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Swiss Federal Statistical Office FSO

Farm Structure Survey 2010

Survey on agricultural production methods 2010

National Methodological Report

According to Art. 12 of Regulation (EC) No. 1166/2008 of the European Parliament and of the Council of 19 November 2008 published in the Official Journal of the European Union L 321, p.14 of 1 December 2008

State: **Switzerland**

CONTENTS

SUMMARY

Switzerland has a long tradition of conducting censuses in the area of agriculture. The first livestock survey was organised as early as 1866, and the first survey of primary sector enterprises followed in 1905. From the First World War onwards, the surveys were conducted more frequently and increased in scope. A survey of crops was introduced in 1917, and was conducted every year between 1939 and 1947.

From 1955, the agricultural census, conducted every five years, was the main source of information. A turning point came in 1966 with the introduction of farm surveys based on administrative sources from the agricultural policy information system.

In 2007, Switzerland participated for the first time in the farm structure survey in accordance with Council Regulation (EEC) no. 571/88. The survey was special in that it only concerned the general characteristics of the holding in question, and use of land and livestock - information which mainly came from administrative data. However, labour and other gainful activities were not surveyed. The 2010 survey on farm structure and production methods was the first survey in which Switzerland participated in full. This survey was special, however, in that information on labour and other gainful activities was not collected exhaustively, but through a representative sample.

The 2010 agricultural census consists of three parts:

1) Farm structure survey
2) Supplementary farm structure survey
3) Thematic survey

Preparatory work for the survey started in 2009 (drawing of sample) and the results were published in April 2012. During this time, a great deal of work went into ensuring the quality of the responses received.

The Swiss Federal Statistical Office was responsible for organising the survey in its entirety. The Federal Office for Agriculture and the cantonal offices for agriculture made a key contribution by making their administrative data sources available.

In the end, more than 56,000 farms were surveyed as part of the 2010 farm structure survey. Over 95% of the 17,000 farms contacted as part of the thematic survey responded to the questionnaire.

1. CONTACTS

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2. SURVEY METHODOLOGY

2.1 National legislation

The Swiss Federal Statistical Office (FSO) carried out the Farm Structure Survey 2010 (FSS2010) in accordance with the regulations of the European Union and national laws.

Regarding the topic "labour force", Switzerland did not use the data from the census (insufficient level of detail for regulation (EC) No 1166/2008), but instead the data from the sample survey 2010. Switzerland conducts an annual census for the main subjects such as farmland, livestock and labour force. These data are obtained from the direct payment system for farmers, which constitutes an administrative source.

The main national legal basis consists of the following laws:

- Federal Statistics Act (FStatA) of 9 October 1992
- Federal Act on Agriculture (Agriculture Act, AgricA) of 29 April 1998
- Federal Act on Data Protection of 19 June 1992 (FADP)
- Ordinance on Agricultural Terminology and Recognition of Types of Farming
- Ordinance on Information Systems in the Field of Agriculture of 23 October 2013
- Ordinance on the Evaluation and Sustainability of Agriculture of 7 December 1998

The national legislation deals with the scope, coverage, frequency, time reference and responsibility for the census, administrative and financial provisions, obligations of respondents with respect to the census, identification, protection and obligations of enumerators, rights of access to administrative data and confidentiality.

In accordance with the Swiss Federal Act on Data Protection, all individual data items on each person and each farm are confidential. Any person working with the data is bound to respect that confidentiality.

2.2 Characteristics and reference period

For national requirements, Switzerland collected additional characteristics on mechanisation and cowshed systems. Furthermore, additional information was collected on contractors.

National characteristics

National characteristics	Requested for	Requested from
Mechanisation Motorised vehicles Non-motorised machines Fixed installations Farm systems and installations, detailed level	Agricultural machinery Survey on release of ammonia and CO_2 emissions	Agricultural research Federal Office for the Environment
Contractors	Economic Accounts for Agriculture	NSI

Table 1: National focus

Non-existent, non-significant and not requested characteristics for FSS and SAPM

Explanatory notes:
NE = non-existent or close to zero
NS = not significant
NR = not requested (too high burden)

General characteristics

1.03.02.02	Total UAA of the holding under **conversion** to organic farming production	NR	around 100 holdings
1.03.02.03.09	Citrus plantations	NE	
1.03.02.03.10	Olive plantations	NE	
1.03.03.01	Household consumes more than 50% of the value of the final production of the holding	NS	

Land

2.01.01.02	Durum wheat	NE	
2.01.01.07	Rice	NE	
2.01.06.07	Linseed (oil flax)	NS	
2.01.09.02.02	Leguminous plants	NS	
2.01.12.01	Fallow land without any subsidies	NS	
2.04.01.01.02	Fruit of subtropical climate zones	NE	
2.04.01.03	Nuts	NS	< 10 ha
2.04.02	Citrus plantations	NE	
2.04.03	Olive plantations	NE	
2.04.03.01	Table olives	NE	
2.04.03.02	Olives for oil production	NE	
2.04.04.02	Other wines	NE	
2.04.04.03	Table grapes	NS	< 5 ha
2.04.04.04	Raisins	NE	
2.05.02.01	of which short rotation coppices	NE	
2.06.03.01	of which on set-aside area	NE	
2.06.04	Genetically modified crops	NE	

Machinery and equipment

4.02.01.01	Wind	NS	< 10
4.02.01.02	Biomass		
4.02.01.02.01	of which bio-methane	NS	
4.02.01.03	Solar		
4.02.01.04	Hydro-energy	NS	
4.02.01.99	Other types of renewable energy sources	NS	

Support for rural development

7.01.01	Use of advisory services	NE	Derogation
7.01.02	Modernisation of agricultural holdings	NE	Derogation
7.01.03	Adding value to agricultural and forestry products	NE	Derogation
7.01.04	Meeting standards based on municipal legislation	NE	Derogation
7.01.05	Participation of farmers in food quality schemes	NE	Derogation
7.01.06	Natura 2000 payments for agricultural area	NE	Derogation
7.01.07	Payments linked to the Water Framework Directive	NE	Derogation
7.01.08	Agri-environment payments	NE	Derogation
7.01.08.01	of which in the framework of organic farming	NE	Derogation
7.01.09	Animal welfare payments	NE	Derogation
7.01.10	Diversification into non-agricultural activities	NE	Derogation
7.01.11	Encouragement of tourism activities	NE	Derogation

SAPM

2.02.01	Share of arable area out of planned crop rotation	NS	
3.01.a	Hedges	NE	
3.01.b	Tree lines	NE	
3.01.c	Stonewalls	NE	
3.02.a	Hedges	NE	
3.02.b	Tree lines	NE	
3.02.c	Stonewalls	NE	
5.03.02	Battery cage (all types)	NE	
5.03.02.01	Battery cage with manure belt	NE	
5.03.02.02	Battery cage with deep pit	NE	
5.03.02.03	Battery cage with stilt house	NE	
7.01.03	Slurry	NE	
7.01.03.01	Slurry tank	NE	
7.01.03.02	Lagoon	NE	
7.02.03	Slurry	NE	
8.01.02.03	Rice	NE	
8.01.02.14	Citrus plantations	NE	
8.01.02.15	Olive plantations	NE	

Reference date/period of the characteristics

Census (reference date): 4 May 2010

- Land
- Livestock
- Labour force, number of staff by sex, nationality and employment level

Survey: (reference period)

- Calendar year 2010:
  - Management of the holding
  - Structure of labour force
  - Other gainful activity
  - Renewable energies
  - Irrigation
  - Farm manure
  - Machines
  - Pasture grazing
  - Housing systems

- November 2009-2010
  - Services provided by contractors
  - Land cover, tillage and grazing

Changes to definitions of characteristics

There were no notable changes to report in terms of characteristic definitions. Compared with 2007, the categories of bovine animals surveyed are now compatible with those required by the survey, in other words, sub-divisions by age and sex. The effect on historical series is minimal.

Version of the handbook for implementation of the FSS and SAPM

Version 7 of the handbook served as a reference.

Differences between national and EU concepts

There are two fundamental differences between the Swiss national concept and the European concept:

1- Data on the structure of the labour force and other gainful activities were not collected as part of the census, but rather in the representative sample of the SAPM (Survey of Agricultural Production Methods).

2- Common land, i.e. mountain pastures, are not surveyed (see 2.8.1)

2.3 Survey organisation

In Switzerland the survey is organised centrally by the Federal Statistical Office, which uses the administrative data and which organises the collection and processing of data collected directly from holdings.

Preparatory work:

Analysis of information needs
Drafting questionnaire on paper and in electronic format
Consulting with the relevant authorities
Training the hotline team
Designing IT applications
Raising awareness in the agricultural sector: publishing information in specialised press, briefing sessions for agricultural consultants.

Execution:

Sending and reception of questionnaires
Reminders by phone and in writing
Quality controls

Analysis and publication:
- Discussing figures with experts
- Interactive databases
- Press release
- Delivery of figures to EUROSTAT

Throughout the survey, the FSO received assistance from the federal statistical support group for the agricultural and food sectors, which is made up of representatives from the following:
- Research stakeholders
- Cantonal coordinators
- Federal Office for Agriculture
- Federal Office for the Environment
- Federal Food Safety and Veterinary Office

2.4 Calendar (overview of work progress)

The census is a joint effort of the Federal Office for Agriculture (FOAG) and the Federal Statistical Office (FSO). Several phases can be distinguished.

2010	**April**	Preparatory work
		Setting up IT infrastructure
		Pre-addressing questionnaires for supplementary survey
		Sending out questionnaires for supplementary survey
	May	Receiving questionnaires back for supplementary survey
	June	Processing the supplementary survey
	July	Preparing the supplementary survey
		Developing sampling method
	August	Drawing sample based on the farm register
	Sept	Printing and pre-addressing the questionnaires (SAPM)
	Oct	Briefing the specialised press Sending out questionnaires
	Nov - Feb	Reminders by phone Processing data
2011	**March**	Checking the quality of data received
	May	Initial extrapolations
	June	Publication of first results from the supplementary survey
	July	Extrapolations
	August	Data quality report
	Oct	Publication of results from the supplementary survey
	Dec	First provisional delivery to EUROSTAT
2012	**March**	Second provisional delivery to EUROSTAT

Delay in carrying out tasks

The 4,000 or so holdings that provided incomplete answers to the questionnaire had to be contacted by our hotline by 8 p.m. This considerably slowed down the processing of data but also allowed us to achieve an excellent return rate of 94%.

2.5 Population and frame

Definition of holding in Switzerland
Holding refers to an agricultural enterprise that:

- is dedicated to growing crops or keeping livestock, or both
- consists of one or several production units
- is legally, economically, organisationally and financially independent
- is independent of other holdings
- has its own operating income
- is operated all year round

It should also reach or exceed at least a certain size according to the thresholds defined in the table below

Criteria		Threshold
Utilised agricultural area (UAA)	Utilised arable land, kitchen gardens, permanent grassland or permanent crops	1 ha
Permanent crops	Orchards, viticulture, vegetables, aromatic, medicinal and culinary plants, tobacco, berries, nurseries, hops, other	0.3 ha
Growing under glass, (with accessible protective cover)	Greenhouses	0.1 ha
Pigs	Breeding sow	8 animals
	Fattening pig	80 animals
Poultry	all	300 animals

The statistical definition of agricultural holding in Switzerland complies with Regulation no. 1166/2008. The Swiss census covers all fields defined by the European regulations.

The agricultural census consists of three different surveys:

1) The farm structure survey: which is based primarily on annual administrative data:

- a) Under the terms of the Ordinance on direct payments, the approximately 60,000 agricultural holdings provide their cantonal administration with information on the area of their land, numbers of livestock (excluding bovine animals) and labour force.
- b) The numbers for bovine animals are extracted from the Swiss Animal Tracing Database (BDTA), which registers all births, movements and slaughtering of bovine animals.

All this information is fed into the Agricultural Policy Information System (SIPA), which is managed by the Federal Office for Agriculture. An extract is provided to the Federal Statistical Office so that the results on labour force, number of livestock and land areas can be published.

2) Supplementary farm structure survey: Every 3 years, the FSO sends out an ad hoc questionnaire to around 1,000 holdings not registered in the SIPA to supplement the farm structure survey.

3) Thematic survey: which aims to cover national and international information requirements that are not included in the administrative data, particularly the holding's other gainful activities, the structure of the labour force and the characteristics related to agricultural production methods. This survey is conducted by means of a representative sample of around 17,000 holdings.

2.6 Survey design

Domains	No. of holdings	Reference day /period	Sources	Results	Type
Farm structure survey	58,000	4 May10	Administrative data	July 11	Census
Supplementary farm structure survey	1,000	4 May10	Questionnaires		
Thematic survey	16,000	2010		Nov 11	Sample Survey

2.7 Sampling, data collection and data entry

2.7.1 Drawing the sample for SAPM and OGA

Population
The population comprises all agricultural holdings in Switzerland that meet the FSO's criteria. It is based on the farm structure data from the 2009 farm structure survey and comprises 59,634 holdings. For every holding there is a large amount of information which can be used to develop the sampling plan.

Precise objectives
The aim is to publish the results at NUTS3 level. The sampling plan should therefore meet the following criterion: for important variables, estimates at level NUTS3 should have a maximum coefficient of variation of 5%.
Many important survey variables have a strong correlation with

- agricultural area (size categories of agricultural area),
- the number of bovine animals and/or
- the number of pigs in the holding.

These three dimensions were surveyed in full in the 2009 farm structure survey and can therefore be used to develop the sampling plan. The idea is to develop a plan that allows the agricultural area, total number of bovine animals and total number of pigs to be estimated as efficiently as possible for each canton (NUTS3). The assumption is that it will be possible to also make sufficiently accurate estimations for the majority of the remaining survey variables.

Stratification
The precision target was defined at NUTS3 level. The 26 cantons (NUTS3) therefore make up the primary layers. The agricultural area was used as an additional variable. For every combination canton x size categories of agricultural area, limits were set for the number of pigs and the number of bovine animals, above which a farm is considered large in terms of the livestock in question.

Sample size and other

- The sample size was elaborated based on Neyman Allocation and a precision target of CV=5% on the NUTS3 level for some auxiliary variables available in the sampling frame (Census 2009) and response scenarios.
- The units were chosen by stratified simple random sampling
- Sample selection was performed by SAS (proc surveyselect).
- Sampling design and estimation method: Stratified simple random sampling ([i])

NUTS regions with **more** than 10,000 holdings: crop characteristics

	CH02	CH05
Number of holdings in the NUTS2 region	18,828.0	12,586.0
UAA, ha of the associated NUTS2 region	369,650.4	216,816.4
Area of cereals in ha of the NUTS2 region	54,620.7	16,381.9
% Cereals in the UAA of the NUTS2 region	14.8	7.6
Area of potatoes and sugar beet in ha of the NUTS2 region	11,392.2	4,550.4
% potatoes and sugar beet in the UAA of the NUTS2 region	3.1	2.1
Area of oilseed crops in ha of the NUTS2 region	6,490.6	2,961.0
% oilseed crops in the UAA of the NUTS2 region	1.8	1.4
Area of permanent outdoor crops in ha of the NUTS2 region	1,820.0	3,956.2
% permanent outdoor crops in the UAA of the NUTS2 region	0.5	1.8
Area of fresh vegetables, melons, strawberries, flowers of the NUTS2 region	3,061.8	2,074.6
% fresh vegetables, melons, strawberries, flowers of the NUTS2 region	0.8	1.0
Area of temporary grass and permanent grassland in ha of the NUTS2 region	271,587.0	178,985.6
% temporary grass and permanent grassland in the UAA of the NUTS2 region	73.5	82.6

NUTS regions with more than 10,000 holdings: livestock characteristics

	CH02	CH05
Number of bovine animals in the NUTS2 region, in LSU	440,141.2	265,397.3
% of the LSU in the NUTS2 region	74.4	61.6
% of national share of bovine animals in LSU	25.5	15.4
Number of sheep and goats in the NUTS2 region, in LSU	11,505.3	15,796.7
% of the LSU in the NUTS2 region	2.0	3.7
% of national share of sheep and goats in LSU	0.7	0.9
Number of pigs in the NUTS2 region, in LSU	110,041.2	126,216.1
% of the LSU in the NUTS2 region	18.6	29.3
% of national share of pigs in LSU	6.4	7.3
Number of poultry in the NUTS2 region, in LSU	29,723.1	23,530.0
% of the LSU in the NUTS2 region	5.0	5.5
% of national share of poultry and goats in LSU	1.7	1.4

NUTS2 regions with **fewer than 10,000 holdings**: crop characteristics

	CH01	CH03	CH04	CH06	CH07
Number of holdings in the NUTS2 region	8,489	4,747	3,961	9,290	1,164
Associated NUTS1 region	CH	CH	CH	CH	CH
Number of holdings of the associated NUTS1 region	59,065	59,065	59,065	59,065	59,065
UAA, ha of the associated NUTS1 region	1,047,802	1,047,802	1,047,802	1,047,802	1,047,802
Area of cereals in ha in the associated NUTS1 region with at least 1000 holdings	151,513	151,513	151,513	151,513	151,513
% Cereals in the UAA of the associated NUTS1 region with at least 1000 holdings	14	14	14	14	14
Area of potatoes and sugar beet in ha in the associated NUTS1 region with at least 1000 holdings	28,716	28,716	28,716	28,716	28,716
% potatoes and sugar beet in the UAA of the associated NUTS1 region with at least 1000 holdings	2.7	2.7	2.7	2.7	2.7
Area of oilseed crops in ha in the associated NUTS1 region with at least 1000 holdings	26,487	26,487	26,487	26,487	26,487
% oilseed crops in the UAA of the associated NUTS1 region with at least 1000 holdings	2.5	2.5	2.5	2.5	2.5
Area of permanent outdoor crops in ha in the associated NUTS1 region with at least 1000 holdings	22,628	22,628	22,628	22,628	22,628
% permanent outdoor crops in the UAA of the associated NUTS1 region with at least 1000 holdings	2.2	2.2	2.2	2.2	2.2
Area of fresh vegetables, melons, strawberries, flowers in ha in the NUTS2 region	2,067.6	1,949.5	1,701.5	271.8	212.3
% fresh vegetables, melons, strawberries, flowers in the UAA of the NUTS2 region	1.3	2.4	2.3	0.2	1.5
Area of temporary grass and permanent grassland in ha in the associated NUTS1 region with at least 1000 holdings	751,055	751,055	751,055	751,055	751,055
% temporary grass and permanent grassland in the UAA of the associated NUTS1 region with at least 1000 holdings	72	72	72	72	72

NUTS2 regions with **fewer than 10,000 holdings**: Livestock characteristics

	CH01	CH03	CH04	CH06	CH07
Number of bovine animals in the associated NUTS1 region with at least 1000 holdings, in LSU	1,163,972	1,163,972	1,163,972	1,163,972	1,163,972
% of the LSU in the associated NUTS1 region with at least 1000 holdings	67	67	67	67	67
% of national share of bovine animals in LSU	100	100	100	100	100
Number of sheep and goats in the associated NUTS1 region with at least 1000 holdings, in LSU	52,107	52,107	52,107	52,107	52,107
% of the LSU in the associated NUTS1 region with at least 1000 holdings	3	3	3	3	3
% of national share of sheep and goats in LSU	100	100	100	100	100
Number of pigs in the associated NUTS1 region with at least 1000 holdings, in LSU	420,892	420,892	420,892	420,892	420,892
% of the LSU in the associated NUTS1 region with at least 1000 holdings	24	24	24	24	24
% of national share of pigs in LSU	100	100	100	100	100
Number of poultry in the associated NUTS1 region with at least 1000 holdings, in LSU	88,761	88,761	88,761	88,761	88,761
% of the LSU in the associated NUTS1 region with at least 1000 holdings	5	5	5	5	5
% of national share of poultry in LSU	100	100	100	100	100

2.7.2 Data collection and data entry

In operational terms, the production and logistics involved in the supplementary survey (OGA+SAPM) represented a significant part of the project:

- Setting up (recruitment, training and management) of a production team made up of five to seven specialist employees to provide information, process and check the data and carry out reminders by phone
- Managing more than 17,000 letters and written reminders and 4,000 reminders by phone spread over nine months.

The paper questionnaires sent back to the FSO were passed on to the Federal Office of Information Technology, Systems and Telecommunication (FOITT) to be scanned. Optical data entry involves digitising the data and creating an electronic copy of the questionnaires in image form.

In addition to the traditional paper questionnaire, farmers were also offered an electronic application (eSurvey) allowing them to complete the questionnaire online. With 18% of respondents completing the questionnaire electronically, this initial experience can be considered a resounding success.

All the data collected were imported into a database to which the project production team had access so they could view the content of each questionnaire and contact the holdings concerned to request additional information if necessary in the event of inconsistency, error or missing information.

2.7.3 Use of administrative data sources

As a reminder, the agricultural census comprises three different surveys:

1) Farm structure survey
2) Supplementary farm structure survey
3) Thematic survey

Only the first survey on farm structures, which concerns the area and livestock of 98% of holdings, is based on administrative data sources from the Agricultural Policy Information System (SIPA).
The SIPA is a central monitoring and evaluation instrument, as well as a decision-making tool in the evolution of agricultural policy. It also acts as a nerve centre for the coordinated and harmonised use of administrative data related to agricultural holdings.

The main components of the SIPA are the following:

- Holding register, containing data relating to all persons and types of holding defined in the ordinances on agricultural terminology, epizootics and primary production;
- Data relating to holding structure (area, livestock, labour) taken from the survey conducted on the reference date related to agricultural holdings;
- Data related to direct payments, contributions for cultivating arable crops, summer alp grazing contributions and contributions to ecological quality;
- Dairy data referring to the quantity produced by the holding.
- Swiss Animal Tracing Database (BDTA) which guarantees the traceability of Swiss bovine animals. Since 2000, the BDTA, which is commissioned by the Federal Office for Agriculture, has been registering all births, movements and slaughtering of bovine animals, and thanks to smooth traceability, it allows the veterinary authorities to define rapid and appropriate measures in the event of epizootics. The BDTA helps identify all cloven-hoofed animals (bovine animals, pigs, sheep, goats and game kept in enclosures) by providing every animal with an ear tag containing a unique number. In addition, all horses kept in Switzerland have been recorded since 1 January 2011.

Access to the data is governed by Art. 15 of the Ordinance on Agricultural Data. Federal and cantonal administrative services and institutes of higher education may use the data to the extent permitted by law.

The data are matched with holdings using a unique cantonal identification number.

These data are very detailed and the units recorded are below all the thresholds for the criteria which define a holding in accordance with Regulation 1166/2008.

The limitation of these administrative data lies in the fact that certain holdings (approximately 2% of the total) are not included. These are therefore taken into account as part of the second component of the agricultural census, namely the **supplementary** farm structure survey.

2.8 Specific topics

2.8.1 Common land

Lack of reliable information on “common land” areas
Switzerland does not have any reliable information about “common land” areas with regard to agriculture. No data were collected from the relevant holdings on this topic as the effort and burden involved is much too high.

In Switzerland “common land” mainly refers to summer grazing pastures. These areas are primarily located in mountain areas (Alps), 95% of which are located at an altitude of 1,000 to 2,500 metres above sea level. According to the Land Use Statistics, the summer grazing pastures cover 481,000 ha (2010), which in size terms is around 40% of the UAA or 58% of Switzerland’s green space. Animals are only put out to graze on these pastures (summer grazing) during the summer months (June – September). The study took into account the number of livestock that are put out to graze every year. Information is also available on the maximum number of livestock that can be put out to graze in the summer (to avoid placing too much strain on the summer grazing pastures); this figure is referred to as cattle grazing rights (“Kuhrechte”).

According to the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), around half of small-scale agricultural holdings with livestock put them out to graze on alpine pastures. According to the Swiss Alpine Economic Association (SAV), among the approximately 7,300 summer grazing farms, 54% are privately owned, 13% are owned under private law and 33% are owned by legal entities under public law.

For the reasons mentioned above, Switzerland does not include “common land” in the UAA. It was not included in the 2010 FSS either.

2.8.2 Geographical reference of the holding

The agricultural holdings in Switzerland are geo-referenced using metric coordinates. These were converted in the ETRS89 system.

2.8.3 Volume of water used for irrigation

The questionnaire featured questions on volume of water used. Farmers had to estimate the volume; hardly anyone entered the actual volume of water. It is difficult to gauge the quality of this data. Values that appeared unfeasible were corrected during the quality controls with a factor of 120 m^3 per hectare.

2.8.4 Other issues

No other issues for Switzerland.

2.9 Response-burden policy

In order to reduce administrative burden, it has become government policy that the same data may only be collected once (‘collect once – use often’). This policy is also applied in the census, by combining data collection for statistical and administrative purposes. The questionnaire combines data collection for the agricultural census/FSS, as well as requests for subsidies.

Measures taken to increase response rates:

- 3 x written reminders
- Telephone reminders
- Prioritisation of missing holdings in strata with low response rates:
  - Target: achieving net sample sizes of different strata calculated during the sampling design stage (Neyman Allocation) to obtain the desired CV-level. For take-all strata (small NUTS3/large units with regard to number of pigs or number of bovines) this is equivalent to a 100% response rate
- Contacting respondents who only partly completed the questionnaires
- Training staff in handling difficult respondents
- Hotline from 7 a.m.to 8 p.m. in three languages (German, French and Italian)
- Internet site

3. ACCURACY AND RELIABILITY OF THE DATA COLLECTED

3.1 Data processing, analysis and estimation

3.1.1 Estimation and sampling errors – for SAPM and/or OGA

- Assessment of the potential for bias:
  As the data collection process achieved rather high response rates, the risk of an important bias coming from non-response can be considered as moderate. The risk of bias is further reduced by using powerful auxiliary information at the estimation stage. While the population of interest refers to 2010, the frame reflects the population of 2009, which leads to some coverage errors. Nevertheless, the calibration, performed by NUTS3, based on seven auxiliary variables (number of units, OAF, GVE_RIND, GVE_SCHW, GFL, LN, BSS) and the corresponding population totals from *the 2010 census*, should (to a wide extent) correct coverage errors.

- Methods for deriving the extrapolation factor:
  The extrapolation weight is calculated in three steps:
  - Sampling weight
  - Correction factor for non-response by strata
  - Calibration based on auxiliary information from the 2010 census (see point *assessment of bias*).

- Sampling errors: Sampling error (including unit-nonresponse) was measured by means of coefficient of variation (CV=*standard deviation of estimate*/*estimate*) and confidence intervals.

- Information on methods and formulas to calculate RSE
  The coefficient of variation was calculated by: *estimated standard deviation of estimator*/*estimate*. As estimation was performed using calibration (CALMAR) this also affects the standard deviation of the estimator. The standard deviation of the estimator was therefore estimated by applying the variance formula for Stratified Simple Random Sampling of the Horvitz Thompson estimator to the g-weighted residuals obtained by a weighted linear regression (independent variables: auxiliary variables used for calibration; dependent variable: target variable). This method is explained in Särndal, Swensson, Wretman (1992), page 235.

- RSE for the relevant characteristic included in p. 2.7.1
  The relevant characteristics was measured by a census

3.1.2 Response and non-response

Sample	Holdings	
	Number	in %
Holdings in the sample	16,000	100
Holdings with a response	15,000	94
Holdings with no response	1,000	6
Number of holdings with a response and with one or more errors	8,000	50
-of which holdings where errors could be corrected following enquiry by phone	4,000	25
-of which holdings where errors could be corrected using statistical methods	4,000	25

3.1.3 Methods for handling missing or incorrect data items

General

- For missing or incorrect data items, 4,000 phone calls were made to the relevant holdings, which equates to around 20% of the sample.

o Re-weighting:
Unit-nonresponse was handled by re-weighting. Correction factors for non-response were calculated by strata (response probability within strata assumed to be homogeneous).

o Use of other data sources:
The annual Farm Structure Survey in Switzerland (Census 2010) served as an important basis for the corrections. All farmland, livestock and employees are included – not always in the form required by the sample, but the information could be extrapolated.

- All work for handling missing or incorrect data items was carried out by the same team, which was responsible for drawing the sample (project manager and 3 employees). SAS was used for all programming. Additional staff were recruited for the 4,000 telephone calls.

Data cleaning process

1- Before importation in the database

The online questionnaire (eSurvey) features rough tests, such as maximum values and control totals. The paper questionnaires were checked visually before being scanned in order to correct illegible text and figures.

2- After importation

For the quality controls, the focus was on direct contact with farmers. However, to avoid a high response burden, only farmers who had missed out a whole section of the questionnaire were reminded by phone and asked to provide the missing information. This was also an opportunity to ask farmers to confirm or correct data that were available but dubious on the basis of logical, historical or agronomic tests.

The missing data for other holdings were calculated, estimated or obtained from other sources.

Types of control

	Controls	Reference	Method
Type A	Asking farmers to confirm extreme values	Swiss maximum and mean values.	'Warning' for farmer
Type B	Correction of information not legible for scanning		
Type C	Completing missing sections and correcting erroneous data detected by the quality tests	Asking farmers to provide information	Reminders by phone to farmers (4,000 calls)
Type D	Completing and correcting data	- Historic data - Comparison with available data on agricultural holdings in other registries - Agronomic norms - Coherence between data collected	Imputation

3.1.4 Data controls

Data cleansing process

3- Before importation in the database.

The online questionnaire features rough tests, such as maximum values and control totals. The paper questionnaires were checked visually before being scanned in order to correct illegible text and figures.

4- After importation

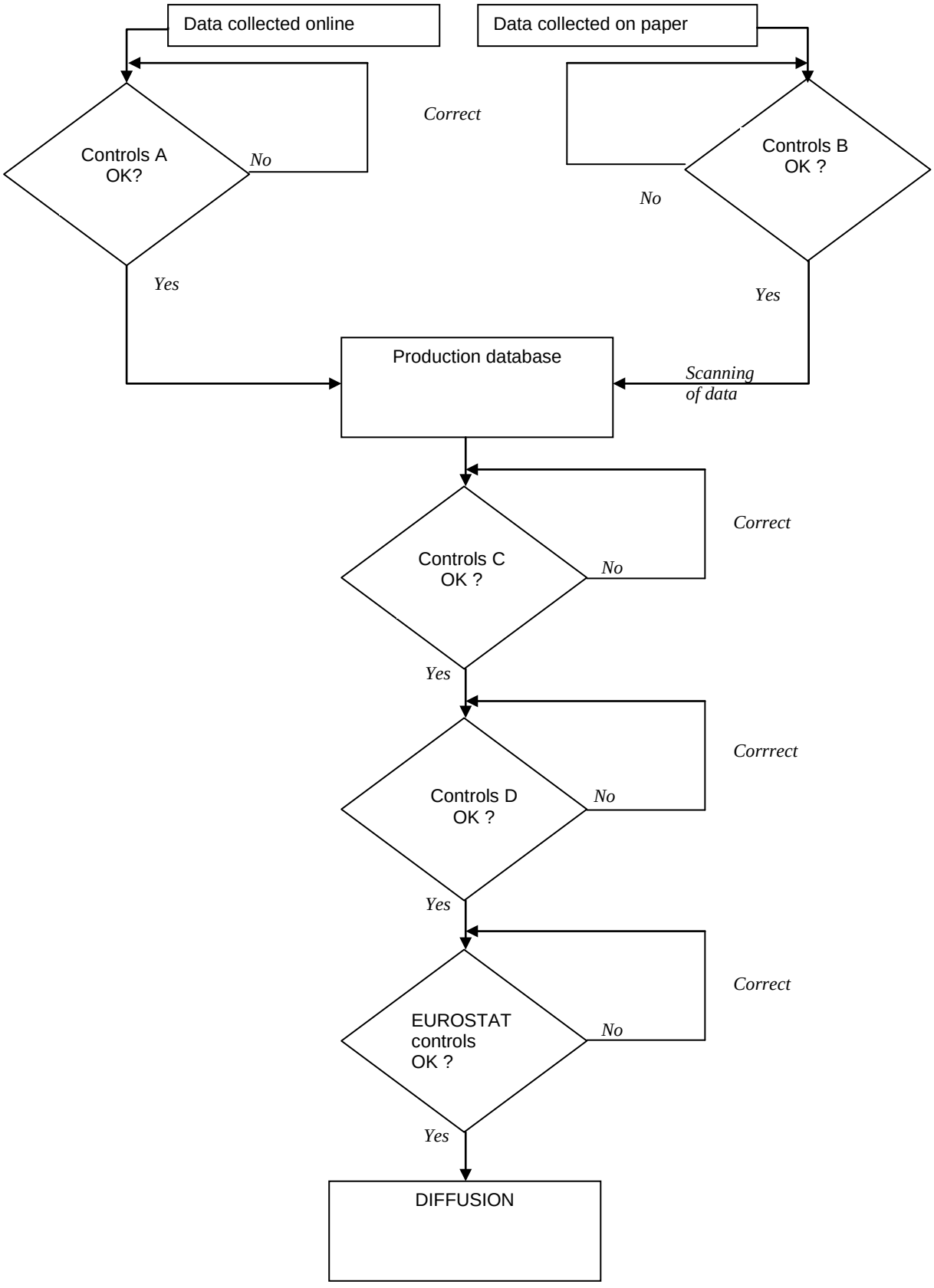
For the quality controls, the focus was on direct contact with farmers. However, to avoid a high response burden, only farmers who had missed out a whole section of the questionnaire were reminded by phone and asked to provide the missing information. This was also an opportunity to ask farmers to confirm or correct data that were available but dubious on the basis of logical, historical or agronomic tests.

The missing data for other holdings were calculated, estimated or obtained from other sources.

Types of control

	Control	Reference	Method
Type A	Asking farmers to confirm extreme values	Swiss maximum and mean values.	'Warning' for farmer
Type B	Correction of information not legible for scanning		
Type C	Completing missing sections and correcting erroneous data detected by the quality tests	Asking farmers to provide information	Reminders by phone to farmers (4,000 calls)
Type D	Completing and correcting data (Annex 2)	- Historic data - Comparison with available data on agricultural holdings in other registries - Agronomic norms - Coherence between data collected	Imputation

Overview of survey data quality controls



3.2 Evaluation of results

The FSO presented the survey results to a number of external bodies, in particular the federal statistical support group for the agricultural and food sectors, which is made up of representatives from the following:

- Research stakeholders
- Cantonal coordinators
- Federal Office for Agriculture
- Federal Office for the Environment
- Federal Food Safety and Veterinary Office

Internally the FSO also presented the results to the coordinators of the Labour Force Survey and the coordinators of the Road Vehicle Statistics Survey.

No aberrant trends were observed.

Comments on major trends from FSS 2007 to FSS 2010.

	From FSS 2007	From FSS 2010	Difference in %	Comments
Number of holdings;	61,764	59,065	-4%	
UAA (A_3_1), ha;	1,056,695	1,047,802	-1%	
Arable land, ha;	406,677	404,549	-1%	
Permanent grassland (B_3), ha;	626,844	619,655	-1%	
Permanent crops (B_4), ha;	22,847	22,628	-1%	
Wooded area (B_5_2), ha;	111,057	114,817	3%	
Unutilised Agricultural area (B_5_1), ha;	3,353	-		Change in statistical method
Fallow land (B_1_12_1 + B_1_12_2), ha;	3,033	2,385	-21%	
LSU in LSU;	1,769,781	1,793,750	1%	
Cattle (C_2), head;	1,571,764	1,591,746	1%	
Family labour force - in persons;	130,881	121,900	-7%	
Family labour force - in AWU;	87,550	69,849	-20%	Change in calculation of UTA
Non family labour force - in persons;	42,110	44,474	6%	
Non family labour force - in AWU	29,153	23,647	-19%	Change in calculation of UTA

3.3 Data Revision Policy

No data revision policy was specified!

4. ACCESSIBILITY AND PUNCTUALITY

4.1 Publications

The results are available on our website: http://www.bfs.admin.ch/bfs/portal/fr/index/themen/07/03/blank/data/01.html

Source	Subject	Press releases Click	Statistical encyclopaedia Click	Interactive database Click	Requests on demand	Microdata	Thematic analyses Click
STRUCTURE SURVEY **Comprehensive data, information available at communal level**	Farmland	X	X	X	X	X	X
	Livestock	X	X	X	X	X	**X**
	Labour	X	X	X	X	X	X
	Holding	X	X	X	X	X	X
THEMATIC SURVEY **Extrapolation results** at the level of - Canton - Zone - Size class	Conditions of ownership	X	X		X		X
	Training of farmer and his/her spouse		X		X		X
	Distribution of working time among persons employed in the holding	X	X		X		X
	Diversification within the holding	X	X		X		X
	Farmer's family		X		X		X
	Services provided by contractors		X		X		X
	Mechanisation		X		X		X
	Equipment	X	X		X		X
	Cowshed systems and installations		X		X		X
	Grazing pasture land on holding		X		X		X
	Manure		X		X		X

4.2 Timeliness and punctuality

The results were published in April 2012, four months later than planned. For the first time, Switzerland carried out this survey, so there is no timeliness available.

5. CONFIDENTIALITY AND SECURITY

Under the terms of the Federal Act on Data Protection of 19 June1992 (FADP), anyone working with the data is subject to professional confidentiality.

REFERENCES

- Methodological notes available
  Publication of methodological report (German) 2012
- Main scientific references
  Carl-Erik Särndal, Bengt Swensson, Jan Wretman (1992), Model Assisted Survey Sampling, 1992 Springer-Verlag New York.

ANNEXES

Questionnaire(s) German

Fragebogen 2010 D.pdf

Questionnaire(s) French

Questionnaires 2010 F.pdf

Questionnaire(s) English

Adobe Acrobat Document

(i) Probability sampling assures a known positive probability of selection for each element in the population. In practice, it may be that this condition is not fulfilled for certain stages of the sampling design. In this case, the sample is indicated as a *not completely probabilistic sample*.