

## AGRICULTURAL CENSUS 2010 IN LATVIA

**Anita Raubena**

Department of Agricultural and Environmental Statistics, Central Statistical Bureau of Latvia

Address: 1, Lāčplēša Street, Riga LV-1301, Latvia

E-mail: [Anita.Raubena@csb.gov.lv](mailto:Anita.Raubena@csb.gov.lv)

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**Abstract.** The aim of this paper is to describe the organisation of the Agricultural Census 2010 in Latvia, to disclose the methods of data acquisition used, as well as to present a short analysis of the provisional results of the census. The paper substantiates the necessity of agricultural censuses and indicates opportunities for the use of information acquired in the census. In the research made within the framework of this paper the methods of induction and deduction as well as statistical analyses, including grouping, processing and comparing are used. Provisional results of the Agricultural Census 2010 show that agricultural holdings in Latvia are consolidating – they have become larger and economically more viable: their sown areas are growing as well as the average number of livestock per holding. In 2010 on average per holding there were 33.8 ha of land, of which 21.5 ha were utilized agricultural land. The average size of herd per holding growing cattle was 11 cattle, of which 5 were dairy cows.

**Keywords:** Agricultural Census, agricultural holdings, farm structure survey.

### 1. Introduction

The aim of this paper is to describe the organisation of the Agricultural Census 2010 in Latvia, to reflect the methods of data acquisition used, as well as to present a short analysis of the provisional results of the census. As the mentioned survey – Agricultural Census – was carried out in 2010, data aggregation and analysis of the data has not been completed yet. The paper substantiates the necessity for agricultural censuses and indicates the opportunities for the use of information acquired in censuses. In the research made within the framework of this paper the methods of induction and deduction as well as statistical analyses, of which grouping, processing and comparing, are used. The short history of agricultural censuses, paying more attention to the Agricultural Census 2001 in Latvia, is also described.

### 2. Background

An Agricultural Census is an activity of a national scale ensuring the opportunity to acquire the broadest range of information for the analysis of processes on-going in the agricultural sector, and to work out development projects for the future.

The Food and Agriculture Organization (FAO) of the United Nation is currently organising the ninth round of the World Agricultural Census (2010). It has been carried out every 10 years since 1930. *Eurostat*, the Statistical Office of the European Union (EU), has followed the FAO's recommendation on the world-wide decennial Agricultural Censuses since the round of 1970.

During the first Republic in Latvia six agricultural censuses were carried out:

- Agricultural Census 1920, which took place at the same time as the first Population Census;
- Agricultural Census 1923;
- General Agricultural Census 1929;
- General Census of Sown Areas and Livestock 1935;
- Agricultural Census 1937;

- General Agricultural Census 1939 – the widest one, data of which were not fully compiled because work was interrupted by the war [1].

During the post-war years, when Latvia was part of the Soviet Union, a separate census on sown areas of agricultural crops, a census of livestock and a census of fruit gardens were organised.

### **3. Agricultural Census 2001**

Thanks to the funding granted by the government and methodological support of international experts, in 2001 statistics Latvia was able to carry out an Agricultural Census – the first one since Latvia regained its independence. As at the time the aim of Latvia was the accession to the European Union and simultaneously the successful development of the agricultural sector, the legislation of the EU [3] and requirements of national data users were taken into account in the development of the Agricultural Census methodology and programme.

The aim of the Agricultural Census 2001 was to acquire wide information on the number of agricultural holdings, land use, number of livestock, buildings and machinery in holdings, the social infrastructure of production, the number employed in holdings, other gainful activities of holdings, as well as to find out the specialization of holdings and their economic sizes.

In 1999 the Central Statistical Bureau (CSB) in co-operation with the experts from Sweden created the Statistical Farm Register. This register was used as a frame to select holdings for the Agricultural Census 2001 and subsequently for other sample surveys on agriculture statistics.

Census included all holdings whose main land use in which was agriculture, and which on June 2001 managed at least 1 ha of agricultural land, or in which value of agricultural output for sale in the previous year comprised LVL 1 000 and more, regardless the area of agricultural land [2].

The reference date of the Agricultural Census was June 1, 2001. The census took place from June 1 until July 5. During this period 194.1 thousand holdings were visited and the work engaged almost 3000 employees.

For the input of information acquired in the Agricultural Census 2001 high-speed scanners were used, as well as a modern data processing system and software, thus ensuring that the revision and correction of the data base and development of summary tables met the technological requirements of the time.

Information obtained in the Agricultural Census 2001 [2] was used to update and improve information in the Statistical Farm Register: the register was supplemented with economic indicators on holdings – economic size and specialisation. These indicators were used for sample design in future statistical surveys.

EU legislation [3] requirements and FAO's recommendations [5] set that agricultural censuses in Member States should be carried out every 10 years, but in between censuses an intermediate Farm Structure Survey should take place every two years. After the census of 2001 a Farm Structure Survey was conducted in Latvia in 2003, 2005 and 2007.

### **4. Organization of Agricultural Census 2010 and methods used**

Clause 1 of the Chapter II Article 6 of the European Parliament and Council Regulation (EC) No 1166/2008 [6] set that EU Member States should carry out surveys on farm structure in 2010, 2013 and 2016. Clause 2 of the mentioned Article requires that the Farm Structure Survey 2010 had to be conducted in the form of a census. This requirement and FAO's recommendations [5] were binding to Latvia as a Member State of the EU and served as the legal basis for the Agricultural Census and the Survey on Agricultural Production Methods in 2010.

The Agricultural Census had to be carried out with an aim of providing statistical data users (state, scientific and educational institutions, non-governmental organisations and society) with broad information on the situation in agriculture. Results acquired in the Agricultural Census 2010 will be used to analyse the situation in Latvia, as well as for planning and implementation of the Common Agricultural Policy in future, especially in relation to the diversity of agricultural activities. Moreover, the results will serve as a substantiation for the debates on the influence of agricultural practice on the environment, the quality and safety of agricultural products, as well providing comparable information on agricultural activities in the corresponding geographic territory and the whole Community.

One of the most significant factors for why the Agricultural Census was needed was the acquisition of data which would ensure objective substantiation on which to base payment level discussions between Latvia and the European Commission and on which to set the criteria for the re-distribution of new direct payments.

In 2008 CSB started to prepare for the Agricultural Census 2010: CSB created an inter-institutional work group on the organisation of the Agricultural Census, which included representatives of the Ministry of the Economy, Ministry of Agriculture, State Institute of Agrarian Economics, Rural Support Service, Agricultural Data Centre and State Plant Protection Service.

In cooperation with specialists of corresponding fields the questionnaires of the Agricultural Census and Survey on Agricultural Production Methods were developed, which afterwards were approved by the Cabinet of Ministers. CSB also produced informative material including definitions of indicators and explanations for personnel engaged in the Agricultural Census. In the development of the Census questionnaire the requirements of EU legal acts [4, 6] and the needs of national data users were taken into account.

Due to the limited financial resources, the conduct of the Agricultural Census 2010 met the minimum requirements set within the Regulation No 1166/2008: that the Agricultural Census should cover at least 98% of the national utilised agricultural land. Thus, it was planned to survey 90 thousand of the 105 thousand holdings, but for the Survey on Agricultural Production Methods a sub-sample comprising 20 thousand holdings was formed.

Information from the CSB Statistical Farm Register was used for the selection of holdings. Holdings were selected by their economic size – the total standard output<sup>1</sup> (SO) of the holding expressed in Euros. All economically active holdings with SO 8000 Euro or more were included in the Census, as well as holdings whose SO is under 8000 Euros and area of utilised agricultural land comprise 1 ha and more.

It was planned that in the Agricultural Census the following information on holdings was to be acquired:

- General information on the holding, its owner and manager;
- Land use;
- Number of livestock;
- System of organic farming;
- Agricultural buildings and machinery used on the holding (including machinery for the production of renewable energy);
- People employed in agriculture;
- Other gainful activities.

The aim of the Survey on Agricultural Production Methods was to acquire information characterising the agro-environment in holdings:

- Methods of soil treatment and activities for soil fertility maintenance;
- Information on animal housing and manure storage facilities;
- Irrigation methods used in holding.

In order to reduce respondent burden, it was planned that part of the information in the Agricultural Census will be acquired from administrative data bases: the Animal Register of the Agricultural Data Centre and Integrated Administration and Control System of the Rural Support Service (RSS).

The Cabinet of Ministers with Order No 843 “On the Agricultural Census 2010” of December 11, 2009 delegated the organisation of the Agricultural Census 2010 to the Central Statistical Bureau. The Order also set that within the framework of the Agricultural Census, the Ministry of Agriculture (MA) in 2010 should ensure the acquisition of information from 50 thousand holdings in accordance with the methodology and terms set by the Ministry of Economics (i.e. CSB). MA entrusted the collection of information to the Latvian Rural Advisory and Training Centre (LRATC).

To reduce the costs of data collection, with an aim to ensure that CSB is able to survey receivers of EU support who at the time were submitting applications for the EU area payments, the CSB concluded an agreement with the RSS on the opportunity to use the premises of the RSS regional administrations and sectors in April – May 2010. Interviewers input the data in portable computers on-site.

At the same time in April – May 2010 the personnel of the LRATC consultation centre started to obtain information from farmers, who had approached consultants with a request to help to fill in application forms for the area payments.

The 2<sup>nd</sup> stage of the Agricultural Census data collection started on July 1, when interviewers of the LRATC started to survey holdings on which information had not been acquired, and the data were input into portable computers on-site.

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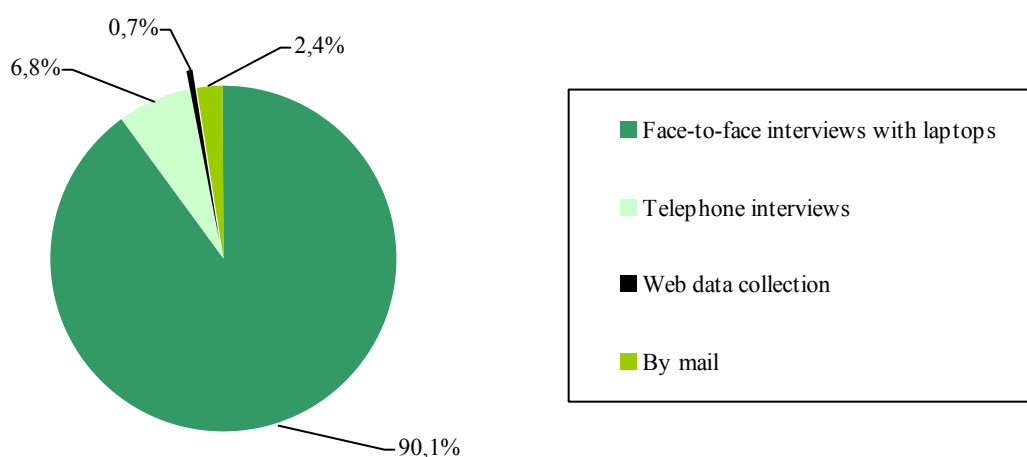
<sup>1</sup> The total standard output of the holding corresponds to the sum of the values obtained for each characteristic by multiplying the standard outputs per unit by the number of corresponding units.

Information on smaller holdings in the 2<sup>nd</sup> stage was obtained also with the help of the telephone interviews. From July until the end of September interviews were conducted by the CSB Telephone Interview Centre.

In the meantime from July 20 until September 1 holdings had an opportunity to submit information for the Agricultural Census in electronic form (Web data collection).

Finally, in the Agricultural Census 2010 in Latvia the following methods of data acquisition were used (see Fig. 1 for a breakdown):

- Face-to-face interviews with laptops,
- Telephone interviews,
- Web data collection,
- Data acquisition by mail.



**Fig. 1.** Summary of data acquisition methods used in the Agricultural Census 2010

This was the first time a new data collection method - Web data collection software CAWI (Computer Assisted Web Interviewing) which is a part of the new system CASIS (Computer Assisted Statistical Information System) was used in census data acquisition.

In order to reduce respondent burden, in the Agricultural Census information from following administrative data bases was used:

- Animal Register of the Agricultural Data Centre – number of livestock: cattle, sheep, goats and horses,
- Integrated Administration and Control System (IACS) of the Rural Support Service – support for rural development.

For quality checking and imputation in cases of non-response the following administrative data sources were used: IACS register – sown areas of main crops, Animal Register – number of livestock and Organic Farming Register.

## 5. Provisional results of the Agricultural Census 2010

In May 2011 the CSB compiled provisional key indicators of the Agricultural Census 2010. In total for the Agricultural Census 91.7 thousand holdings were surveyed, comprising 86.8% of all economically active holdings in Latvia managing 98.2% of the utilised agricultural area (UAA). As a result of the Census, information was acquired on 88.8 thousand holdings or 96.9% of the surveyed holdings, of which 83.1 thousand or 93.8% in 2010 were engaged in agricultural production or maintained land in good agricultural and environmental condition. But 5.5 thousand or 6.2% of the surveyed holdings, had leased the land out, sold it or were not engaged in agricultural production anymore. Information on 2.9 thousand or 3.1% of holdings was not obtained, because respondents were not met or refused to give information.

In 2010 in Latvia 83.1 thousand economically active holdings managed 2807.1 thousand ha of land (Table 1), of which 1787.2 thousand ha was utilised agricultural area. In comparison with the data of the Farm Structure Survey

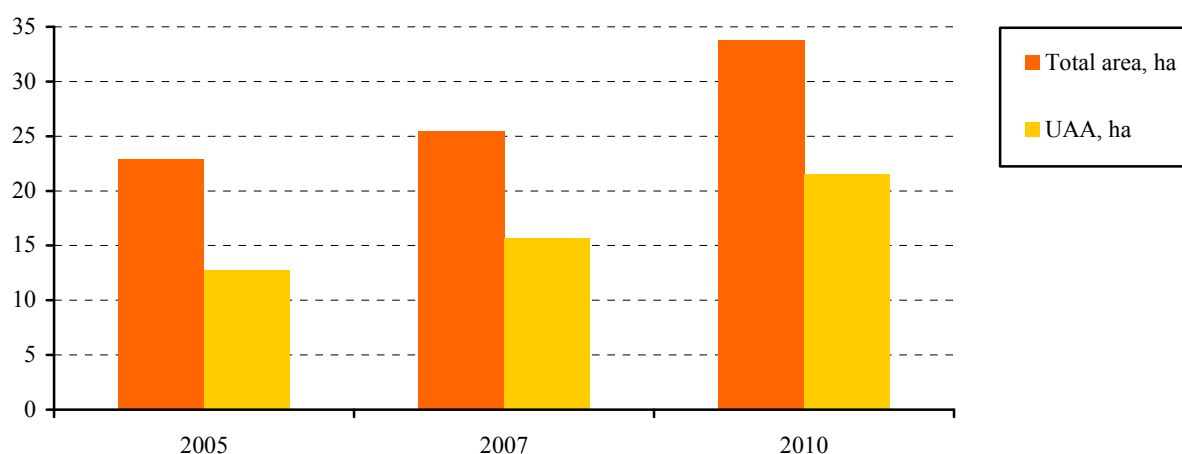
2007, the number of economically active holdings has reduced by 26.5%, but the total utilised agricultural area has grown by 11.4 thousand ha or 0.6%.

**Table 1.** Grouping of economically active holdings surveyed in Agricultural Census 2010 by utilised agricultural area

Utilised agricultural area per holding, ha	Number of holdings, thousand	Total land area, thousand ha	Agricultural area, thousand ha	
			total	of which UAA
Total	83.1	2807.1	1911.3	1787.2
up to 1.9	10.1	67.3	26.9	9.1
2.0–4.9	17.8	140.0	73.5	61.1
5.0–9.9	22.8	320.2	182.9	163.0
10.0–49.9	27.2	928.2	576.4	531.5
50.0–99.9	2.7	275.2	193.4	184.9
above 100.0	2.5	1076.2	858.2	837.6

The results of the Agricultural Census show that holdings in Latvia are consolidating – they have become larger (Fig. 2) and economically more active: the sown areas in holdings are growing, as well as the average number of live-stock per holding.

In 2010 one holding on average was managing 33.8 ha of land, an increase of 8.3 ha or 32.5% on 2007. The average area of utilised agricultural land per holding has grown by 36.9% – from 15.7 ha in 2007 to 21.5 ha in 2010.



**Fig. 2.** Average size of an economically active holding in Latvia

The sown area of agricultural crops in economically active holdings surveyed in the Agricultural Census 2010 comprised 1002.8 thousand ha, of which 53.7% was cereals, 11.3% was industrial crops and 1.9% was potatoes.

In 2010 the sown area of crops on average per crop-growing holding comprised 21.4 ha, 10.1 ha or 89.7% more than in 2007. The average area of cereals per holding growing them constituted 19.9 ha, an increase of 6.7 ha or 51.2% compared to 2007. The area of industrial crops on average per holding engaged in growing of them has risen by 16.9% – from 48.4 ha in 2007 to 56.6 ha in 2010. The area of potatoes on average per potato-growing holding comprised 0.7 ha – a growth of 0.2 ha or 50% on 2007.

48.8 thousand economically active holdings in 2010 were engaged in livestock production. The average herd size in cattle-growing holdings constituted 11 cattle, of which 5 were dairy cows. In comparison with 2007, the average size of cattle herd per holding has increased by 2.8 animals or by 33.2%, and the number of dairy cows has grown by 0.7 animals or by 17.4%.

The average size of pig herd per holding engaged in pig rearing comprised 20.1 animals, 5.9 animals or 41.6% more than in 2007.

The number of permanent employees in agriculture in economically active holdings in 2010 was 183.5 thousand, a reduction of 18.1% on 2007. The number of permanent employees at annual work units was 88.5 thousand or 16.1% less than in 2007.

More detailed results of the Agricultural Census 2010 and Survey on Agricultural Production Methods are planned to be published at the end of 2011 in a publication "Results of the Agricultural Census 2010", as well as on the website of the CSB: <http://www.csb.gov.lv/>.

In accordance with the requirements of the European Parliament and Council Regulation (EC) No 1166/2008, CSB has to develop and send a data file and a national methodological report on the Agricultural Census and Survey on Agricultural Production Methods to Eurostat by March 31, 2012.

## 6. Conclusions

1. In the Agricultural Census 2010 in Latvia following methods of data acquisition were used:

- Face-to-face interviews with laptops,
- Telephone interviews,
- Web data collection,
- Data acquisition by mail.

Data collection methods used in the Census proved their effectiveness, because, due to the possibility to input the data into laptop computers on-site during the interview as well as to save financial resources by using telephone interviews and Web data collection methods, it was possible to acquire the first provisional results rather quickly.

2. For the Web data collection a part of the new system CASIS (Computer Assisted Statistical Information System) – the software CAWI (Computer Assisted Web Interviewing) – was used for the first time in a census. This new system was also used in 2010 for annual agricultural statistics survey and will be used in future.

3. In order to reduce respondent burden, the Agricultural Census used information from the following administrative data bases:

- Animal Register of the Agricultural Data Centre – number of livestock (cattle, sheep, goats and horses),
- IACS register of the Rural Support Service – support for rural development.

4. For quality checking and imputation for non-response the following administrative data sources were used:

- IACS register – sown areas of main crops,
- Animal Register – number of livestock,
- Organic Farming Register.

5. The results of the Agricultural Census show that holdings in Latvia are consolidating – they have become larger and economically more active: the sown areas in holdings are increasing, as well as average number of livestock per holding. In 2010 one holding on average was managing 33.8 ha of land, and the average area of utilised agricultural land per holding was 21.5 ha.

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**2010 M. ŽEMĒS SURAŠYMAS LATVIJOJE****Anita Raubena**

**Santrauka.** Straipsnio tikslas – aprašyti 2010 m. žemės ūkio surašymo organizavimą Latvijoje, parodyti duomenų rinkimo būdus ir pristatyti trumpą išankstinių surašymo rezultatų analizę. Straipsnis pagrindžia surašymų reikalingumą ir parodo surašymo metu surinktos informacijos panaudojimo galimybes. Tyrimuose, atliktuose rengiant šį straipsnį, panaudoti indukcijos ir dedukcijos metodai, taip pat statistinė analizė, įskaitant grupavimą, apdorojimą ir palyginimą. Išankstiniai 2010 m. žemės ūkio surašymo rezultatai parodė, kad Latvijoje ūkiai konsoliduojasi – tampa didesni ir ekonomiškai perspektyvūs: jų pasėlių plotai didėja, tai pat didėja gyvulių skaičius, vidutiniškai tenkantis vienam ūkiui. 2010 m. vidutiniškai vienam ūkiui teko 33,8 ha žemės, iš kurios 21,5 ha naudojamų žemės ūkio naudmenų. Vidutinis ūkyje auginamos galvijų bandos dydis buvo 11 galvijų, iš jų 5 melžiamos karvės.

**Reikšminiai žodžiai:** žemės ūkio surašymas, ūkių struktūros tyrimas.