. As the depth of ground water in irrigation fields is more than two meters in most cases, the capillary rise is not computed. In the Agricultural Census the exact soil type was unknown and the calculation was made based on sandy soil being the predominant one on mainly agricultural sites. Thus field capacity (FC)=22.9%; wilting point (WP)=13.3%, 50% water reservoir and a retention capacity 1 day were taken into account. Phenological phases of crops and root depth were defined for each crop for 4 agricultural regions and atmospheric conditions for individual agricultural holding were taken from the nearest precipitation and evapotranspiration measuring station respectively.

For each culture and each agricultural region (West, South, Central and North-East Slovenia) the root depth for each phenological phase was defined, as well as the crop coefficients K<sub>c</sub> needed for potential evapotranspiration calculation. For the mix class of vegetables, K<sub>c</sub> was defined

based on the mixture of typical vegetables for each agricultural region of Slovenia. For the class Other, the same Kc as for the class Grassland was used.

For each crop, the water depletion factor p that indicates water between field's capacity and wilting point was characterized and taken into consideration in case of sprinkler. In case of drip irrigation, where irrigation is used to maintain the water quantity in the frame of field capacity and each irrigation event replaces potential evapotranspiration, this parameter is not used.

Daily water requirements are supplemented with drip irrigation; this means irrigation of the amount evapotranspired from soil and plants that day. For all other methods 20 mm was defined as the volume of water which has to be added in one irrigation event. The next irrigation event thus takes place when this volume of water is consumed by evapotranspiration. As long as the plant available water due to low root depth is less than 20 mm, the irrigation event is equal to the plant available water, calculated using factor p and root depth.

Because of the model, it is possible that some irrigated areas get 0 of water used.

We did not gather the volume of water used for irrigation for kitchen gardens and area under glass.

#### 2.8.4 Other issues

- Area of "B\_1\_8 - Flowers and ornamental plants" in Slovenia is very small (76 ha in 2010 and 154 in 2007), which makes only 0.016% of UAA in Slovenia (in 2010). The reason for the difference in the number of agricultural holdings in 2007 (13,949) and 2010 (1,065) is not a mistake but a methodological difficulty. Flowers and ornamental plants are not included in the stratification criteria (because of their relatively small importance). In Slovenia, there are a large number of very small producers of flowers and ornamental plants. It is difficult to separate the actual market production (which can take place on very small areas and means 'supplementing agricultural activity' on the farm) and other production of mainly cut-flowers (intended for self-sufficient use). Our focus in the AC 2010 (and the AC 2000) was more targeted concerning flowers and ornamental plants producers. On the other hand, it is more difficult to manage such a small phenomenon in the case of a sample survey (2003, 2005 and 2007). For comparison of flowers and ornamental plants producers in 2007 and 2010, there would be a better option of a "structural view" of agricultural holdings (by size classes).  
"In 2003, 2005 and 2007 all producers of flowers and ornamental plants were included".  
"In 2010 mainly market producers of flowers and ornamental plants were included".
- All market gardeners that have "irrigated market garden" (M\_8\_1\_2\_12) have in this variable included also the area of kitchen gardens.
- *Organic rough grazing* and *organic kitchen garden area is included in the Total organic area* (A\_3\_2\_3\_HA) even though it is not included in any sub-category under organic farming.
- For completing the questionnaire on Agricultural Census 2010 and SAPM, handbook on implementing the FSS and SAPM definitions – revision 7 (from January 2010) was used. This means that for the calculation of M\_2\_2\_1\_AA "share of arable area out of planned crop rotation", temporary grassland was excluded from considered arable area.

- Some quantity of manure and slurry removed from the agricultural holdings were not intended to be used by other agricultural holdings or for industrial fertilizer production. Some of them were removed as a waste or intended to be used for bio-fuel production.

## **2.9 Response-burden policy**

### **Campaign: advertising, promotion**

A special promotional publication presenting main results of previous surveys and pointing out the purpose of the AC2010 was published and presented to the media. We have also decided to inform the farmers about the AC2010 with a notice in the most read agricultural newspaper and with a short advertisement on TV. The promotion of the AC2010 was concentrated one week before we started field data collection.

### **Informing the farmers**

The farmers were informed about the AC2010 by a letter of notification sent to all family farms and agricultural enterprises with the basic information on the AC2010:

- what is the AC and what is the purpose of the AC2010,
- when the AC2010 will be carried out,
- who is responsible for the AC2010,
- which data will be collected,
- information about the protection of collected data and
- Information about the legislation on which AC2010 is based.

### **Training staff in handling difficult respondents**

Before the AC, SURS organized training for supervisors and staff of the contractor who was responsible for field data collection. Training for supervisors and staff of the contractor was carried out by SURS, for interviewers by the contractor with supervision of SURS. Trainings pointed out methodological issues as well as good practices concerning handling difficult respondents and data protection.

### **SURS and the contractor controlled the work done by interviewers**

The contractor also used telephone interviewing of some agricultural holdings (about 0.6% of units) after fieldwork; the purpose was to check the correctness of entered data. In this way we checked the work done by fieldwork interviewers and the correctness of data entered into the computer application. On the other hand, SURS controlled the work done by the contractor all time of fieldwork: we used all available administrative data sources and the SFR to compare the situation in the field.

### 3. ACCURACY AND RELIABILITY OF THE DATA COLLECTED

#### 3.1 Data processing, analysis and estimation

##### 3.1.1 Estimation and sampling errors – for the SAPM and/or the OGA, if applicable

- The Survey on Agricultural Production Methods (SAPM) 2010 was conducted together with the Agricultural Census as a sample survey. All other data were gathered with the census and therefore we have the data for all agricultural holdings.
- Main sources of error are over-coverage and non-response.
- Assessment of the potential for bias has not been estimated.
- There is no other source of information that SAPM data could be directly compared with.
- Final extrapolation factor for the SAPM survey is the sum of basic sampling weight and non-response weight. Stratification was made at NUTS2 level, but as the sample size was quite large and to get more efficient weights, weighting classes were defined at the lower level (in this case at NUTS3 \* production size class).
- We used SAS PROC SURVEYMEANS procedure for the calculation of standard errors and coefficients of variation.
- **Coefficients of variation:**

Crop and livestock characteristics:

Precision requirements	Field codes	CV: NUTS2 regions	
		SI01	SI02
UAA, ha of the NUTS2 region	A_3_1	1.2	1.3
Area of cereals in ha in the NUTS2 region	B_1_1	1.8	4.0
Area of potatoes and sugar beet in ha in the NUTS2 region	B_1_3 + B_1_4	4.0	4.5
Area of oilseed crops in ha in the NUTS2 region	B_1_6_4 + B_1_6_5 + B_1_6_6 + B_1_6_7 + B_1_6_8	3.8	15.9
Area of permanent outdoor crops in ha in the NUTS2 region	B_4 - B_4_7	2.9	3.2
Area of fresh vegetables, melons, strawberries, flowers in ha in the NUTS2 region	B_1_7 + B_1_8	15.4	13.7
Area of temporary grass and permanent grassland in ha in the NUTS2 region	B_1_9_1 + B_3	2.0	1.6
Number of Bovine animals in the NUTS2 region, in LSU	C_2_1*0.4 + C_2_2*0.7 + C_2_3*0.7 + C_2_4 +C_2_5*0.8 + C_2_6 + C_2_99*0.8	2.1	2.0
Number of Sheep and goats in the NUTS2 region, in LSU	C_3_1*0.1 + C_3_2*0.1	5.6	6.5
Number of Pigs in the NUTS2 region, in LSU	C_4_1*0.027 + C_4_2*0.5 + C_4_99*0.3	3.4	3.9
Number of Poultry in the NUTS2 region, in LSU	C_5_1*0.007 + C_5_2*0.014 + C_5_3*0.030	6.9	6.8

### 3.1.2 Non sampling errors

- **Under-coverage:**

The probability of under-coverage in the Agricultural Census and the SAPM is very low since there are not many new agricultural holdings. All important new farms are included in administrative registers and were consequently included into the list. All new farms from administrative sources were added just before the census started.

- **Over-coverage:**

- **AC2010:**

Going on the field we had 94,686 agricultural holdings in the list. After all corrections and imputations and applying the threshold, we came to the number 74,646 agricultural holdings. So 21% of agricultural holdings drawn in the list were not eligible. With the aid of questions from Chapter A in the questionnaire we also record the reason for non-eligibility. This helps us by updating the Statistical Register of Agricultural Holdings (exclusion of ineligible family farms from the frame). We estimate that after this census the frame for sample surveys is now fully updated, and over-coverage will no longer be such a problem.

- **SAPM:**

The share of units that were included in the frame and it turned out that they didn't belong to the target population was 13.6%.

- **Contact errors**

- **AC2010:**

All the family farms that were not contacted during the fieldwork were later called by phone. There were also some farms which we could not contact by phone either. The farmers that were not contacted were checked with administrative data, and for all of them who had any data in registers the data would be transmitted into the agricultural database (all other non-existing variables would be imputed).

There were altogether 955 (1% of the total frame) not contacted family farms. 358 of them were later on, on the basis of administrative data, considered as still operational family farms. Farms were not contacted due to the following reasons:

- There was nobody at the address given. Each interviewer had to visit a family farm from the list at least 5 times and leave the leaflet about the visit.
- Person (holder of the family farm) was not known at the address.
- The address of the agricultural holding was incomplete and the telephone numbers of these family farms did not exist.

- **SAPM:**

There were 0.4% of agricultural holdings not contacted regarding the SAPM.

- **Multiple listing errors**

Altogether 353 (0.37%) family farms were listed twice in the Agricultural Census 2010. They were treated as ineligible.

- **Measurement errors**

We are aware of measurement errors and we try to avoid this kind of errors by training interviewers, supervisors, by data checking and validation process. Where inconsistency or extreme values were discovered, the data were checked with possible administrative

data or there was also a “call-back” to the farmers, and the data were checked again. So extreme values of variables were checked and corrected if necessary.

- **Non-response errors**

- **Unit non-response in Agricultural Census 2010:**

If the response rate is considered as the share of response among all eligible family farms, then the response rate is 100%. All the farms that didn't give response (regardless of the reason) were filled with the data from administrative registers. Other variables that were not in the registers were later on imputed.

We have 74,646 agricultural holdings, and 3,509 of them (4.7%) can be considered as non-responding units, because the data for them were gained fully from administrative registers or imputed.

The main reasons for non-response were the following:

- holders consider themselves as “non-agricultural holding”,
- dissatisfaction with the current agricultural policy in Slovenia,
- problems with unsolved ownership (official procedures regarding succession can be very long),
- general refusal because of low economic conditions of living.

Agricultural enterprises: According to the National Programme of Statistical Surveys, reporting of data is obligatory for the enterprises (and voluntary for family farms). Due to low number of agricultural enterprises, all enterprises with non-response were contacted via telephone and asked for the cooperation.

- **Unit non-response in SAPM:**

Response rate is considered as the share of response among all eligible family farms in the SAPM. The non-response rate is 4.5%.

- **Item non-response:**

In the process of data validation, we considered national rules (described in 3.1.3) as well as validation rules for EUROFARM.

There were no specific units discovered which had not responded to a particular item. If such item non-response did appear, we corrected it with imputation methods.

The “large” item non-response can be considered by those agricultural holdings which had “unit non-response” (described above). The labour force section was fully imputed and other data was gathered from registers.

If item non-response did appear, then such items were corrected with imputation methods.

Validations and imputations were done by SAS.

### **3.1.3 Methods for handling missing or incorrect data items**

In the process of data validation, we considered national rules as well as validation rules for EUROFARM. Validations and imputations were done by SAS

After the CAPI census, we also used telephone interviewing of some agricultural holdings (about 0.6% of units) after fieldwork; the purpose was to check the correctness of entered data. In this way we checked the work done by fieldwork interviewers and the correctness of data entered into the computer application. After that checking we also phoned back around 60 units, which had very inconsistent data and no data were available in registers.

The descriptions of imputations were written (established) by methodologists in the Department for Agriculture, Forestry, Fishery and Hunting (SURS). They were based on national rules, validation rules in Eurofarm and different calculations.

The actual imputation was also made in SURS, in the Department for General Methodology and Standards.

#### **Imputation methods used:**

- **Method of logical imputations** (if some values were inconsistent with other values (we discovered there was clear a typing error), we imputed the values with the “Method of logical imputations”).
- **Hot deck method** (if we had only some data from administrative registers and no data for some variables, then we used the “Hot deck method” to get the data from similar farms (same UAA, same region, etc.)).
- **Structural hot deck method** (if we had data from administrative data only for totals, then we used the “Structural hot deck method” to get all the subcategories. The proportions were taken from similar farms (same UAA, same region, etc.)).
- **Method of cut average** (if the data were missing, there was a possibility to impute the mean value within a given variable (e.g. intra-regional or intra-county), whereby a certain percentage of the maximum and minimum values are removed from the average computation).

**Table 5:** Imputation rate for the main Eurofarm variables (values taken from administrative data are not counted as imputed values)

CODE	RATIO OF THE IMPUTED VALUE (in %)	COMMENT
A_3_1_1_HA	1.15	
A_3_1_2_HA	1.15	
A_3_3_1_Y_N_Z	19.08	Very difficult to assess for farmers - subjective estimation.
B_1_1_HA	0.05	
B_1_2_HA	0.03	
B_1_3_HA	0.01	
B_1_5_HA	0.00	
B_1_6_HA	0.63	
B_1_7_1_HA	0.69	
B_1_7_2_HA	0.21	
B_1_8_HA	0.32	
B_1_9_HA	0.01	
B_1_10_HA	0.12	
B_1_12_1_HA	0.01	
B_2_HA	2.14	
B_3_HA	2.02	
B_4_HA	1.61	
B_4_1_HA	1.61	
B_4_3_HA	0.00	
B_4_5_HA	0.07	

B_5_1_HA	0.00	
B_5_2_HA	0.01	
B_5_3_HA	5.49	
B_6_2_1_HA	0.16	
B_6_2_2_HA	0.38	
C_1_HEADS	0.02	
C_2_6_HEADS	0.83	Imputed is only the distribution of Cows. (dairy cows and other cows). The value of Cows - Total is from the administrative source.
C_2_99_HEADS	1.22	Imputed is only the distribution of Cows. (dairy cows and other cows). The value of Cows - Total is from the administrative source.
C_3_1_1_HEADS	0.01	
C_3_1_99_HEADS	0.01	
C_3_2_HEADS	0.00	
C_3_2_1_HEADS	0.01	
C_3_2_99_HEADS	0.01	
C_5_HEADS	0.01	
C_5_1_HEADS	0.01	
C_5_2_HEADS	0.00	
C_5_3_HEADS	0.00	
C_6_HEADS	0.05	
D_2_1_2_Y_N	0.03	
D_2_1_2_1_Y_N	0.01	
D_2_1_3_Y_N	0.08	
D_2_1_4_Y_N	0.02	

The data set relating to labour force and gainful activities on agricultural holdings is methodologically complex. We therefore believe that for an adequate level of data quality it is not enough to put direct questions prescribed by regulation into the questionnaire. For this reason we included more detailed and explicit questions into the questionnaire in order to obtain high-quality basic information on which further calculations of Eurofarm variables are based. It would therefore be incorrect for this set of variables to calculate imputed value of the shares of the Eurofarm variables in the same manner as for other variables which are collected directly from the data sources (primary or administrative).

Regardless of this fact, we have calculated the share of imputed values of data relating to labour force and gainful activities. The range of imputed shares is from 0% to 20%, depending on the single variable.

### 3.1.4 Control of the data

Hence this agricultural census was conducted as computer assisted personal interviewing (CAPI) in combination with administrative data sources; we had a unique chance to put the validation rules directly into the computer program. When data were gathered in the field, and something would be written wrong, the program would alert the interviewer to check the consistency again.



After field data collection we also used telephone interviewing of some agricultural holdings (about 0.6% of units); the purpose was to check the correctness of entered data. In this way we checked the work done by fieldwork interviewers and the correctness of data entered into the computer application.

For controlling of the data, we used numerous administrative data and the previous FSS (2007). The data were checked also with Eurostat's validation rules.

### 3.2 Evaluation of results

The results of the AC 2010 were checked and compared with all the available administrative data, previous surveys and other surveys conducted by SURS. A comparison was made with other sources at micro- and macro-data level. If data were not consistent, we examined them and, if needed, also corrected them.

The data from the AC 2010 were consistent with other available administrative sources; hence all summands from the AC 2010 were slightly higher than from other administrative sources. This is understandable because some agricultural holdings still do not apply or in any way report data to the administrative office.

**Table 6:** Number of surveyed units

	Survey	
	FSS	SAPM*
Initial list of units	94686	94686
Initial sample	NA	9863
Number of holdings with completed questionnaires (incl. eventual imputed questionnaires):	85469	8758
Number of units under the threshold applied	10823	711
Holdings with ceased activities:	20040 *	1343 *
- (If information is available) of which definitely ceased, i.e. the land is abandoned	2682	NA
- (If information is available) of which holdings with change of the manager	6527	NA
Unit non-response:	3509	429 **
- Refusals – not corrected	0	429 **
- Refusals – corrected (imputed)	3509	0
Number of records transferred to Eurostat	74646	8047
Common land units (A_2_1)	0	0

\* Holdings under the threshold and duplicate records are included.

\*\* Unit non-response is considered as: unit with no contact and unit non-response.

**Table 7:** Comments on major trends from FSS 2007 to FSS 2010

	<b>From FSS 2007</b>	<b>From FSS 2010</b>	<b>Difference in %</b>	<b>Comments</b>
Number of holdings;	75,340	74,646	-0.93	
UAA (A_3_1), ha;	488,774	482,653	-1.27	
Arable land, ha;	172,937	169,081	-2.28	
Permanent grassland (B_3), ha;	288,222	285,713	-0.88	
Permanent crops (B_4), ha;	25,843	26,796	3.56	
Wooded area (B_5_2), ha;	377,768	373,629	-1.11	
Unutilised Agricultural area (B_5_1), ha;	35,392	32,659	-8.37	
Fallow land (B_1_12_1 + B_1_12_2), ha;	1,887	349	-440.69	The data gathered are mostly from administrative data (IACS), which are checked by the supervisors. The area is also very small and a slight change has a big influence on the relative change.
LSU in LSU;	433,382	421,553	-2.81	
Cattle (C_2), head;	472,363	472,333	-0.01	
Family labour force - in persons;	197,495	205,239	3.77	
Family labour force - in AWU;	77,397	68,679	-12.69	We are noticing a decrease in AWU on family labour force since 2000 onwards. The number of working persons increased, but most of the persons were working less time. There was also a slight change in calculating AWU; till 2010 we had size classes of AWU (persons working >0-< 25% of 1 AWU, working >25-< 50% of 1 AWU, etc.). There were many persons who worked in the first size class, but a lot of the persons were working only few weeks per year, but they all got AWU 0.125. In 2010 we calculated the exact AWU.
Non family labour force - in persons;	247	352	29.83	There are not many people regularly employed, so the slight change in the number of people working makes a big relative change.
Non family labour force - in AWU	175	225	22.22	There are not many people regularly employed, so the slight change in the number of people working makes a big relative change.

### 3.3 Data Revision Policy

The Agricultural Census was conducted in June-July 2010. The final publishing of the data on the Agricultural Census was on 29 March 2012. Publishing of SAPM data was on 21 December 2012.

**Table 8:** Revision plan for the AC 2010:

Planned revision	Status of published data	Link to the publication	Planned date	Actual date
First Release (e-publication)	preliminary	<a href="http://www.stat.si/novica_prikazi.aspx?id=3818">http://www.stat.si/novica_prikazi.aspx?id=3818</a>	30.3.2011	30.3.2011
Detailed data in web database portal and e-commentary	final	<a href="http://pxweb.stat.si/pxweb/Database/Agriculture_2010/Agriculture_2010.asp">http://pxweb.stat.si/pxweb/Database/Agriculture_2010/Agriculture_2010.asp</a>	31.3.2012	Determined date: 29.3.2012
Data on SAPM	final	<a href="http://www.stat.si/eng/novica_prikazi.aspx?id=5227">http://www.stat.si/eng/novica_prikazi.aspx?id=5227</a>	18.12.2012	Determined date: 21.12.2012

## 4. ACCESSIBILITY AND PUNCTUALITY

### 4.1 Publications

Dissemination of AC2010 data is focused mainly on electronic data publications and available detailed data in the web-portal. All publications contain also meta-data which are available in the particular publication or are linked to the publication or to the data web-portal. We prepared also a special web page with detailed information about the AC2010, meta-data and with links to all published data concerning the AC2010. The link to this web page is:

<http://www.stat.si/PopisKmetijstva2010/>

**Table 9:** The dissemination plan for AC2010 and SAPM was:

Publication	Status of published data	Link to the publication	Planned date	Actual date
First Release (e-publication)	preliminary	<a href="http://www.stat.si/novica_prikazi.aspx?id=3448">http://www.stat.si/novica_prikazi.aspx?id=3448</a>	30.9.2010	30.9.2010
First Release (e-publication)	preliminary	<a href="http://www.stat.si/novica_prikazi.aspx?id=3818">http://www.stat.si/novica_prikazi.aspx?id=3818</a>	30.3.2011	30.3.2011
First Release (e-publication)	preliminary	<a href="http://www.stat.si/novica_prikazi.aspx?id=4241">http://www.stat.si/novica_prikazi.aspx?id=4241</a>	5.10.2011	5.10.2011
Detailed data in web database portal and e-commentary	final	<a href="http://pxweb.stat.si/pxweb/Database/Agriculture_2010/Agriculture_2010.asp">http://pxweb.stat.si/pxweb/Database/Agriculture_2010/Agriculture_2010.asp</a>	31.3.2012	Determined date: 29.3.2012
Brochure (printed and electronic publication)	final	<a href="http://www.stat.si/doc/pub/kmetija.pdf">http://www.stat.si/doc/pub/kmetija.pdf</a>	29.6.2012	Determined date: 29.6.2012
Data on SAPM	final	<a href="http://www.stat.si/eng/novica_prikazi.aspx?id=5227">http://www.stat.si/eng/novica_prikazi.aspx?id=5227</a>	18.12.2012	Determined date: 21.12.2012

The micro-data of the AC 2010 are available according to special conditions to researchers for research purposes (basic instructions concerning the access and the use of statistically protected micro-data are available on the web page: [http://www.stat.si/eng/drz\\_stat\\_mikro.asp](http://www.stat.si/eng/drz_stat_mikro.asp)).

## 4.2 Timeliness and Punctuality

*The reference month is June 2010.*

Time lag first results: 3 months.

Time lag final results AC2010: 21 months

Time lag final results SAPM: 30 months

**Table 10:** Timelines and Punctuality for AC2010 publications:

Publication	Status of published data	Planned date	Actual date	Punctuality, number of days
First Release (e-publication)	preliminary	30.9.2010	30.9.2010	0
First Release (e-publication)	preliminary	30.3.2011	30.3.2011	0
First Release (e-publication)	preliminary	5.10.2011 2011	5.10.2011	0
Detailed data in web database portal and e-commentary	final	31.3.2012	Determined date: 29.3.2012	-2
Brochure (printed and electronic publication)	final	29.6.2012	Determined date: 29.6.2012	0
Data on SAPM	final	18.12.2012	Determined date: 21.12.2012	+3

## 5. CONFIDENTIALITY AND SECURITY

In the Statistical Office of the Republic of Slovenia, dissemination of statistically protected micro-data and sensitive tables (from the point of view of statistical confidentiality) to researchers is organized through the function of the Data Protection Committee, the advisory body of the Director General, in compliance with the system of rules and procedures related to the dissemination of statistically protected micro-data to researchers, and the use of software for the statistical protection of data.

The confidentiality issue was determined by the methodologists on protection in SURS and methodologists for agricultural census.

Regarding protection of final output tables, two confidentiality rules were applied:

- "Threshold rule" - the individual cell in the table is protected if there are fewer than "t" reporting units.
- "Dominancy, (n,k) rule" - if the "n" reporting units contribute more than "k"% of the whole value, then the individual cell is protected.

Protection of micro-data for research purposes:

SURS decided that researchers could gain access to micro-data in "Eurofarm data-set" (without precise location of individual agricultural holding). There will also be a possibility to gain other data on individual holding that are not in the "Eurofarm data-set", but each request will be dealt with individually.

Researchers must sign the contract with SURS, where confidentiality rules are included. Results intended for the export are later on reviewed by SURS concerning the statistical confidentiality.

## ANNEXES

- Questionnaire(s)
  - [In the Slovenian language](#)
  - [In the Italian language](#)
  - [In the Hungarian language](#)