Farm Structure Survey 2010
Survey on agricultural production methods 2010

National Methodological Report (NMR)

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

Member State: LUXEMBOURG

FARM STRUCTURE SURVEY 2010
SURVEY ON AGRICULTURAL PRODUCTION METHODS 2010
NATIONAL METHODOLOGICAL REPORT

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SUMMARY

A yearly Farm Structure Survey is organised in Luxembourg since 1953. This survey is used to meet the requirements of the European FSS. Until 2009 included, this survey was organised as a census with an indirect collection mode (i.e. via municipalities)

For the reference year 2010, Luxembourg organised a direct data collection to satisfy the requirements of the 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 (hereafter referred to as "the Regulation").

The institutes involved in the data collection were:
- STATEC, the National Statistics Institute, as a coordinator to ensure the achievement of the data collection and in charge of the data collection ;
- The Service d'économie rurale (hereafter referred to as "SER"), a department of the Ministry who has agriculture in its mission statement, as the data provider for administrative sources and the national producer of economic accounts of agriculture.

SER managed the data collection of surfaces and animals via the application forms for subsidies, which were sent to all agricultural holdings, and organic farming and rural development via dedicated administrative registers. These data were made available to STATEC as an administrative source to minimise the statistical burden on agricultural holdings. Consequently, STATEC covered the characteristics related to machinery, labour force, other gainful activities and agricultural production methods through the survey.

At the beginning of April 2010, the agricultural holders received the STATEC questionnaire (reference date May 15, 2010) together with the SER application forms for subsidies (reference date April 1, 2010). The questionnaires were sent back by the agricultural holdings to SER during the period covering May until June 2010 and then transferred as a single package to STATEC at the end of June 2010.

Questionnaires data entry was performed by STATEC staff as from July onwards using the Blaise software tool for managing survey forms. In autumn 2010, the administrative sources obtained through SER were combined with the survey data using an official common identifier to form a combined micro data set. Micro data validation was performed at STATEC to check the accuracy and plausibility of both the survey and the administrative data. Analysis was also performed at national aggregate level with prior year data. Moreover, SER assisted the data validation by providing feedback on the aggregated data at national level for the purpose of the production of economic accounts of agriculture.

While data imputation was achieved at February 2011, the data validation process was only completed by the end of the year 2011. This was due to several reasons:
- in order to satisfy all the requirements of the Regulation, STATEC and SER had to completely revise their system of variables. As a result, the complete data production and validation processes had to be rewritten while ensuring comparability with past data ;
- a contingency involving a key person significantly delayed the data validation process ;

- the farm structure survey for reference year 2011 had to be organised at the usual yearly timeline to satisfy the needs of the economic accounts of agriculture produced yearly by SER. Therefore, the resources could not all be dedicated to the completion of the 2010 data collection.

The final target population comprised 2 201 agricultural holdings for the reference year 2010 defined in conformity with the Regulation and was based on the database of agricultural holdings managed by SER.

Item non-response was addressed using cold-deck imputation, hot-deck imputation and, to a minor extent, ratio imputation as well as deductive imputation.

The unit non-response rate was 2.73%, which is very low. Had it been for reasons of bias, unit non-response would not have needed to be accounted for. However, given that the Regulation requires a completely imputed micro data set in case of census data, i.e. including unit non-response, the imputation procedures had to be extended to impute the characteristics covered by the STATEC survey to entire agricultural holdings. This process was performed in January and February 2012. The impact of this imputation was low, except for the work force characteristics.

Meanwhile, the transmission format, i.e. the passage from national variables to the characteristics defined in the Regulation had to be rewritten in March 2012.

On March 30, 2012, the first batch of micro data established in conformity with the farm structure characteristics (including rural development) defined in the Regulation was transmitted to Eurostat via the Edamis platform. A revised micro data set was transmitted to Eurostat at the end of April 2012.

1. CONTACTS

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2. SURVEY METHODOLOGY

2.1 National legislation

At a national level, the farm structure survey (hereafter referred to as "FSS") and the survey on agricultural production methods (hereafter referred to as "SAPM") were based on the modified Law of July 9, 1962 organising the STATEC. The law allows STATEC to carry through and/or coordinate public interest surveys for exclusively statistical purposes with the constraints of mandatory response for the respondents and statistical confidentiality for the NSI.

For the annual agricultural census as of May 15, the Law was complemented by a national executing regulation ("Règlement grand-ducal") as of February 18, 2003, which specifies the census and coverage, the frequency (annual), the time reference (May 15), the characteristics to be covered, the role of each administration as well as the technical organisation of the census. According to this framework, the data collection of the annual census was supervised and coordinated by STATEC, the actual data collection being carried through by the municipalities. The annual census was organised within this framework until the reference year 2009 included.

As from reference year 2010, in order to minimise the burden of the survey on agricultural holdings and municipalities and to ensure the best possible quality of the FSS and SAPM variables, the survey was still organised as a census but by directly contacting the agricultural holdings, using a list of agricultural holdings extracted from the database managed by SER. After a test period covering the period 2007 to 2009, the list was deemed sufficient to satisfy all the needs of the data collection. Administrative sources now cover most of the FSS variables, except for labour force.

SER is in charge of the data collection of surfaces, animals, organic farming and rural development. Surface and animal figures proceed from the application forms for subsidies, which were sent to all agricultural holdings. Data on organic farming exist in the Organic farming register and data on rural development are provided by the Ministry of Agriculture MAFEA database (payments supporting rural development). These data were merged and made available to STATEC as an administrative source to minimise the statistical burden on agricultural holdings. Consequently, STATEC is in charge of collecting the characteristics related to machinery, labour force, other gainful activities and agricultural production methods through the dedicated census.

The necessary funding is provided for by the articles of the national budget, for each of the two administrations separately.

It should be noted that as from the reference year 2012 onwards, the data collection is no longer named annual agricultural census but farm structure survey (despite the collection mode being a an exhaustive one). The change in name came along with the Law of July 10, 2011 organising STATEC, which has repealed the old national framework. Given that the data collection no longer involves the municipalities since reference year 2010, a dedicated national framework is no longer required.

2.2 Characteristics and reference period

There were no changes of definition of characteristics, reference time and measurement affecting the comparability with previous survey data. Only the thresholds for farms changed since 2007 without involving comparability problems (see 2.5).

Consequently, the characteristics that have been surveyed and their definitions are in general those of the Regulation N° 1166/2008 of the European Parliament and the Council of the 19th November 2008, as they are specified in the Handbook implementing the definitions of the FSS and of the SAPM (rev.9), without distinction between the data obtained via SER from administrative sources or the data obtained directly from the survey. The reference period is April 1, 2010 for surfaces, animals and rural development and May 15, 2010 for the other characteristics. Labor force characteristics refer to the 12-months period ending on May 15, 2010. Rural development characteristics refer to the 3 years period from 2007 until 2009 included.

For reasons of consistency with economic accounts of agriculture in Luxembourg, the definition of the Annual Work Unit (AWU) had, as in 2007, to be adapted as follows: "a person is considered working full-time with an average of 8 hours a day during 275 days (2 200 hours a year). Persons with less than 15 years or with more than 80 years are excluded. Persons aged between 15 and 18 years as well as persons aged at least 65 years while being declared as full-time working in the survey were transformed into part-time working using fixed coefficients which in line with national economic accounts of agriculture recommendations.

There were no other definition adaptations strictly speaking, but as opposed to former surveys, STATEC collected data for agricultural group holdings separately.

To satisfy national needs, STATEC surveyed the following characteristics in addition:
- agricultural machinery, i.e. tractors, combine harvesters and other fully mechanized harvesters ;
- affiliation to a national health and retirement insurance ;
- succession prospects.

Some of the FSS and SAPM characteristics have not been collected, either because they do not exist, either because they are irrelevant for the Luxembourg territory.

The inexistent characteristics are :

- A_3_2_3_4 Organic farming - sugar beet: there are no transformation factories nearer than more or less 200 km ;
- A_3_2_3_9 Organic farming - citrus fruit: climatic reasons ;
- A_3_2_3_10 Organic farming - olives: climatic reasons ;
- B_1_1_7 Rice: climatic reasons ;
- B_1_4 Sugar beet: there are no transformation factories nearer than more or less 200 km ;
- B_1_6_1 Tobacco: climatic and agronomic reasons ;
- B_1_6_2 Hops: climatic and agronomic reasons ;
- B_1_6_3 Cotton: climatic reasons ;
- B_1_6_6 Soya: climatic reasons ;
- B_4_1_1_2 Fruit species of subtropical climate zones: climatic reasons ;
- B_4_2 Citrus fruit: climatic reasons ;
- B_4_3 , B_4_3_1, B_4_3_2 Olives: climatic reasons ;

- B_4_4_4 Vineyards - table grapes: climatic reasons ;
- B_4_7 Permanent crops under glass: climatic and agronomic reasons ;
- B_6_3_1 Energy crops on set-aside area ;
- B_6_4 Genetically modified crops: not allowed in Luxembourg in 2010 ;
- G_1_1 Rural development support: advisory services: no direct payments to farmers in Luxembourg ;
- G_1_3 Rural development support: adding value to products: not implemented in Luxembourg ;
- G_1_4 Rural development support: Community standards: not implemented in Luxembourg ;
- G_1_5 Rural development support: Food quality scheme: not implemented in Luxembourg ;
- G_1_7 Rural development support: payments under Water Framework Directive: not implemented in Luxembourg ;
- G_1_9 Rural development support: Animal welfare payments: not implemented in Luxembourg.
- G_1_11 Rural development support: Encouragement of tourism activities: not implemented in Luxembourg ;
- M_4_2_1 Common land grazing: Number of animals: climatic reasons, different evolution of agricultural laws ;
- M_4_2_2 Common land grazing: Number of months with animals outdoors: climatic reasons, different evolution of agricultural laws ;
- M_5_3_2 Animal housing - Laying hens - Battery cages (all types): housing of laying hens in battery cages is prohibited in Luxembourg.

The insignificant characteristics are :

- A_3_3_1 More than 50% of production self-consumed by the holder: due to the evolution of social life and of the organization of economy and society during the last 100 years, subsistence farming has nearly disappeared in Luxembourg (as elsewhere in north-eastern Europe;
- B_1_1_2 Durum wheat: climatic reasons;
- B_1_6_5 Sunflower: climatic reasons;
- B_1_6_7 Linseed (oil flax): climatic and agronomic reasons;
- B_1_6_9 Flax: climatic and agronomic reasons;
- B_4_1_2 Berry species: very small area, added to “Fruit and berry plantations - Fruit species”;
- B_4_1_3 Fruit and berry plantations – nuts: very small area, added to “Fruit and berry plantations - Fruit species”;
- B_4_4_2 Vineyards - other wines: inside the wine-producing scope, all the grapes are potentially suited for quality wine; the distinction between quality wines and other wines is made only after the tests of the institute in charge of the quality appellation;
- B_6_2_1 Total irrigable area: climatic reasons for agriculture, prohibited for viticulture;
- B_6_2_2 Irrigated once a year – Total: climatic reasons for agriculture, prohibited for viticulture;
- M_3_1_B Linear elements maintained: tree lines: historical and climatic reasons (no priority for protection against wind, important part of the country covered by woods, …);
- M_3_1_C Linear elements maintained: stone walls: historical, climatic and geological reasons;
- M_3_2_B Linear elements established: tree lines: historical and climatic reasons (no priority for protection against wind, important part of the country covered by woods, …);

- M_3_2_C Linear elements established: stone walls: historical, climatic and geological reasons;
- M_8 Irrigation: climatic reasons for agriculture, prohibited for viticulture.

2.3 Survey organisation

The actors involved in the survey organisation are :
- STATEC as a coordinator to ensure the achievement of the data collection and in charge of the survey ;
- SER as the data provider for administrative sources and the national producer of economic accounts of agriculture.

Technically, each actor is only responsible for the variables under their respective supervision. Nonetheless, the cooperation and coordination goes beyond the data collection. Both actors meet regularly every year:
- to coordinate any joint data collection ;
- to define the roles of each administration ;
- to discuss the needs addressed by the survey as well as the burden on agricultural holdings ;
- to explore the availability and quality of potential administrative sources ;
- to analyse aggregate results of the survey, including the burden on agricultural holdings ;
- to discuss any methodological issues regarding the survey that may arise in the context of economic accounts of agriculture ;
- to coordinate the dissemination of statistical results ;
- etc.

Since the reference year 2010, the municipalities are no longer involved in the survey. The survey questionnaires were sent directly to the agricultural holdings via SER together with the subsidy application forms and then returned to STATEC via SER. However, since this experience caused a few technical issues and delays, it has been decided that STATEC directly contacts the agricultural holdings as from reference year 2011 – to avoid any additional burden, the survey questionnaires are practically sent out at the same moment by STATEC than the subsidy application forms by SER.

2.4 Calendar (overview of work progress)

Key activities of the survey

The organisation of the survey 2010 started in the end of 2009 with a consultation of user and lobby groups regarding the structure and contents of the survey questionnaire. It had to be decided to what extent administrative sources could actually replace the survey characteristics in the questionnaire. Due to the importance of administrative sources, it was decided that municipalities would not need to be involved anymore in the census, a direct data collection being more efficient and less burdensome for most actors. It also became clear that it would be too burdensome to organise two separate surveys, i.e. one for FSS and one for SAPM. Consequently, the FSS 2010 questionnaire had to be re-designed to provide for all these changes in the environment. These discussions ended in January 2010.

The printed questionnaires were available in the end of February 2010.

SER managed the data collection of surfaces, animals, organic farming and rural development. Surface and animal figures proceed from the application forms for subsidies, which were sent to

all agricultural holdings. Data on organic farming exist in the Organic farming register and data on rural development are provided by the Ministry of Agriculture MAFEA database (payments supporting rural development). These data were merged and made available to STATEC as an administrative source to minimise the statistical burden on agricultural holdings. Consequently, STATEC covered the characteristics related to machinery, labour force, other gainful activities and agricultural production methods through the census.

In the beginning of April 2010, the agricultural holders received the STATEC survey questionnaire (reference date May 15, 2010) together with the SER application forms for subsidies (reference date April 1, 2010). The survey questionnaires were sent back by the agricultural holdings to SER during the period covering May until June 2010 and then transferred as a single package to STATEC during summer 2010. Due to a high SAPM item non-response, it was decided to launch a final reminder to agricultural holdings in February 2011.

Data entry of survey questionnaires was done by STATEC staff as from July 2010 onwards using the BLAISE software tool for managing survey forms.

In autumn 2010, the administrative sources obtained through SER were combined with the survey data using an official common identifier to form a combined micro data set. Micro data validation was performed at STATEC to check the accuracy and plausibility of both the survey and the administrative data. Analysis was also performed at a national aggregate level with historical data. Moreover, SER assisted the data validation by providing feedback on the aggregated data at national level for the purpose of the production of economic accounts of agriculture.

While data entry was achieved in March 2011, the data validation process was only completed by the end of the year 2011.

The final target population comprised 2 201 agricultural holdings for the reference year 2010 defined in conformity with the Regulation and was obtained from the database of agricultural holdings managed by SER.

Before preparing the micro data for Eurostat, the imputation procedures had to be rewritten in February 2012. Item non-response was addressed using cold-deck imputation, hot-deck imputation and, to a minor extent, ratio imputation as well as deductive imputation – the type of imputation applied depended on the nature of the variables to be imputed. Imputation was also extended to unit non-response for regulatory reasons. Meanwhile, the transmission format, i.e. the conversion program of national variables into the characteristics defined in the Regulation had to be rewritten in March 2012 due to the modernisation of the national variable system.

On March 30, 2012, the first batch of micro data established in conformity with the farm structure characteristics (including rural development) defined in the Regulation was transmitted to Eurostat via the Edamis platform. A revised micro data set was transmitted to Eurostat in the end of April 2012.

At the moment of finalising this report, national data dissemination was still work-in-progress.

Issues which significantly impacted the established calendar

For several reasons, the production of 2010 farm structure and production methods micro data got delayed:

- in order to satisfy all the requirements of the Regulation (in particular SAPM), STATEC and SER had to completely revise their system of variables. Furthermore, the increased use of administrative sources rendered the production process applicable until reference year 2009 obsolete. As a result, the data production and validation processes had to be completely rewritten while ensuring comparability with historical data. It wasn't before February 2011 that this work was achieved ;

- a contingency involving a key person significantly delayed the actual data collection and validation process ;

- 2010 reference year data collection also saw the rise of some serious item non-response issues, mainly for SAPM variables but which also spread over to a few FSS variables, in particular labour force related variables (e.g. other gainful activities dimension). The cause for this was the volume and complexity of the combined FSS-SAPM. To minimise the effects of item non-response and in order to receive better quality responses from targeted agricultural holdings as well as a few major agricultural holdings still missing completely, a late reminder was organised in February 2011. To deal with the remaining item non-response, a rewriting of imputation procedures was necessary and due only in February 2012 ;

- the annual survey for 2011 had to be organised to satisfy the yearly needs of economic accounts of agriculture produced by SER. Therefore, the resources could not be all allocated to the completion of the 2010 data collection.

2.5 Population and frame

(Target) Population and definition of a holding

The questionnaire was sent to all the agricultural holdings which were on the list communicated by SER in March 2010.

Not all agricultural holdings in that list are considered to be agricultural holdings as specified by the Regulation definition. Only those agricultural holdings which met any of the following criteria at the reference date were obliged to respond to the survey:

- at least 3 hectares of utilised agricultural area, i.e. arable land, permanent grass land, permanent crops, kitchen gardens ;
- at least 0.25 hectares of fresh vegetables, melons and strawberries, flowers and ornamental plants or at least 0.30 hectares of fruit and berry plantations or at least 0.50 hectares of nurseries ;
- at least 0.10 hectares of vineyards;
- at least 10 horses/donkeys or 10 bovines or 20 sheep or 20 goats or 50 pigs or 1 000 laying hens or 1 000 other poultry or 1 000 rabbits.

Holdings with less than 3 hectares of utilised agricultural area don't have to answer if they hold woods or bushes or if they keep riding horses or fatten pigs for their own consumption or cultivate vegetables, strawberries and so forth for their own consumption.

The survey is carried through at the headquarters of the holding. It is considered that the whole surface of the agricultural holding resides in the municipality where the headquarters are located, even if the surfaces are all in another municipality or outside the national borders.

Surfaces on lease are not indicated by the owner but by the tenant.

There were no changes in the definition of a holding, but there were differences in the thresholds applied. In 2007, the threshold was 1 hectare, in 2010 it was 3 hectares. This did not lead to any comparability issues (see below). Also STATEC did not survey group holdings separately in 2007 (but as family holdings); potential comparability issues can thus be solved by adding group figures to family holding figures.

The final target population comprised 2 201 agricultural holdings for the reference year 2010 defined in conformity with the Regulation.

The thresholds applied nationally differ from the Regulation. On one hand, the cut-off threshold of 3 hectares of utilised agricultural area differs from the 1 hectare threshold. On the other hand, the physical cut-off thresholds are less strict in the national survey than in the Regulation. The final list of agricultural holdings provided by SER and used by STATEC as a basis to determine the target population contained 2 353 registered agricultural holdings with a total utilised agricultural area (total UAA) of 131 166 hectares. The following table illustrates the impact due the differences in criteria:

Size characteristic	**Criteria as applied by STATEC with UAA of at least 3 hectares** (A)	**STATEC criteria with UAA of at least 1 hectare** relative difference with (A) in parentheses	**Regulation criteria as laid out in Annex II with UAA of at least 1 hectare** relative difference with (A) in parentheses
Number of holdings	2201	2228 (+1,23%)	2071 (-5,91%)
UAA	131 105, representing 99,95% of total UAA	131 158 (+0,04%), representing 99,99% of total UAA	131 092 (-0,01%), representing 99,94% of total UAA
LSU	173 724, representing 99.89% of total LSU	173 768 (+0,03%), representing 99,91% of total LSU	173 768 (+0,03%), representing 99,91% of total LSU

This table proves that the national criteria satisfy both:

- the condition according to which not more than 2% of the population in terms of UAA and LSU should be excluded if another threshold than 1 hectare is used ;
- the physical thresholds laid out in Annex II of the Regulation.

Frame

The type of frame was a list with administrative source data.
The initial frame referred to February 2010. The time frame of the administrative source data collection was April 2010. Updated frames for April 2010 were provided in November 2010 and January 2011.

Also refer to 3.1.2 Non sampling errors ().

2.6 Survey design

The survey design was based on a census data collection.

2.7 Sampling, data collection and data entry

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

This section of the report is not applicable because the survey design was based on a census data collection and not on a sample survey.

Please provide information in the following tables:

NUTS2 regions with more than 10000 holdings
Crop characteristics:

		NUTS2 regions			
Precision requirements	Field codes				
Number of holdings in the NUTS2 region					
UAA, ha of the NUTS2 region	A_3_1				
Area of cereals in ha in the NUTS2 region	B_1_1				
% Cereals in the UAA of the NUTS2 region					
Area of potatoes and sugar beet in ha in the NUTS2 region	B_1_3 + B_1_4				
% potatoes and sugar beet in the UAA of the NUTS2 region					
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				
% oilseed crops in the UAA of the NUTS2 region					
Area of permanent outdoor crops in ha in the NUTS2 region	B_4 - B_4_7				
% permanent outdoor crops in the UAA of the NUTS2 region					
Area of fresh vegetables, melons, strawberries, flowers in ha in the NUTS2 region	B_1_7 + B_1_8				
% fresh vegetables, melons, strawberries, flowers in the UAA of the NUTS2 region					
Area of temporary grass and permanent grassland in ha in the NUTS2 region	B_1_9_1 + B_3				
% temporary grass and permanent grassland in the UAA of the NUTS2 region					

Livestock characteristics:

			NUTS2 regions			
Precision requirements		Field codes				
LSU in the NUTS2 region						
Bovine animals (all ages)	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				
	% of the LSU in the NUTS2 region					
	% of national share of bovine animals in LSU					
Sheep and goats (all ages)	Number of Sheep and goats in the NUTS2 region, in LSU	C_3_1*0.1 + C_3_2*0.1				
	% of the LSU in the NUTS2 region					
	% of national share of sheep and goats in LSU					
Pigs	Number of Pigs in the NUTS2 region, in LSU	C_4_1*0.027 + C_4_2*0.5 + C_4_99*0.3				
	% of the LSU in the NUTS2 region					
	% of national share of pigs in LSU					
Poultry	Number of Poultry in the NUTS2 region, in LSU	C_5_1*0.007 + C_5_2*0.014 + C_5_3*0.030				
	% of the LSU in the NUTS2 region					
	% of national share of poultry in LSU					

NUTS2 regions with less than 10000 holdings
Crop characteristics:

		NUTS2 regions			
Precision requirements	Field codes				
Number of holdings in the NUTS2 region					
Associated NUTS1 region					
Number of holdings of the associated NUTS1 region					
UAA, ha of the associated NUTS1 region	A_3_1				
Area of cereals in ha in the associated NUTS1 region with at least 1000 holdings	B_1_1				
% Cereals in the UAA of the associated NUTS1 region with at least 1000 holdings					
Area of potatoes and sugar beet in ha in the associated NUTS1 region with at least 1000 holdings	B_1_3 + B_1_4				
% potatoes and sugar beet in the UAA of the associated NUTS1 region with at least 1000 holdings					
Area of oilseed crops in ha in the associated NUTS1 region with at least 1000 holdings	B_1_6_4 + B_1_6_5 + B_1_6_6 + B_1_6_7 + B_1_6_8				
% oilseed crops in the UAA of the associated NUTS1 region with at least 1000 holdings					
Area of permanent outdoor crops in ha in the associated NUTS1 region with at least 1000 holdings	B_4 - B_4_7				
% permanent outdoor crops in the UAA of the associated NUTS1 region with at least 1000 holdings					
Area of fresh vegetables, melons, strawberries, flowers in ha in the NUTS2 region	B_1_7 + B_1_8				
% fresh vegetables, melons, strawberries, flowers in the UAA of the NUTS2 region					
Area of temporary grass and permanent grassland in ha in the associated NUTS1 region with at least 1000 holdings	B_1_9_1 + B_3				
% temporary grass and permanent grassland in the UAA of the associated NUTS1 region with at least 1000 holdings					

Livestock characteristics:

			NUTS2 regions			
Precision requirements						
Precision requirements		Field codes				
LSU in the associated NUTS1 region						
Bovine animals (all ages)	Number of Bovine animals in the associated NUTS1 region with at least 1000 holdings, 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				
	% of the LSU in the associated NUTS1 region with at least 1000 holdings					
	% of national share of bovine animals in LSU					
Sheep and goats (all ages)	Number of Sheep and goats in the associated NUTS1 region with at least 1000 holdings, in LSU	C_3_1*0.1 + C_3_2*0.1				
	% of the LSU in the associated NUTS1 region with at least 1000 holdings					
	% of national share of sheep and goats in LSU					
Pigs	Number of Pigs in the associated NUTS1 region with at least 1000 holdings, in LSU	C_4_1*0.027 + C_4_2*0.5 + C_4_99*0.3				
	% of the LSU in the associated NUTS1 region with at least 1000 holdings					
	% of national share of pigs in LSU					
Poultry	Number of Poultry inthe associated NUTS1 region with at least 1000 holdings, in LSU	C_5_1*0.007 + C_5_2*0.014 + C_5_3*0.030				
	% of the LSU in the associated NUTS1 region with at least 1000 holdings					
	% of national share of poultry in LSU					

2.7.2 Data collection and data entry

Data were sent back by agricultural holdings via mail. Data entry involved manual inputting of data.

For the survey characteristics covered by STATEC, the software Blaise was used for this task. Some application controls were configured. However, most data accuracy and plausibility tests were only performed and documented after data entry.

2.7.3 Use of administrative data sources

The characteristics of the sections A_2, D, E, F and M of the FSS and SAPM have been obtained directly from the holders whereas the characteristics of the remainder of section A and of the sections B, C and G were taken from administrative sources.

The administrative data were gathered by the SER and provided to the STATEC.

The administrative data sources used are the following:

1. integrated administration and control system (IACS) ;
2. Bovine register (SANITEL) ;
3. Data base of the Ministry of agriculture on the payments made to farmers and other beneficiaries eligible for FEAGA or FEADER (MAFEA) ;
4. organic farming register.

1) Integrated administration and control system (IACS) of the common agricultural policy (CAP)

Legal basis

- EU legislation: Regulation (EC) 73/2009, chapter 4;
- National legislation: Règlement grand-ducal du 25 novembre 2011 portant application, au Grand-duché de Luxembourg, du régime de paiement unique, de la conditionnalité et du système intégré de gestion et de contrôle dans le cadre de la politique agricole commune.

Definition of the reporting unit (holding)
See article 2 of Regulation (EC) 73/2009.

Identification of the units
By the "numéro d'exploitation (Kannennummer)" a 6-digit identification number for agricultural holdings, a common identifier managed by the Ministry of Agriculture. A link to the social security identifier ("matricule national de la sécurité sociale") for physical and legal persons exists. The administrative data are made available to STATEC using the common identifier.

Population covered, completeness
The register of agricultural holdings of the Ministry of Agriculture is complete for all holdings applying for payments within CAP or which have to be officially registered at the Ministry of Agriculture following the EU and national legislation (for example bovine register, food safety, animal welfare, etc.).

Information on quality issues
There are no processing or measurement errors.

Purpose of the administrative source used
The administrative sources are used as direct data source, not for building the sample frame or for validation of results.

Information on the characteristics
There are no differences in the definition of the characteristics between administrative source and FSS.

Reference date of the information used

Crop year for crop productions, day of application for payments by the farmer (the deadline was the May 15 in 2010) for animal productions.

Checking the reliability, accuracy and coherence
There are no comparisons between the data originating from administrative sources with other data.

Record linkage algorithm; rate of false matches and their handling
Record linkage was done using a common identifier. No record linkage algorithms were needed.

Information on the methods of integration of administrative data in FSS
The administrative data are used as actual values in the farm structure survey.

2) Bovine register (SANITEL)

Legal base
- EU-legislation: Regulation (EC) 820/97;
- National legislation: Règlement grand-ducal du 22 avril 1999 portant mesures d'application du règlement (CE) 820/97.

Definition of the reporting unit (holding)
Holder of bovine animals.
A link with the reporting unit in IACS (agricultural holding) exists. Regular exchange of information and permanent mutual updating between IACS and SANITEL concerning the list of reporting units (holding/holder).

Identification of the units
Different identifiers in SANITEL and IACS but a permanent link between the 2 identifiers exists.
List of characteristics taken from administrative source: See "liste des caractéristiques FSS MPA.xls".

Population covered, completeness
SANITEL covers all units holding bovine animals.

Information on quality issues
The characteristics requested in FSS are calculated/deducted from the characteristics registered in SANITEL per individual animal (date of birth, gender, age of first calving, date of slaughtering, etc.).

Information on the characteristics
The characteristics in FSS are not as such in the administrative database SANITEL but are calculated from the characteristics registered in SANITEL per individual animal.

Reference date of the information used
SANITEL is a permanently updated database.

Checking the reliability, accuracy, coherence
SANITEL has to meet the quality criteria set by the European legislation for bovine registers.

Record linkage algorithm; rate of false matches and their handling

Record linkage is done using a common identifier. No record linkage algorithms are needed.

Information on the methods of integration of administrative data in FSS
The administrative data are used as actual values in the farm structure survey.

3) Database of the Ministry of agriculture on the payments made to farmers and other beneficiaries eligible for FEAGA or FEADER (MAFEA)

The data for the characteristics on support for rural development (chapter VII of annex III of the regulation (EC) 1166/2008) come from the database of the Ministry of Agriculture on the payments made to farmers and other beneficiaries eligible for FEAGA or FEADER (MAFEA). This database is fully integrated with the IACS database. The information given on IACS applies to this database, too.

4) Organic farming register

The register of agricultural holdings certified or under certification in organic farming is managed by Administration des Services Techniques de l'Agriculture (ASTA), an administration of the Ministry of Agriculture. This register is fully compatible with IACS (same identification of the units). The information on the status of the holdings concerning organic farming at a reference day (deadline for application for payments by the farmers) is uploaded in IACS yearly.

2.8 Specific topics

2.8.1 Common Land

Tough existing in the Middle Ages, common land has disappeared in Luxembourg due to a specific evolution of agricultural laws.

2.8.2 Geographical reference of the holding

The municipality and section of municipality where the living place of the holder (sole family holder) or the address of the holding (other legal personalities of the holding) is situated in was prefilled in the IACS questionnaire. The respondents were asked to indicate the municipality and municipality section where the major buildings / agricultural areas of the holding are located in in the case where the living place or address of the holding was not situated in the same municipality section than the major buildings / agricultural areas of the holding.

A geo-reference (longitude, latitude) was assigned to each municipality section. The rounding rule stated in the regulation (within an arc of 5 minutes or less) was applied. By doing so, the rounded geo-reference of a certain number of holdings situated near the borders of the national territory fell outside these borders. For these holdings the initial value(s) of the coordinate(s) was (were) modified as far as needed so that after rounding the geo-reference of the holdings fell again within the borders of the national territory.

2.8.3 Volume of water used for irrigation

Due to obvious climatic reasons (agriculture) and legal reasons (viticulture), irrigation is a non-significant characteristic in Luxembourg.

2.8.4 Other issues

Not applicable.

2.9 Response-burden policy

The following measures were initially planned to increase response rates:

- The survey questionnaire was sent by SER together with the subsidy application package. The plan was to avoid agricultural holdings having to delve twice into their reporting systems and thus accelerating the response. Technically, the response management was in the hands of SER. In practice, follow-up was difficult because questionnaires would only be transferred to STATEC as a package during the summer and not on an on-going basis.

- Reminders were managed by SER for the reference year 2010. While unit non-response was acceptable, the volume and complexity of the combined FSS-SAPM questionnaire seemed to have had a significant impact on item non-response, in particular for SAPM characteristics. Consequently, a late reminder had to be sent out by STATEC to agricultural holdings in February 2011 to improve the response rate on these characteristics. In the end, no legal actions were taken, as the unit non-response was only 2.73%.

- No special priority was given to important agricultural holdings. However, non responding agricultural holdings identified as being part of the final target population were subject to a dedicated final reminder in February 2011.

For the 2010 reference year, we asked the agricultural holdings how long it took them to complete the questionnaire. 1 820 holdings responded to this question, the average time being 43 minutes to complete the combined FSS-SAPM questionnaire. This duration excludes any post-collection procedures. The impact of SAPM on the burden of agricultural is significant - for the FSS concerning the reference year 2011, the average time to complete the questionnaire dropped to 15 minutes.

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, if applicable

This section of the report is not applicable because the survey design was based on a census data collection. Moreover, the unit non-response rate was very low, so that the impact of any imputation or estimation on bias and variance was minor.

3.1.2 Non sampling errors (i)

The list of the SER with all the holdings of the frame was transmitted to STATEC three times (March 2010: frame to launch the survey, September 2010: first version, January 2011: revision). Over-coverage was countered by a filter program based on the national thresholds that eliminated all the holdings in the frame that did not belong to the target population. Under-coverage was eliminated by revising the frame and by accounting for non-response via a reminder or in the worst case via imputation.

The administrative data of the SER were tested for multiple listing and misclassification errors. Multiple listing was possible because surface data were collected on viticulture by the SER for holdings that had also other surfaces and by the Institut viti-vinicole (IVV) for holdings with only vineyards. The multiple listing issues were solved on a case by case basis. There were no misclassification issues.

For measurement errors, please refer to the section 3.1.4 Control of the data.

Regarding unit non-response and item non-responses, please refer to the section 3.1.3 Methods for handling missing or incorrect data items.

3.1.3 Methods for handling missing or incorrect data items

At the stage of data entry, we distinguished between two scenarios:

1. the questionnaire was insufficiently filled out for an agricultural holding in the target population: we contacted the agricultural holding either by phone or by mail to request the remaining information ;
2. the questionnaire contained a few minor item non-responses. If the missing item was a structural characteristic (e.g. legal status, holding manager, etc.) and the prior year questionnaire was available, the information was directly imputed. This procedure was not performed for characteristics that are likely to change every year (e.g. labour force, other gainful activities, etc.).

At the stage of data production, we used automated rules to impute:

1. Cold-deck imputation was used for labour force and related characteristics. The cold-deck contained 2009 survey information. Data available in 2009 was then directly imputed without any other adjustment for a given agricultural holding. This imputation procedure concerned 2% of the target population in terms of number of units ;
2. A few characteristics required deductive imputation in case of item non-response. These were mainly the characteristics related to the manager in case of group holdings and legal persons but also for some national characteristics.
3. Hot-deck imputation based on random sampling without replacement was performed by predefined strata. The procedure was mainly used for characteristics related to the manager in case of sole holder holdings, labour force characteristics, other gainful activities and their importance in the production, machinery and qualitative characteristics of SAPM.
4. Hot-deck ratio imputation based on ancillary information available in the administrative sources managed by SER was performed by predefined strata. The procedure was mainly used for quantitative variables of SAPM. The underlying assumption is a linear correlation between the variable of interest and the ancillary information. This procedure allows to maintain a certain consistency between characteristics obtained from the administrative sources and those obtained through the survey ;

Item non-response was addressed before unit non-response.

For methods 3) and 4), the strata were defined so that they would best explain non-response. Various combinations of variables available in administrative sources, provided by SER and thus for all agricultural holdings in the target population, were tested against unit non-response using

a logit regression model. The strata defined on the basis of the following ancillary information were found to sufficiently explain unit non-response:

- UAA size class: less than 10 ha, at least 10 ha ;
- 1st digit of the farm type code in reference to the typology defined in Commission Regulation (EC) No 1242/2008 ;
- agro-environment payments (rural development support): yes, no.

While agro-environment payments were found to significantly explain non-response, taking into account holding size and activity was also important to avoid any unwanted and uncontrolled side effects during imputation.

The strata were used both for item non-response and then for unit non-response.

Cold-deck imputation was performed in the main production engine, namely SPSS. The other imputation procedures were programmed in Stata.

3.1.4 Control of the data

The questionnaires are first checked manually to find the missing items and obvious errors in order to complete and correct the answers even before entering the data (along to the methodology described sub 3.1.3). The comparison with the prior year begins here. At this stage, the questionnaires are made ready for coding. Moreover, it is decided whether or not the questionnaire can be accepted as such. Sometimes, a high item non-response causes the survey manager to get back to the agricultural holding for further information.

The second set of checks occurs when coding the data into Blaise. The checks are implemented as application controls. The software reacts with dialogue windows if it finds any missing, inaccurate or implausible items; alternative coding possibilities are sometimes suggested. Moreover, some items only allow a fixed list of responses (e.g. single or multiple choice, yes/no, etc.). For numeric figures, the number of digits may be limited by a lower and/or upper bound or checked for out-of-plausible-range items.

Blaise is also suited for internal consistency checks, but in order not to render the 2010 coding too burdensome, these checks were performed ex-post, i.e. after the coding stage. Typically, the tests are written using a statistics software syntax (e.g. SPSS).

As the survey FSS data did not include any surface and animal figures, arithmetic checks and ratio edits were not necessary when entering the data, but the administrative data (i.e. surfaces and animals) were checked for arithmetic, ratio and coherence issues at the integration with the survey data of the STATEC. Same as above, the tests were written in statistical software.

The SAPM data on surfaces and animals were checked for consistency by comparing them to the administrative data on surfaces and animals; for a given holding and a given characteristic, the SAPM data could not exceed the value of the administrative data, if a certain characteristic fssX exists in the administrative data, a characteristic sapmX must exist in SAPM and the reverse.

3.2 Evaluation of results

Administrative data, in particular animals and surfaces, were checked for consistency with the survey data, in particular labour force, number of holdings and production methods. Moreover,

results were compared over a period covering the last 4 years. This was mainly necessary due to the complete revision of the data production and validation processes.

The following 2 tables should be completed by MS in order to collect exact information of the number of surveyed units in a uniform way. They will be considered as a part of the data-validation process.

	Survey		
	FSS (excl. OGA in case of sample survey)	OGA (if sample survey)	SAPM (if sample survey)
Initial list of units	2 353	n.a.	n.a.
Initial sample	not applicable (n.a)	n.a.	n.a.
Number of holdings with completed questionnaires (incl. Eventual imputed questionnaires):	2 201	n.a.	n.a.
Number of units under the threshold applied *	147	n.a.	n.a.
Holdings with ceased activities:		n.a.	n.a.
- (If information is available) of which definitely ceased, i.e. the land is abandoned	not available	n.a.	n.a.
- (If information is available) of which holdings with change of the manager	not available	n.a.	n.a.
Unit Non-response:	60	n.a.	n.a.
- Refusals – not corrected	0	n.a.	n.a.
- Refusals – corrected (imputed)	60	n.a.	n.a.
Number of records transferred to Eurostat *	2 201	n.a.	n.a.
Common land units (A_2_1)	0	n.a.	n.a.

** Units that do not meet the national threshold criteria (in some countries there could be completed questionnaires for them, in others – not). In case it's impossible to provide this information, a short explanation about the reasons to be provided.*

***The number of holding with completed questionnaires for FSS 2010 may be different from the number of records transferred to Eurostat in case that very low national threshold is applied.*

The evolution from 2007 to 2010 reflects the main features of the structure of the Luxemburgish agriculture: The number of holdings decreases whereas the UAA remains stable; thus the average surface per holding increases. The holdings specialised in raising herbivores are important compared to other holdings.

	From FSS 2007	From FSS 2010	Difference in %	Comments
Number of holdings;	2 300	2 201	-4.30	
UAA (A_3_1), ha;	130 880	131 106	0.17	
Arable land, ha;	61 070	61 951	1.44	
Permanent grassland (B_3), ha;	68 290	67 593	-1.02	
Permanent crops (B_4), ha;	1 510	1 503	-0.46	
Wooded area (B_5_2), ha;	6 518	6 029	-7.86	
Unutilised Agricultural area (B_5_1), ha;	440	339	-22.95	Minor.
Fallow land (B_1_12_1 + B_1_12_2), ha;	1 347	139	-89.68	Dropping of subsidies for frozen land
LSU in LSU;	160 820	173 724	8.02	Due to the change of the conversion coefficients in 2010.
Cattle (C_2), head;	191 930	198 830	3.59	
Family Labour force - in persons;	4 750	4 169	-12.23	Due to decrease in number of holdings.
Family Labour force - in AWU;	3 180	2 793	-12.17	Due to decrease in number of holdings.
Non family labour force - in persons;	540	893	65.37	Minor.
Non family labour force - in AWU	500	759	51.80	Minor.

3.3 Data Revision Policy

Generally, STATEC performs revisions when receiving packages of administrative data from the SER or in case of major errors detected in the STATEC survey. The first package was received in November 2011 to produce preliminary data to SER for the purpose of economic accounts of agriculture. In January 2011, a revised package was received to produce revised data to SER. Given that the whole production process had to be renewed as from 2010, figures released were again revised during the second semester of 2011 as well as during the beginning of 2012. A final revision is scheduled based on the final data transmission of FSS to Eurostat.

4. ACCESSIBILITY AND PUNCTUALITY

4.1 Publications

The results of the Farm Structure Survey 2010 (FSS) and of the Survey on Agricultural Production Methods 2010 (SAPM) have not been disseminated before the transmission to Eurostat. The reason was the huge revision of the production process and thus it had to be ensured that the quality met Eurostat criteria first before any national transmission. However, data were indirectly disseminated by SER through the national economic accounts of agriculture.

The publication of reports other than the National Methodological Report NMS 2010 for EUROSTAT is not intended, but methodological notes will accompany the publications of the data. The on-line glossary explains the main terminology.

Action plan for nationally disseminating FSS data:
- a detailed report ("Bulletin du STATEC) containing the FSS results as well as a brief description of methods and sources used ;
- the report is published with a press release containing key figures ;

tables are made available on-line on the Luxembourg statistics portal:
http://www.statistiques.public.lu/stat/ReportFolders/ReportFolder.aspx?IF_Language=fra&MainTheme=4&FldrName=2

The key results are also published in the statistical year book ("Annuaire statistique du Luxembourg") of the year 2012, with a methodological introduction.

4.2 Timeliness and Punctuality

The reference date was May 15 2010 and provisional results (FSS) were expected for the November 15 2010 (t+6 months); these results have not been published but only made available to the SER for the economic accounts in agriculture; key data were also sent to EUROSTAT.

The final results (FSS) were expected for the 15 February 2011 (9 months); due to various issues, this deadline could not be met for the whole of the characteristics. Whereas the data for surfaces and animals remained nearly unchanged since February 2011, reliable data for labour force characteristics were not available before February 2012. A data file with these results has been sent to EUROSTAT but they have not yet been published nationally.

Also refer to 2.4 Calendar (overview of work progress) for further information.

5. CONFIDENTIALITY AND SECURITY

Confidentiality is laid out in the national framework. Please refer to 2.1 National legislation for further details on this framework. STATEC staff and assimilated persons have to guarantee the protection of confidential data. Any non-compliance can be punished by law - for further details please refer to article 16 of the aforementioned law.

Tabular data are protected using the following approaches:
- table design: very detailed tables are avoided (e.g. data published by municipality) unless the data is not confidential (e.g. number of agricultural holdings, total UAA, etc.). On a national level, almost any data (i.e. low occurrence variables) can be published. Problems arise with national data broken down by one or more spanning variables (farm type, size class, municipality, etc.). The table design usually results in a compromise between relevance and confidentiality ;
- cell suppression: any cell that contains confidential data according to a sensitivity rule (n,k) or a minimum frequency rule are suppressed due to primary confidentiality. Any cell that is needed to protect one or more primary confidential cells are suppressed due to secondary confidentiality. In practice, suppression comes down to aggregation for one-dimensional tables and to flagged cells for multi-dimensional tables – linked tables are also accounted for. To guarantee the proper protection of tabular data, the exact parameters used to apply the above rules are kept confidential.

The protection of tables is performed with the software tau-Argus.

External users have so far not been allowed any access to FSS/SAPM micro data for research purposes. The procedure to access the data for such purposes is defined in the national legal framework (article 16). To ensure the anonymisation of micro data files in case of access granted for research purposes by external users, the software mu-Argus is used.

REFERENCES

- Methodological notes available
- Main scientific references

ANNEXES

- Questionnaire(s)
- Formulas applied for estimation methods and calculating sampling errors
- Other

ENDNOTES

([i]) *Non-sampling error* is the error attributable to all sources other than sampling error. Non-sampling errors arise during the planning, conducting, data processing and final estimation stages of all types of survey.