Standard documentation
Meta information
(definitions, explanations, methods, quality)

on the

Farm Structure Survey

Sample survey 2005

This documentation is valid as of the reporting date:

1 December 2005

These statistics were the subject of a feedback quality meeting on 27 September 2007

Status: **March 2008**

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Contents

1. Summary and important hints

The Farm Structure Survey supplies important information about the structure of agricultural and forestry holdings and gives an overview of the development of structural changes in agriculture and forestry at both national and European level.

Based on EU legislation, the Farm Structure Survey is at present conducted every 10 years (at the end of the decade) as a full survey and at regular intervals in between (currently 2003, 2005 and 2007) as a sample survey. All statements and comments in the following report refer to the Farm Structure Survey 2005 (sample survey).

The data from the Farm Structure Survey is used in many other areas of agricultural statistics and forms a crucial basis for correct political decision-making in the agricultural sphere at national and international level (see Figure 1; for further details see also the section "Objective and history" below).

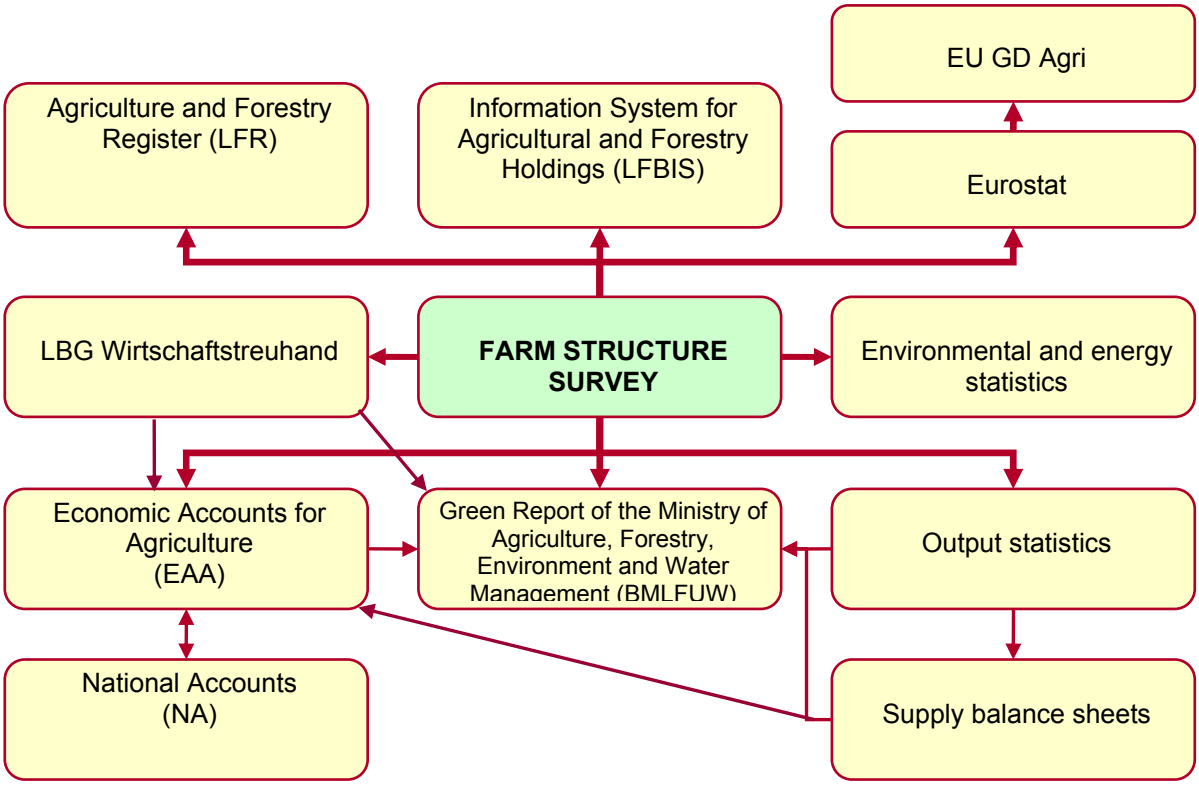

Figure 1: Users of the Farm Structure Survey data

The list of questions is based on the relevant EU legislation. Working party meetings (attended by representatives of Eurostat, GD Agri and the member states) are held at EU level and discuss the list of characteristics to be surveyed. After going through the necessary procedural steps (Standing Committee for Agricultural Statistics, European Council/Parliament), the framework list of questions for the various characteristics is fixed for a decade in a regulation, with follow-up regulations being issued if necessary. In order to reduce the respondent burden, a rotation principle was introduced in 2003. This means in practice that there is a core bank of questions that are asked in each survey (2003, 2005 and 2007) and alternating topic areas that are only included in one or two of the surveys. In order to take proper account of national requirements, possible modifications or additions to the list of characteristics are discussed with national experts.

According to relevant EU regulations, the scope of the Farm Structure Survey exceeds that of ÖNACE Sections A and B. The definition of agricultural and forestry holdings within the meaning of the Farm Structure Survey is as follows: Agricultural and forestry holdings are

technical/economic units with a single management that produce agricultural and forestry products. The holding may also produce other (non-agricultural) products and services. The Farm Structure Survey should record all holdings that fulfil the criteria of the Farm Structure Survey, irrespective of whether agriculture is a main or secondary activity of the holding. However, only the agricultural/forestry part of the holding is included in the Farm Structure Survey, i.e. only the scope of activity that represents agricultural or forestry work is taken into account. There is no classification of holdings by main area of activity as, for instance, in business statistics.

The statistics focus on the operational structure of agricultural and forestry holdings in 2005 under the following groups of characteristics: ownership structure, land use, labour force, livestock, fertiliser units, other holding-specific data such as machinery and equipment, and rural development.

The characteristics are obtained from primary statistics from agricultural and forestry holdings and also from administrative data from Agrarmarkt Austria (AMA) (Cattle Database, Integrated Administration and Control System (IACS)).

Only information that cannot be obtained from administrative data is obtained from primary statistics. For instance, in respect of cultivated land, only those holdings that have not made a subsidy application (multiple application for land areas – *Mehrfachantrag-Flächen*) to Agrarmarkt Austria as part of the IACS procedure must provide these details in the Farm Structure Survey (see also the standard documentation regarding Crops on arable land; available in German only).

In compliance with the Federal Statistics Act, Statistics Austria is obliged to use available administrative data.

To be allowed by the European Commission to use administrative data in the Farm Structure Survey requires a specified authorisation procedure by the European Commission. In 1997 Austria was allowed for the first time to use land area data from the multiple applications for land areas and from 2003 was allowed to use data from the AMA Cattle Database.

The Farm Structure Survey 2005 was conducted as a sample survey of 40 000 holdings. The selection framework consisted of the active operational units listed in the Agriculture and Forestry Register that are updated on an ongoing basis with information from various primary agricultural statistics surveys as well as by comparison with various sources of administrative data (subsidy applications etc.).

The survey was conducted solely by means of an Internet questionnaire. Altogether, 26% of the farmers made use of the option of submitting their responses on their own PC (direct respondents). The other respondents received assistance from their municipalities. According to regulations, the municipalities (through the mayor) had to help in the survey by providing survey assistants who filled out the electronic questionnaires following verbal questioning of the respondents.

The survey took the form of a personalised Internet questionnaire in which the name and address of the holdings and the land area details had already been entered from available administrative data. Data privacy was ensured by means of personal access data for each holding. A further benefit of using an electronic questionnaire was the integration of plausibility checks that checked data accuracy as it was being entered.

This document contains links to the most important meta information, e.g. legal basis, Internet questionnaire, explanations, accompanying letter, methodology report to Eurostat and the relevant publications.

When using the results of the Farm Structure Survey, it should be noted that this survey focuses on the holding and its operating conditions and is therefore always published in accordance with the business principle, i.e. all data for a holding is assigned to the area in which the headquarters or residence of the owner of the holding is located. In some areas at regional level this can lead to distortions, e.g. particularly as regards land areas in comparison to the total (cadastral) area of individual districts. Because of the increasing size of holdings through

acquisition or leasing or through the merger of individual business components to form an overall holding, this aspect is becoming increasingly important.

The Farm Structure Survey (formerly the Agricultural and Forestry Holdings Census / Agricultural Census) has a long tradition in Austria stretching back to 1902. However, when making comparisons with earlier periods, it should be noted that there have been changes in definitions and different survey criteria over this time.

You can find explanations of the specialist vocabulary and abbreviations in the **Glossary and list of abbreviations** at the end of the standard documentation.

2. General information

Type of statistics

Primary/secondary statistics.

Subject area

Agricultural statistics/agricultural structure.

Responsible organisational unit and contact details

Agriculture and Forestry Division; Directorate Spatial Statistics;

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Objective and purpose, history

The Farm Structure Survey is one of the most important sources of statistical information about agriculture and forestry. The aim is to obtain up-to-date and realistic results regarding the structural conditions in Austrian agricultural and forestry and their comparability with the results from other EU member states. This information is required to investigate the causes and background of structural change in this important economic sector and subsequently to draw specific conclusions for the future. This data forms a crucial basis for correct political decision-making in the agricultural sphere at national and international level.

The results are incorporated in other statistics, including output statistics, and subsequently supply the basic data for supply balance sheets and national agricultural accounts. The master data and the data on holdings updated during the survey are also used to update the Agriculture and Forestry Register (LFR). The data is also used in further calculations in the environment and energy sectors and forms the basic data e.g. for the development of indicators and for adjusting the wage rate index.

In addition, the distribution plan of the accounting companies of LBG Wirtschaftstreuhand- und Beratungsgesellschaft m.b.H., the analysis of which supplies valuable information about the economic conditions in agricultural and forestry holdings for the "Green Report" of the Ministry of Agriculture, Forestry, Environment and Water Management, is based on the results of the Farm Structure Survey.

The first survey of all agricultural and forestry holdings in Austria was conducted in 1902. Further censuses of holdings took place in 1930, 1939, 1951 and then at 10-year intervals from 1960 to 1990. In between these there were land use surveys and – from 1973 – labour force surveys at intervals of three to four years. Machinery was also recorded in separate surveys at 6-year intervals. The first sample Farm Structure Survey was conducted in 1993. Its list of questions was primarily based on that of the 1990 Agricultural Census in order to ensure continuity in the

national time series. However, there were initial adaptations to EU requirements to take account of national needs. In the year of accession to the EU, the list of questions for the 1995 survey was completely modified in line with the specifications of the EU list of characteristics. Because of this change, a full survey was conducted on the recommendation of the National Working Group of the Advisory Council for Agricultural Statistics. In 1997 there was a sample survey in which Austria was allowed to use administrative data for the first time. The European Union planned a full Farm Structure Survey at the turn of the decade, whereby the member states could decide whether to hold it in 1999 or 2000. The Farm Structure Survey took place in Austria on 1 June 1999. Sample surveys were then specified for 2003, 2005 and 2007 based on the relevant EU regulations. The next full survey is again to be held at the turn of the decade (2010) and changes to the list of questions are likely in line with the new requirements of the Common Agricultural Policy and the Rural Development Policy. Sample surveys are also planned for 2013 and 2016.

Periodicity

Currently at intervals of two to four years.

Contracting entity

Ordered pursuant to Section 4 (1) of the Federal Statistics Act 2000 (see also Legal Basis section below).
Responsible ministry: Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW).

Main users

- EU (Eurostat, GD Agri);
- Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW, also referred to as "Ministry of Life");
- Austrian Chamber of Agriculture (LKÖ);
- Regional chambers of agriculture;
- Offices of the regional governments;
- Austrian Institute of Economic Research (WIFO);
- Federal Institute of Agricultural Economics (AWI);
- Agency for Health and Nutritional Safety (AGES);
- Agricultural colleges;
- Universities;
- Municipalities;
- Media;
- Individual users (farmers, companies etc.)
- Internal users at Statistics Austria:
    - Output statistics and subsequently supply balance sheets,
    - Economic Accounts for Agriculture (EAA) and subsequently National Accounts (NA),
    - Environment and energy statistics.

Legal basis

National legal basis:

Regulation of the Federal Minister of Agriculture, Forestry, Environment and Water Management regarding the preparation of statistics concerning the structure of agriculture and livestock in 2005, Federal Law Gazette II No. 358/2005 (available in German only).

EU legal basis:

Regulation (EEC) No. 571/88 of the Council of 29 February 1988 on the organization of Community surveys on the structure of agricultural holdings between 1988 and 1997.

Regulation (EC) No. 2467/96 of the Council of 17 December 1996 amending Regulation (EEC) No 571/88 on the organization of Community surveys on the structure of agricultural holdings.

Regulation (EC) No. 2139/2004 of the Commission of 8 December 2004 adapting and implementing Council Regulation (EEC) No. 571/88 and amending Commission Decision 2000/115/EC with a view to the organization of Community surveys on the structure of agricultural holdings in 2005 and 2007.

Commission Decision of 10 February 2005 (2005/124/EC) authorising certain Member States to use information from sources other than statistical surveys for the 2005 survey on the structure of agricultural holdings.

3. Statistical concepts and methodology

Subject of the statistics

Structure of agricultural and forestry holdings 2005: ownership conditions, land use, labour force, livestock, fertiliser units, other holding-specific information.

The **reporting date** for the survey was 1 December 2005. There were also a number of different reference time frames:

1. The 2005 crop year – for details regarding land-area-related survey characteristics

2. 1 December 2004 to 30 November 2005 – for details regarding labour data, machinery and equipment and fertiliser collection units.

3. For poultry data, in the case of poultry houses that were temporarily cleared as of 1 December 2005, the survey date is taken as the date of the last previous clearance between 1 November 2005 and 1 December 2005.

Observed unit / reporting unit / presentation unit

Agricultural and forestry holding (according to the Agriculture and Forestry Register).

Definition of "holding" according to the relevant EU regulation: Agricultural and forestry holdings are technically economic units with a single operation management that produce agricultural and forestry products. The holding may also produce other (non-agricultural) products and services.

Statistical units within the meaning of the Farm Structure Survey are:

1. Agricultural and forestry holdings with an area of at least 1 hectare used for agricultural purposes;
2. Vineyards with at least 25 ares of vineyard area;
3. Holdings with at least 15 ares of land used intensively as fruit orchards, 10 ares of soft fruit, strawberries, vegetables, flowers or ornamental plants or vine, forestry or tree nursery and with greenhouses (greenhouse, polytunnel or cloche);

4. Forestry holdings with at least 3 ha of wooded area;
5. Livestock husbandry holdings with at least 3 cattle or at least 5 pigs or at least 10 sheep or at least 10 goats or at least 100 poultry (any type).

The scope of the Farm Structure Survey exceeds that of ÖNACE Sections A and B. The definition of agricultural and forestry holdings within the meaning of the Farm Structure Survey is as follows: Agricultural and forestry holdings are technically economic units with a single management that produce agricultural and forestry products. The holding may also produce other (non-agricultural) products and services. The Farm Structure Survey should record all holdings that fulfil the criteria of the Farm Structure Survey (see above), irrespective of whether agriculture is a main or secondary activity of the holding. However, only the agricultural and forestry part of the holding is included in the Farm Structure Survey, i.e. only the scope of activity that represents agricultural or forestry work is taken into account. There is no classification of holding by main area of activity as, for instance, in business statistics.

Data sources

1. Primary statistical survey of agricultural and forestry holdings

2. Administrative data of Agrarmarkt Austria (AMA)

- Cattle Database
- Integrated administration and control system (IACS)
  - Multiple application for land areas
  - ÖPUL – Austrian programme for the funding of environmentally sustainable, extensive agriculture that conserves the natural world

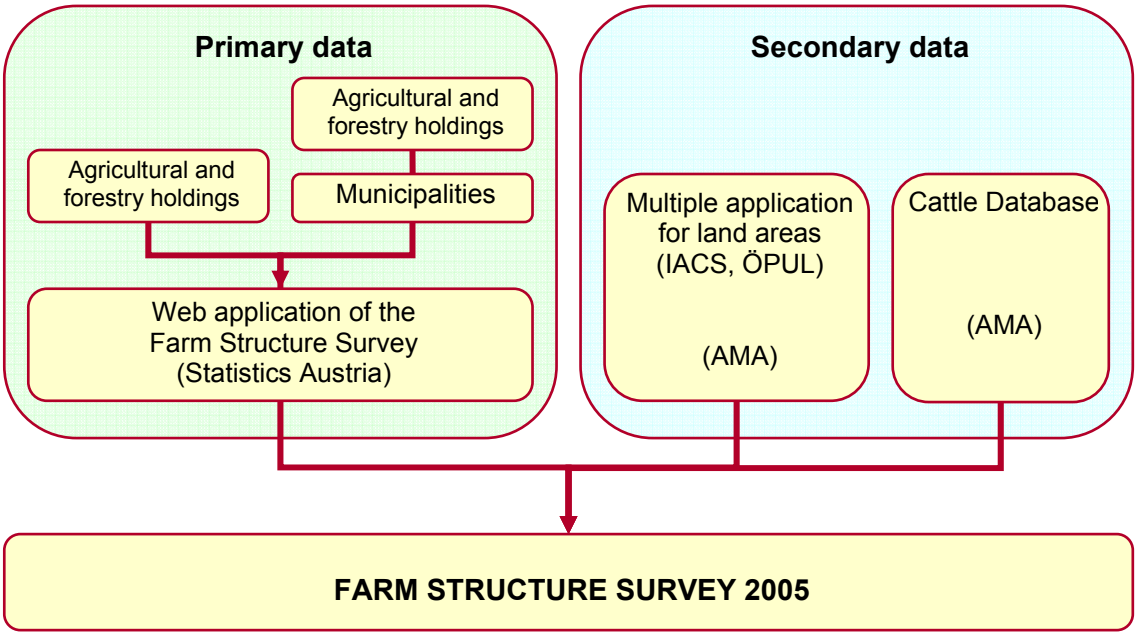

Figure 2: Data sources of the Farm Structure Survey 2005

Table 1: Sources of characteristic groups

Characteristic group	Primary data	Secondary data
Ownership details (owned/leased)	ST AT	
Management system and methods (organic cultivation, investment grants, direct marketing)	ST AT	(ÖPUL)
Types of cultivation and irrigated areas	ST AT	(MA areas)
Crops on arable Land	ST AT	(MA areas)

Areas that are subject to a set-aside aid scheme		(MA areas)
Manure storage facilities	ST AT	
Rural development (ancillary activities)	ST AT	
Agricultural and forestry machinery and equipment	ST AT	
Agricultural and forestry workers from the family and other persons in the household of the holding	ST AT	
Non-family agricultural and forestry workers	ST AT	
Agricultural and forestry training of the holding manager	ST AT	
Cattle		(Cattle Database)
Other livestock	ST AT	

Note: Only those characteristics and groups of characteristics regarding the management system and methods, types of cultivation, irrigated areas and crops on arable land that were not available as secondary data were surveyed as primary statistics.

Reporting unit and respondents

Natural and legal persons as well as partnerships under commercial law that operate a statistical unit in their own name were obliged to submit information.

Respondents were required to provide their data in due time, complete and to the best of their knowledge. They were only able to submit their return via the electronic questionnaire (Web application). 26% of farmers did this directly, 74% completed their submissions with the help of the municipality.

According to regulations, the municipalities (through the mayor) had to help in the survey by providing survey assistants who filled out the electronic questionnaires following verbal questioning of the respondents. To this end Statistics Austria had notified the relevant municipalities of the addresses of the sample holdings. As a result of their knowledge of local conditions and holdings, the municipalities made a valuable contribution in conducting the survey and in issuing reminders to non-responder holdings.

Survey format

Sample survey with use of administrative data.

Sample characteristics

- **Selection framework**
  The selection framework for the Farm Structure Survey 2005 consisted of the active operational units (232 825) listed in the Agriculture and Forestry Register that are updated on an ongoing basis with information from various primary agricultural statistics surveys and by comparison with various administrative data (data from Agrarmarkt Austria/information about mineral oil tax reimbursements). The scope of the selection was based on the available data regarding land area and/or livestock with the relevant applicable lower thresholds. It was not significant whether a unit was already included in a different register, e.g. the Company Register, since the information there is unsatisfactory in terms of land area and livestock data. The master data in the LFR is updated based on information from the Company Register (UR) where the information refers to corresponding units; the same applies for the Veterinary Information System (VIS).
- **Scope of sample survey**
  The sample survey covered approx. 40 000 holdings. This size of sample guarantees sufficient accuracy and has also proven manageable in terms of processing.

Calculations have shown that the specifications that will be binding from 2013 regarding simple relative standard errors (max. 5% for aggregates comprising 5% of the cultivated land/livestock) are satisfied.

- **Sample plan**
  The sample was designed as a multi-level random sample.

- **Level characteristics**
  Selected characteristics from the Farm Structure Survey 1999 were basically used to form levels, e.g. total land area, domestic garden areas, orchards or vineyards and the number of workers. Since the farm structure surveys also need to investigate livestock numbers, the most recent stock levels of horses, cows, cattle, pigs, sheep, goats, hens, other poultry and non-domesticated animals were used to form levels.

- **Formation of levels and breakdown of the scope of the sample**
  Detailed level formation (including numbers in population and sample; available in German only).

  The holdings in the selection framework were divided into 8 to 16 levels for each federal province. The levels numbered 1 to 5 (in Salzburg, Tyrol, Vorarlberg and Vienna) or 1 to 9 (in the other federal provinces) were formed by combining the size categories for the characteristics 'total area in ha (TA)' and 'arable area in ha (AA)'. The other levels comprised holdings with high livestock numbers, high labour force or significant fruit/vine cultivation.

  The sample plan was designed to produce results with low sample errors for all federal provinces for the most important survey characteristics (land and livestock data), with different level characteristics also being used in the individual federal provinces. The level numbers used are solely for technical purposes for internal processing.

  The sample scope of 40 000 holdings was allocated to the 9 federal provinces proportionately to the square root of (total area in ha + number of cattle + number of pigs). Within each federal province, the province-specific sample scope was allocated to the levels proportionately to the product of the level scope and the standard deviation of an indicator ascertained by averaging the total area and the arable area. If this standard deviation in a level was smaller than the standard deviation of cattle numbers, the latter was taken. This allocation algorithm (Neyman-Tschuprow) meant that, in levels with large holdings (with large areas of land or large numbers of livestock), an above-average number of holdings were selected in the sample. In some cases there was even a full survey of the most important levels.

- **Selection of the sample**
  Before the sample was selected from the selection framework, the holdings within each level were sorted by arable land in ascending order. The selection was made systematically for each level using a start number Z_{bh} and a step number S_{bh}. The step number S_{bh} of a level bh is based on a quotient (holdings in selection framework / desired scope of sample). A random number between 1 and the step number is generated as the start number Z_{bh}. Those holdings were selected whose sequence number corresponded with one of the numbers $[Z_{bh} + (i - 1)S_{bh}], i = 1,2,3,...$.

- **Compilation of statistical surveys**
  The member states are obliged by relevant EU legislation to conduct a Farm Structure Survey. This survey must include the recording of the entire stock of farm animals, broken down into various usage groups.

  In addition, an EU directive stipulates that there must be a survey of numbers of cattle, pigs, sheep and goats each December, broken down by usage groups.

  To minimise the respondent workload, the Farm Structure Survey was designed so that it also complied with the EU directives for surveying livestock numbers. This meant that respondents only needed to be questioned once.

Survey techniques / data transmission

As with most agricultural statistical surveys, the Farm Structure Survey 2005 was conducted with the support of the municipalities, which were obliged under national regulations to manage the survey locally. In November 2005, the offices of the regional governments were asked by Statistics Austria to issue official instructions for conducting the survey to administrative district offices, to municipal departments of the towns with their own statute and to municipalities. These letters contained the most important information for ensuring the smooth management of the survey, e.g. procedural instructions and deadlines for returns.

The survey documents were sent by post at the end of November to both the municipalities and the respondents. For the farmer these consisted of a checklist for completing the Internet questionnaire and a booklet with detailed instructions. An accompanying letter and list of questions were also sent. In addition, the municipalities received address lists of the holdings to be surveyed and "Official announcements". The "Official announcements" were to be put up at various visible locations in the local area.

The Farm Structure Survey 2005 was held solely using an Internet-based questionnaire, i.e. for the first time farmers were able to submit their return either directly at the computer after entering their user ID and password (direct respondents) or via a computer at their municipality offices. The survey took the form of a personalised Internet questionnaire in which the name and address of the holdings and the land area details from available administrative data were already entered and only had to be checked and, if necessary, corrected. Detailed information material on how to use the Internet questionnaire and administer the Farm Structure Survey was sent directly to the respondents and municipalities. A dedicated hotline was set up by Statistics Austria to answer any questions that arose during the survey phase. In addition, queries could be sent by e-mail to Agrarstrukturerhebung@statistik.gv.at. In the Internet questionnaire, too, there was detailed help on the various functions and pop-ups with information about the individual questions.

The changeover to the Internet questionnaire affected not only the municipalities but also every farmer. In collaboration with representatives of a wide range of organisations, a very practically based questionnaire was developed and tested in two trial runs to minimise the number of queries/problems automatically arising with respect to new/amended features.

26% of farmers responded directly. The other 74% received assistance from their municipality. On an agreed date they visited the municipality offices with their access data (user ID and password), prepared information and required documents. The competent officers logged onto the municipality computer using the farmer's access data, opened the farmer's survey form and assisted him/her in filling out the Internet questionnaire.

The municipalities could access a list of holdings (all holdings in the local area still to be surveyed) by entering their own access data (user ID and password). This list of holdings helped the municipalities during the reminder phase since those holdings that had sent their questionnaires directly to Statistics Austria were removed from the list on a daily basis, i.e. the list only showed those holdings that had not yet made a return to Statistics Austria and therefore needed to be reminded or summoned to do so by the municipality.

The questionnaires could also be accessed from this list of holdings in the event that the farmer's access data had been lost or was not available during the questioning at the municipality offices (but without the land area data from the MFA of the AMA for data protection reasons).

Survey questionnaire (including explanatory notes)

Questionnaire (available in German only)

Explanations (available in German only)

Accompanying letter (available in German only)

Survey participation (mandatory or voluntary)

Compulsory (duty to inform).

Variables surveyed and derived, indicators (including definitions)

In accordance with Federal Law Gazette II No. 358/2005 (available in German only);

The EU Commission in principle specifies the set of questions, which is in line with the requirements of the European agricultural policy. The list of characteristics is discussed at EU level in working group meetings (representatives of Eurostat, GD Agri and the member states). After going through the specified procedural stages (Standing Committee for Agricultural Statistics, European Council and Parliament), the framework programme for the list of characteristics is established for a decade in a Council Regulation. Subsequent regulations may be adopted if required, e.g. for the purposes of adaption to agricultural policy requirements.

From 2003 a rotation principle was introduced for the list of characteristics in order to reduce the respondent burden. This means there is now a "core" bank of questions that must be asked in each survey (2003, 2005 and 2007) and alternating topic areas that only need to be asked in one or two of the surveys. The Advisory Council for Agricultural Statistics has also adapted the list of characteristics to meet national requirements and conditions.

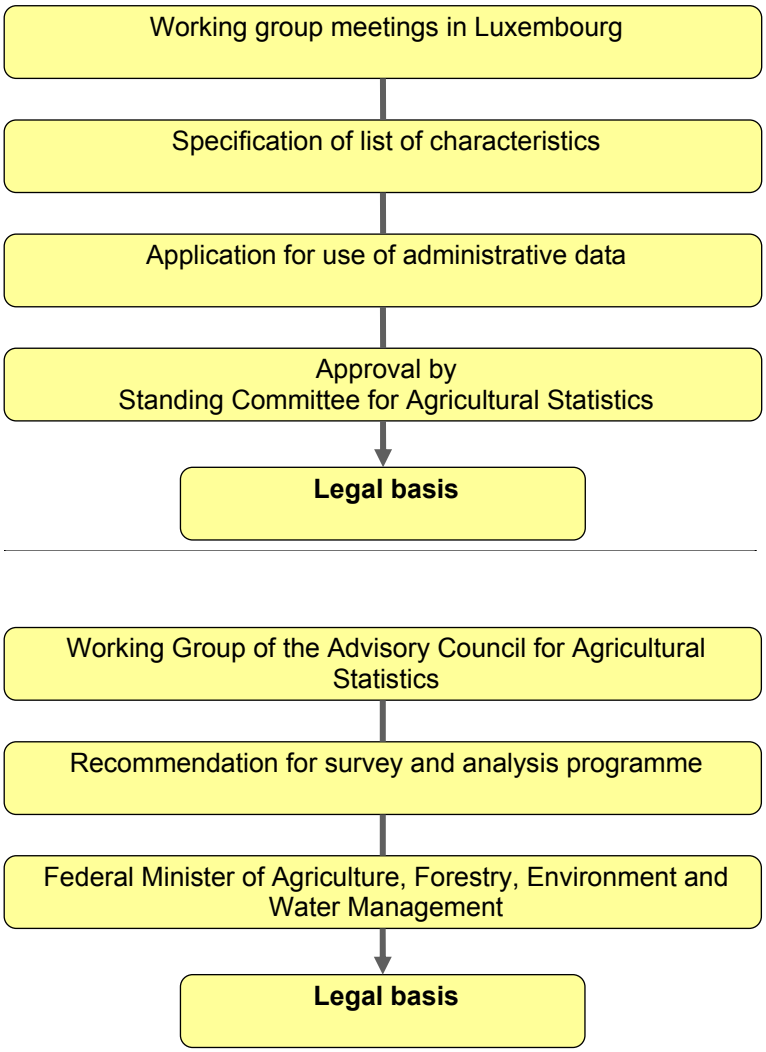

Figure 3: Development of the list of questions

Survey items:

Name, address, phone number, e-mail address of the owner of the holding (holding data)

Legal form of the holding

1. **Ownership details (all area data in ares)**
   - Total land area under ownership
   - Land area under ownership under agricultural use
   - Total land area leased to others
   - Land area leased to others under agricultural use
   - Total land area relinquished for cultivation
   - Land area relinquished for cultivation under agricultural use
   - Total land area leased from others
   - Land area leased from others under agricultural use
   - Total land area received for cultivation
   - Land area received for cultivation under agricultural use
   - Total land area under cultivation
   - Land area under agricultural use
2. **Management systems and methods**
   - Land area under agricultural use with organic farming:
     - recognised (ares)
     - in conversion phase (ares)
   - Use of organic production methods in animal rearing (full, partial, none)
   - Receipt of direct state funding in the last 5 years
     - for operational investment (yes/no)
     - for other rural development measures (forestry promotion, Art. 33 measure) (yes/no)
   - Share of direct sales as proportion of total sales to consumers (by % groups) (yes/no)
3. **Types of cultivation and irrigated areas (area in ares)**
   - Arable
   - Land used for kitchen gardens
   - Intensive fruit plantations, including soft fruit (excluding strawberries)
   - Extensive fruit plantations
   - Vineyards
   - Vine and tree nurseries
   - Forestry nurseries
   - Single-cut meadows
   - Multiple-cut meadows
   - Cultivated pastures
   - Common pastures (*Hutweiden*)
   - Mountain pastures
   - Mountain meadows
   - Litter meadows (*Streuwiesen*)
   - GLÖZ G land (grassland in good agricultural and ecological condition no longer used for production)
   - Total area in agricultural use
   - Wooded areas
   - Short rotation coppices
   - Christmas tree plantations
   - Forestry plantations
   - Grassland no longer used
   - Flowing and still water
   - Uncultivated moorland
   - Building and yard areas
   - Other unproductive areas
   - Total area
   - Irrigation in ares

Land actually irrigated in the last 12 months
Land that could be irrigated

4. Cultivation on arable land in ares (main use – harvest 2005)

Soft winter wheat
Soft summer wheat
Durum wheat
Spelt wheat
Rye
Winter barley
Summer barley
Oats
Winter mixed cereals
Triticale
Summer mixed cereals
Other cereals
Grain maize
Maize for corn-cob mix
Silo maize
Green maize
Grain legumes
Field beans
Sweet lupins
Lentils, chickpeas and vetch
Other leguminous plants
Early and mid-early potatoes
Late potatoes
Sugar beet
Fodder roots and brassicas
Hops
Tobacco
Winter oilseed rape
Summer rape and turnip rape
Sunflowers
Soya beans
Poppy seed
Linseed
Oil pumpkin
Other oil-seed crops
Flax
Hemp
Medicinal plants, aromatic plants and herbs
Other industrial plants
Strawberries
Outdoor vegetables – open field cultivation
Outdoor vegetables – market garden cultivation
Vegetables under glass/plastic
Flowers and ornamental plants – outdoor
Flowers and ornamental plants – under glass
Red clover and other types of clover
Lucerne
Clover grass
Other field fodder crops
Pasture and meadow land
Seeds and seedlings
Fallow land without any subsidies

Fallow land subject to the payment of subsidies, with no economic use
Other arable land crops
Total arable land

5. Land subject to payment of subsidies for setaside

Fallow land (green fallow land) with no economic use
Land used for producing agricultural raw materials not destined for foodstuffs or animal fodder (e.g. sugar beet, rape, non-forest trees and shrubs), including lentils, chickpeas and vetch
Land converted to permanent grassland
Former agricultural land that has been converted to wooded areas or in preparation for afforestation

6. Manure storage facilities

Liquid manure pits (number and available storage capacity in months)
Slurry storage facilities (number and available storage capacity in months)
Facilities for solid dung (number and available storage capacity in months)

7. Rural development: Pursuit of other gainful activities on the holding (other than agriculture) that are directly related to the holding:

Tourism, accommodation and other leisure activities
Production of handicrafts
Processing and sale of farm products
Timber processing
Aquaculture
Renewable energy production
Contractual work (using machinery/equipment of the holding)
Other activities

8. Agricultural and forestry machinery and equipment

Holding's own machinery and equipment (quantity)
- Tractors under 40 kW (54 hp)
- 40 to <60 kW (82 hp)
- 60 to <80 kW (109 hp)
- 80 to <100 kW (135 hp)
- 100 kW (135 hp) or more
- Single-axle tractors, motor hoes, motor tillers and motor mowers
- Combine harvesters
- Potato harvesters
- Turnip harvesters
- Other harvesting machines for green fodder, hay etc.

Irrigation system (fixed/mobile)

Use of machinery not belonging to the holding over the past 12 months
- Tractors under 40 kW (54 hp)
- 40 to <60 kW (82 hp)
- 60 to <80 kW (109 hp)
- 80 to <100 kW (135 hp)
- 100 kW (135 hp) or more
- Single-axle tractors, motor hoes, motor tillers and motor mowers
- Combine harvesters
- Potato harvesters
- Turnip harvesters
- Other harvesting machines for green fodder, hay etc.

9. Farm/forestry workers who are members of the family and other persons in the holding household

Holder
- Manager
- For all persons

Family relationship to the holder (except in the case of the holder him/herself)
Year of birth
Gender
Main occupation
Working time on the holding
(0%; 1 to 24%; 25 to 49%; 50 to 74%; 75 to 99%; 100% of annual working hours)

10. Farm/forestry workers who are not part of the family

Manager:
Year of birth
Gender
Working time on the holding
(1 to 24%; 25 to 49%; 50 to 74%; 75 to 99%; 100% of annual working hours of a full-time worker)

Regularly employed workers who are not part of the family:[1]
Number in each age category (under 25, 25 to 34, 35 to 44, 45 to 54, 55 to 64, 65 and older)
Number in each gender category
Working time on the holding
(1 to 24%; 25 to 49%; 50 to 74%; 75 to 99%; 100% of annual working hours of a full-time worker)

Irregularly employed workers who are not part of the family:[2]
Number in each gender category
Total working days

11. Agricultural and forestry training of the holding manager

Solely practical experience
Basic training
Comprehensive agricultural and forestry training

12. Cattle livestock

bovine animals under 1 year old
male
female
bovine animals from 1 to 2 years old
Bulls and oxen
Heifers
bovine animals 2 years old and older
Bulls and oxen
Heifers

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[1] Those persons who, irrespective of the number of weekly working hours, were working from 1 December 2004 to 30 November 2005 each week in the surveyed holding (excluding holidays, illness, compulsory military/civilian service etc.).

The number of persons in the relevant category of working time (1-24%, 25-49%, etc.) must be entered. The percentages refer to the working hours of a full-time worker.

Example: Persons working half-days should be entered in the 50-74% category.

[2] Those persons who did not work every week on the holding from 1 December 2004 to 30 November 2005.

This includes seasonal workers, day-rate workers/harvest helpers. Those who were working on the surveyed holding as part of neighbourhood help or on contract for someone else (e.g. workers employed by farm contractors) should not be included.

The total number of days should also be stated that were worked by irregularly employed workers from 1 December 2004 to 30 November 2005.

In the case of hourly employment, this should be converted to days (1 day = 8 working hours).

The totals should be rounded up to full days.

Dairy cows
Other cows
Total cattle

13. Other livestock

Horses, donkeys, mules
Pigs
Piglets under 20 kg live weight
Young pigs from 20 to >50 kg live weight
Fattening pigs (including culled breeding animals) with a live weight of 50 kg and over
50 to >80 kg
80 to >110 kg
110 kg and over
Breeding sows with a live weight of 50 kg and over
Young sows, not yet served
Young sows, served for the first time
Older sows, served
Older sows, not served
Breeding boars
Total pigs
Sheep
Ewes and lambs put to the ram
Other sheep
Total sheep
Goats
Goats that have already kidded and mated goats
Other goats
Total goats
Poultry
Broilers
Chicks for laying purposes, laying hens, cockerels
Total chickens
Turkeys
Ducks
Geese
Other poultry
Other farm animals

Classifications used

Municipality codes of Statistics Austria (available in German only): Assignment of holdings to "Disadvantaged areas".

NUTS (available in German only): Regional view.

Regional breakdown of the results

NUTS 2 (federal provinces; available in German only).

4. Production of statistics, processing, quality assurance measures

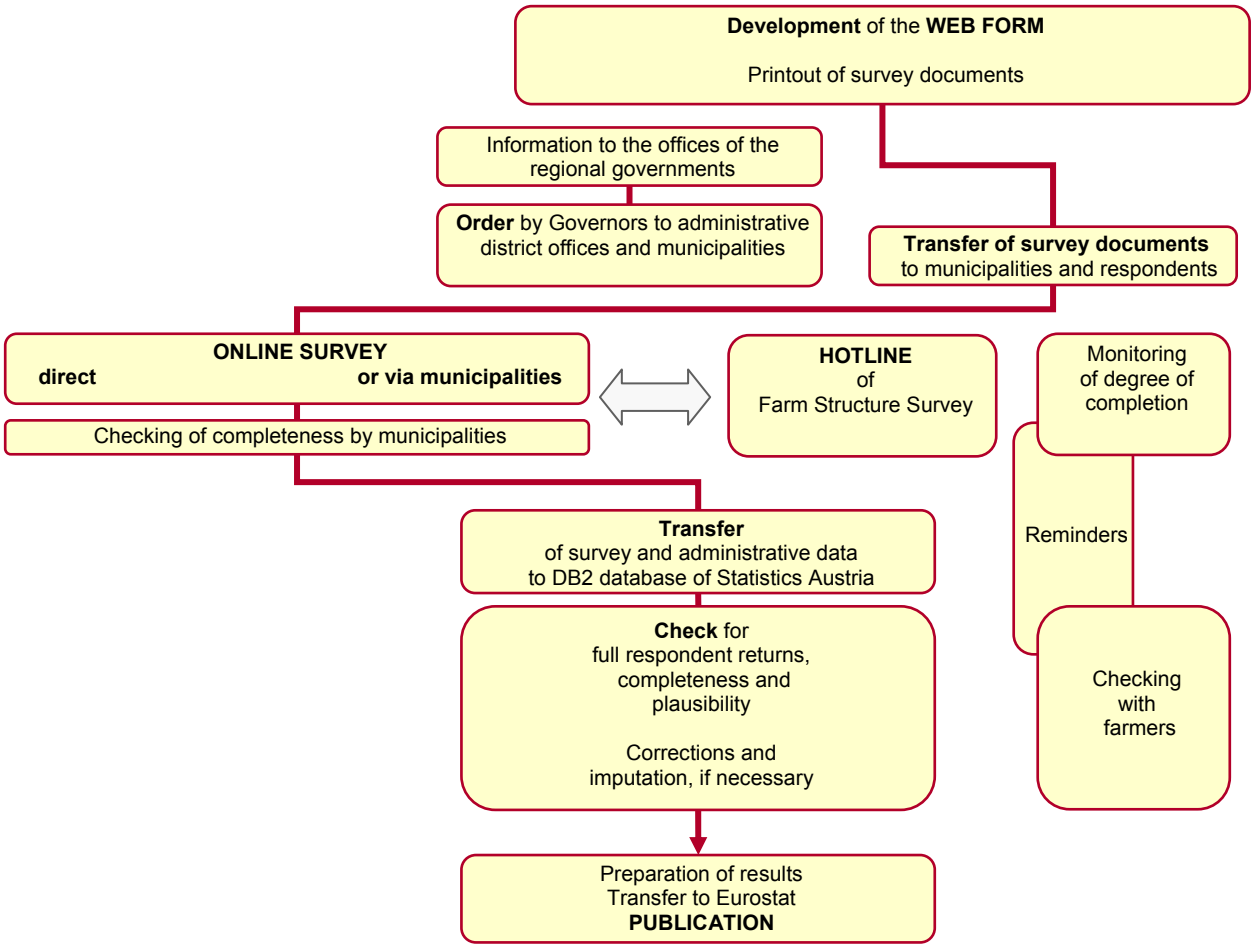

Figure 4: Flow diagram for the Farm Structure Survey 2005

Data capture

An electronic Internet questionnaire was used for the first time, i.e. in most cases it was not necessary to acquire data separately, instead the data could be transferred directly to the host computer system from the Internet questionnaire with the use of a conversion table.

In order to ensure that the survey could still be completed locally without difficulties in the event of Internet failure or other application problems, a replacement Excel form was sent to the municipalities by e-mail with the explicit instruction that it should only be used when the Internet application had failed. This option was used in around 500 cases.

Transfer and processing of administrative data

The Computing and Technology Centre for Agriculture, Forestry and Water Management (LFRZ) of the BMLFUW was assigned the task of performing the analysis from IACS for the crops on arable land and setaside land. To do so, however, the relevant allocations had to be specified by Statistics Austria for the multiple application data available in IACS relating to the items required in accordance with the survey programme of the Farm Structure Survey. The data file created by LFRZ contained the data regarding individual holdings required for merger with the Farm Structure Survey, i.e. the municipality number, holding number and the individual land area data were identified for each holding.

The analyses from the Cattle Database, information regarding organic holdings and information about those holdings that had received investment grants were obtained from the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW). The boundaries of disadvantaged areas and NATURA 2000 areas were also notified by the BMLFUW. This data was provided to Statistics Austria in electronic form and then electronically processed. In order to link the

various datasets, the administrative data had to be prepared and transferred to the host computer system.

Coding

None.

Editing and verification of data sources used

Check for completeness (return control)

Under Section 15 of the Farm Structure Survey Regulation (Federal Law Gazette. II No. 358/2005; available in German only) the municipalities were responsible for ensuring that the completed surveys were transferred in due time to Statistics Austria. The issuing of reminders to non-respondent holdings was therefore primarily the responsibility of the municipalities.

In order to track the return of the questionnaires quickly and to ensure that the process was as up to date as possible, an Access database was created with the necessary information (e.g. master data for the holdings, competent administrative office (municipality, municipal authority or administrative district) and administrative data (mineral oil tax data, alpine transhumance list (Almauftriebsliste), Natura 2000 holdings). This database was used to monitor the degree of completion of the survey on an on-going basis. The relevant reminder measures primarily took the form of reminder e-mails to non-responding municipalities or phone calls.

Error correction/plausibility

In principle, a distinction is made between:

- plausibility at micro data level and
- plausibility at macro data level.

Plausibility at micro data level

The Internet questionnaire was designed so that the input data was checked for plausibility in the most important sections either while the questionnaire was being completed or before it was sent off. The questionnaire could only be sent off after any errors identified in the error check had been corrected. In order not to overload the questionnaire and make it unnecessarily unwieldy, this immediate plausibility check had to be limited to the most important content.

In addition, precautions were taken to prevent individual pages of the questionnaire being inadvertently missed out by putting a marker on each page of the questionnaire that had to be set to either "There are no data entries for this page" or "The data entries on this page are complete".

In collaboration with the Data Processing department, a plausibility program with approx. 100 different plausibility rules was developed for the actual monitoring of the transferred datasets. It was ensured that missing, incorrect or implausible entries were detected by the program and transferred to the plausibility lists or corrected immediately (automatic error points; see below).

For the plausibility rules created, a distinction was made between the following types of error:

- Automatic error points (19 automatic error points)

These were errors that could be automatically corrected by appropriately programmed predefined values.

- Information error points (43 information error points)

These were primarily used to detect incorrect entries or spelling mistakes. Threshold values were incorporated in the program, particularly for specific items, e.g. to prevent entries for special cultivation in the wrong units of measurement (e.g. m²). A message appeared if these predefined values were exceeded. The processor then either had to confirm that the data was correct on the basis of research or his/her specialist knowledge, or make the necessary corrections if entries were incorrect.

- Error points (37 error points)

These error points had to be corrected by the processors either by questioning respondents or on the basis of their specialist knowledge.

The specialist team first tested the functionality of the plausibility program using "fictitious" holdings. To this end, a specific range of respondent errors were entered in the correction application to check whether the program detected the incorrect entries and displayed them accordingly.

Extensive plausibility checks were used to edit the data at micro level. The errors displayed (entry errors, missing or implausible data) had to be clarified and corrected by the trained team of specialists. Errors were corrected and plausibility work was performed electronically by means of the application itself. The design of the correction application ensured that, in the case of certain characteristics (e.g. non-permitted coding, errors at total items), it was not possible to continue working in the application until the error had been rectified. After the datasets had been processed, they were subjected to another extensive plausibility check. Holdings with data that was still incorrect were listed again and had to be reprocessed. This procedure was repeated until the program no longer detected any incorrect or inconsistent data.

The necessary corrections were made by trained Statistics Austria staff. Particular attention was paid to larger holdings in the plausibility checks in order to prevent area undercoverage. The data was "compared" with the previous Farm Structure Survey (1999/2003) and holdings with large area differences (200 ha in holdings of up to 1 000 ha or a 20% difference in holdings of more than 1 000 ha) were identified. Many years of experience have shown that in this area, despite clear instructions in the explanations and in the questionnaire itself, incorrect land area data (particularly for alpine and wooded areas) is very often entered, which can be corrected through relevant research from various data sources (information from subsidy applications on the alpine transhumance lists (*Almauftriebslisten*), Forestry Yearbook etc.) or by phoning the respondents.

Comparative figures
Relevant key data from the previous survey was contained in the plausibility lists, thus enabling gross errors such as ranking errors in the cultivated area data to be easily detected. If required, previous data could also be accessed in detail, allowing errors or incomplete data to be corrected without burdening respondents. In addition, the available administrative data for each holding (multiple application (MA) as well as data from mineral oil tax reimbursements for agricultural diesel (MÖST)) could also be examined. These features greatly facilitated the data plausibility checks as unclear information was frequently able to be corrected without burdening respondents.

Master data correction
The master data in the Internet questionnaire was corrected, if necessary, by respondents. These changes were passed on to the Agriculture and Forestry Register (LFR) specialist team to enable them to correct the register data.

Errors and omissions by the holding operator (*Bewirtschafter*)[3]
Using the Internet form reduced the amount of incorrect entries by holding operators during completion since gross errors were not allowed by the system. In particular, the problem of misreporting of land areas (types of cultivation and ownership details) that often occurred in the past and could only be rectified by time-consuming subsequent questioning of respondents was significantly reduced by the plausibility checks integrated in the questionnaire. The most common errors, which generally required contacting the respondent, were caused by incomplete or missing data.

Data correction
The total survey was split into "batches" of approx. 5000 holdings each for data correction. The datasets of each batch were checked for missing, incorrect and implausible data using a powerful plausibility program. Approx. 10 000 holdings (25%) with missing, incorrect or implausible data were identified by the program. For each holding, all errors were listed in a "plausibility list" and assigned the relevant error type (automatic error, information error, error point). Members of the Statistics Austria specialist team who were authorised to process and correct the datasets used this plausibility list as an aid when processing the data. Once all the displayed points of the batch had been processed, the data processing project group started a new plausibility run. Holdings with data that was still incorrect were listed again with their error points in a plausibility list. This procedure was repeated until the plausibility run was at "0" and no more holdings with incorrect data were identified.

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[3] The actual EU term is "holder" (*Betriebsinhaber*). In practice the term "holding operator" (*Bewirtschafter*) is more understandable for farmers in Austria and leads to fewer misunderstandings (the term "*Betriebsinhaber*" is equated in Austria with "owner", which does not correspond to the EU definition for the Farm Structure Survey).

The error correction process itself was carried out on the host system using a correction application.

Staff were able to correct logical or obvious errors independently. Missing or incorrect data was corrected from other data sources, if available (e.g. administrative data such as IACS or ÖPUL data), in order not to burden respondents unnecessarily. A further source of data for checking entries was the Forestry Yearbook, which lists the woodland areas of the largest woodland/forestry holdings in Austria. The data from applications for mineral oil tax reimbursement for agricultural diesel was also used for plausibility checks. If these sources were not extensive enough, existing data was used, if possible, to rectify/check the data in the case of missing or implausible characteristics. If clarification was still needed, respondents were contacted by telephone in individual cases.

In addition, any blank forms received were checked. If information from administrative data was available for the holding and the respondent should therefore not have submitted a blank form, the holding was contacted directly by phone. Blank forms were processed in close cooperation with staff from the Agriculture and Forestry Register, since the information from the blank forms (abandonment of the holding, lease of land, etc.) was used to update the register.

The majority of entry errors were detected by the plausibility program and corrected as follows:

- Respondents were contacted by telephone if the situation was unclear (e.g. missing or inconsistent data); such calls were noted in the correction application

- A number of problems due to spelling or data entry errors (e.g. ranking errors) were able to be corrected by comparison with the corresponding dataset of existing data. Individual characteristics were also able to be added.

- Automatic correction.

Imputation (where responses are missing or data incomplete)

To keep missing responses due to non-returned questionnaires to a minimum, the municipalities were involved in conducting the survey in their local area, since they are familiar with local circumstances and most are also very knowledgeable about the agricultural holdings within their area of responsibility. The municipalities were therefore responsible for ensuring that all questionnaires were returned by asking farmers – in person, by telephone or in writing – to fill in the questionnaires. With respect to those holdings (approx. 4 700) whose questionnaires were not received by Statistics Austria before the deadline, contact was made with those responsible for conducting the survey – and in some cases the respondents directly (by telephone, e-mail or fax) – at regular intervals to remind them of the outstanding questionnaires. Some municipalities and holdings requested an extension for sending in their returns for a wide variety of reasons. Data on some of these holdings was recorded subsequently by Statistics Austria staff in telephone interviews.

Missing and late responses had the following causes:

- Accessibility: The respondents could not be contacted either by phone or in person, or were only asked to appear at the municipality offices to provide their information after several reminders.

- Refusal to supply information: The respondents initially had to be convinced of the need to provide this information (explanation as to who requires this information and that not all data was already available from administrative data). Those farmers who, despite being notified of the legal consequences, refused to provide information were ultimately reported by Statistics Austria in May 2006 to the relevant authorities to initiate administrative penal proceedings. Since Statistics Austria has no executive power to pursue administrative penal proceedings, information about these holdings had to be given to the relevant administrative districts that are responsible in Austria for conducting prosecutions. Normally a fine is imposed and a deadline is set for supplying the required information, i.e. payment of the fine does not release the farmer from the duty of supplying information; he/she must still provide the data in all cases. With few exceptions (0.5% of surveyed holdings), the farmers cooperated and submitted their data properly – if late in some cases – to Statistics Austria.

- Respondents who said they would complete the form themselves but then failed to do so: Some farmers said they would fill out the questionnaires themselves, but then either did not do so or did so only after repeated reminders.

- Lost survey documents: In some cases the survey documents could not be found for a variety of reasons. Statistics Austria then had to resend them.

Incomplete datasets were completed with existing data wherever possible. Missing information (mostly alpine and wooded areas) was completed from other data sources if available (e.g. administrative data such as IACS or ÖPUL data). Information from applications for mineral oil tax reimbursements for agricultural diesel were also used. Another source of data was the Forestry Yearbook that contains details of the forested/wooded areas of the largest woodland/forestry holdings in Austria. If these sources were insufficient, the results for previous periods were used. Where this was not possible, either the municipality or the farmer had to be contacted directly.

In the case of outright refusal, compensation was made for the missing datasets during the projection process.

Grossing up procedures (weighting)

AS05 was analysed by means of a free projection.

x_{bhj} describes the property of a quantitative characteristic (area, livestock,…) of holding j in federal province b and level h; n_{bh} describes the realised scope of the survey (=selected holdings – non-respondents) in level bh; and N_{bh} describes the number of holdings in the selection framework in level bh. Each dataset was enriched with the projection weighting N_{bh} / n_{bh} .

The estimated value $\hat{X}$ for characteristic sum X is then derived from the weighted sum of the characteristic values $\hat{X} = \sum_{j=1}^{n_{bh}} \frac{N_{bh}}{n_{bh}} x_{bhj}$

The table was created on the Statistics Austria host computer with the aid of a specially written program.

The weightings are contained in the dataset and were also transferred to Eurostat and the BMLFUW.

Compilation of the final data set, (other) models and statistical estimation techniques used

The authentic data is generated after merging the various sets of administrative data with the data from the Farm Structure Survey on an individual holding basis using the holding number and checking the data at micro and macro levels. For **plausibility at macro data level,** an analysis of the projected data aggregates is performed or a comparison is made with the results of previous surveys.

Other quality assurance measures

Because of the change from a paper-based questionnaire to an electronic Internet questionnaire, it was necessary to have the questionnaire tested initially by various relevant institutions (BMLFUW, LK Österreich, LBG, Association of Austrian Municipalities) in terms of its functionality and practicality.

Since farmers were able for the first time to submit a return directly by means of the Internet questionnaire, a trial survey was conducted in summer 2005 to test the Internet questionnaire in terms of practicality and intelligibility. This was undertaken with the aid of volunteer farmers at the initiative of LK Österreich. "Guest access" for the survey assistants was also set up for the trial questionnaire so that they could familiarise themselves with the Internet questionnaire and its functions and try to fill out the questionnaire.

During the survey phase, a Statistics Austria telephone hotline was available to respondents and survey assistants. A list of questions and answers was created for the Hotline staff in order to enable them to answer difficult or critical questions appropriately. The list of questions and answers that was initially created on the basis of earlier surveys was updated in regular team meetings during the survey phase and the Hotline staff received on-going training.

Internal working guidelines were also drawn up and relevant instructions for processing the Farm Structure Survey were given. Plausibility rules were also developed and tested for functionality using fictitious holdings.

In the macro plausibility check, the results were examined with respect to changes over time not just against data from previous surveys but also against available administrative data.

The results were subjected to a final check by a panel of experts before the data was published.

5. Publication (accessibility)

Preliminary results

None.

Final results

October 2006

Revisions

None.

Published in:

Results appearing in national publications

The results of the Farm Structure Survey are published in the following media from Statistics Austria:

- Press release (available in German only)

  The most important results were first published nationally in the form of a press release. The press release was made available on the Internet free of charge.

  In addition, a report summarising the results (text and tables) was published and includes terms and definitions. The legal basis and the execution and processing of the survey were also explained. Text analyses of the results in comparison with previous surveys, complemented by comparative tables and graphics, complete the content of this publication. Statistics Austria is obliged to publish the main results free of charge on the Internet under the Federal Statistics Act 2000, as amended by Federal Law Gazette I No. 136/2001 and Federal Law Gazette I No. 71/2003.

  The summary report is available free of charge on the Internet as a PDF file, or can be purchased at cost as a bound brochure or in electronic form as an Excel file.

- Statistische Nachrichten (*Statistical News*)

  The various topics of the Farm Structure Survey were discussed in Statistische Nachrichten in various of its monthly issues (Issue 12/2006, pp. 1156 ff and Issue 2/2007, pp 116 ff). The first article describes the methods and performance of the Farm Structure Survey, while the second article concentrates on the presentation of the results (with graphics to assist with the explanation).

- Standard publication: Agricultural Statistics 2006
- Statistisches Jahrbuch (Statistical yearbook of Austria)

  These publications, which include a CD-ROM, can be purchased at cost. The data can be downloaded as a PDF file from the Internet free of charge.

- Internet
  On the homepage of Statistics Austria
- ISIS database (available in German only)

  At present only the results of the 1999 full survey are stored in the Statistics Austria ISIS database. There is ongoing discussion regarding storage of the sample surveys in the database (which is subject to a charge for external users). The results of the sample surveys can only be reported at NUTS2 level and many cells would in any case need be suppressed because of sample error.

- Österreichischer Zahlenspiegel (available in German only)

In addition, results are published in the following national media:

- Green Report (available in German only) of the Federal Ministry of Agriculture, Forestry, Environment and Water Management

Results are published at EU level in the following media:

- Summary statistics: Landwirtschaft und Fischerei (*Agriculture and Fisheries*), Issue 11/2007
- Pocket book: Agriculture – Main statistics 2005-2006
- Eurostat – Eurofarm database

In accordance with EU criteria/specifications, anonymised datasets relating to individual holdings had to be transferred for each operational unit to Eurostat for storage in the Eurofarm database, from which only aggregated results can be queried.

Treatment of confidential data

Data is published and circulated in accordance with the Federal Statistics Act 2000, as amended by Federal Law Gazette I No. 136/2001 and Federal Law Gazette I No. 71/2003, and the Data Protection Act 2000, Federal Law Gazette I No. 165/1999. This means that only anonymised data is transmitted. No information relating to individuals can be inferred from publication of the results and the provision of anonymised individual data.

Under the Federal Act on the Information System for Agricultural and Forestry Holdings (LFBIS Act) Federal Law Gazette No. 448/1980, as amended by Federal Law Gazette No. 597/1981 and Federal Law Gazette No. 505/1994 § 3 (1), data obtained in the course of surveys ordered by regulation of the Federal Minister of Agriculture and Forestry on the basis of the Federal Statistics Act must be forwarded to the Federal Minister of Agriculture and Forestry insofar as this was ordered in said regulation.

In accordance with EU regulation (EEC) No. 571/88, as amended by regulations (EC) No. 2467/96 and (EC) No. 2139/2004, anonymised individual data must be transferred to Eurostat.

6. Quality

6.1. Relevance

The Farm Structure Survey must be conducted in accordance with EU legal requirements. The list of characteristics is established in Eurostat working groups in the presence of the GD Agri and/or agreed in accordance with current need (Common Agricultural Policy – CAP). This is adapted at national level by the relevant working groups of the Advisory Council in accordance with national requirements.

The requirements of the main users are to a large extent able to be met. The desire for more detailed regional data could not be fulfilled as such data can only be provided from a full survey. This is not possible both for cost reasons and because of the respondent workload. For financial reasons, the tree figures (extensive fruit) required for the yield survey could also not be included in the survey program for 2005.

6.2. Accuracy

The quality of the register is based on the availability of information. This is provided partly by statistical surveys and also from administrative data sources, which are used for updating purposes. As a result of the increased use of administrative data (e.g. Agrarmarkt Austria), it has proved possible to significantly improve the quality of the register, especially as there may be a considerable time gap between the various statistical surveys, which means that not all register data can be updated each year. Differing requirements in terms of the statistical and administrative data often require a not inconsiderable amount of effort when comparing the data.

6.2.1. Sampling effects

Article 4 of the applicable EU regulation No. 571/88 states: "Member States conducting sample surveys shall take the necessary steps to obtain reliable results at the various levels of aggregation required." In the Farm Structure Survey, datasets relating to individual holdings are transferred to Eurostat. In accordance with Eurostat specifications, only one weighting is to be used for each holding, which leads to large differences for individual characteristics in the sample errors.

Calculations have shown that the specifications, which will be binding from 2013 in respect of simple relative standard errors (max. 5% for aggregates containing 5% of arable land or livestock), have already been met.

Random errors

When estimating total values, customary standard formulae can be used to calculate the standard error.

If $\hat{X}$ is the estimator for an aggregate.

This results in variance $S^2_{\hat{X}}$ of the estimated value $\hat{X}$

$$S^2_{\hat{X}} = \sum_{b,h} \frac{(N_{bh} - n_{bh})}{n_{bh}} N_{bh} s^2_{x,bh} \text{ with } s^2_{x,bh} = \frac{\sum_j x^2_{bhj} - \frac{\left(\sum_j x_{bhj}\right)^2}{n_{bh}}}{n_{bh} - 1}$$

The simple standard error is then $\sqrt{S^2_{\hat{X}}}$

The variance $S^2_{\hat{X}}$ of the estimated value $\hat{X}$ derives from

$$S^2_{\hat{X}} = \sum_{b,h} \frac{(N_{bh} - n_{bh})}{n_{bh}} N_{bh} s^2_{x,bh} \text{ with } s^2_{x,bh} = \frac{\sum_j x^2_{bhj} - \frac{\left(\sum_j x_{bhj}\right)^2}{n_{bh}}}{n_{bh} - 1}$$

The simple standard error derives from $\sqrt{S^2_{\hat{X}}}$

Sample errors in the Farm Structure Survey 2005

in % (with 95% statistical certainty); corresponds approx. to 2x the standard error

Federal province	Total holdings	Total area	Arable land	Permanent cultivation	Permanent grassland	Agri-cultural area	Area used for forestry
Burgenland	3.89	2.81	2.90	7.66	14.97	2.83	6.86
Carinthia	1.52	6.92	3.32	42.33	8.82	6.87	3.68
Lower Austria	1.47	1.77	1.91	4.55	3.95	1.60	3.51
Upper Austria	1.47	3.23	2.03	14.72	3.49	1.96	3.88
Salzburg	1.08	4.39	8.60	29.85	3.55	3.46	5.92
Styria	1.39	3.42	2.68	8.50	5.15	3.37	3.80
Tyrol	1.19	4.39	7.47	62.21	6.13	5.96	3.88
Vorarlberg	1.99	5.83	24.17	37.52	5.79	5.66	4.66
Vienna	10.08	7.46	4.76	20.76	18.22	5.51	14.13
Austria	**0.64**	**1.47**	**1.15**	**3.49**	**2.22**	**1.30**	**1.59**

Federal province	Total Labour force	Horses, donkeys, mules	Cattle	Pigs	Sheep	Goats	Chickens
Burgenland	4.17	21.36	6.55	6.52	21.93	29.56	4.77
Carinthia	2.40	12.64	2.53	5.01	5.65	15.25	17.14
Lower Austria	2.14	18.78	2.58	2.62	5.53	8.10	7.18
Upper Austria	2.28	11.83	1.65	2.80	7.50	23.13	10.02
Salzburg	1.91	9.66	1.86	11.80	5.91	8.22	4.62
Styria	2.17	14.68	2.74	3.47	7.40	13.33	12.54
Tyrol	2.22	13.16	2.71	12.75	4.99	7.09	8.72
Vorarlberg	3.24	15.50	2.99	24.35	7.83	8.95	25.85
Vienna	14.48	60.51	14.59	-	16.75	28.65	14.83
Austria	**0.95**	**6.14**	**0.97**	**1.60**	**2.48**	**6.00**	**5.69**

The calculation of the above standard errors was performed on the Statistics Austria host computer with the aid of a specially written program.

6.2.2. Non-sampling effects

Quality of data sources used

1. Primary statistics
The characteristics collected as primary statistics during the Farm Structure Survey were subjected to a plausibility check at micro level and key characteristics were also compared with any available data (see also "Plausibility check").

2. Secondary statistics
Permission to use administrative data in the Farm Structure Survey is subject to a specified approval procedure of the European Commission. To use the relevant administrative data, the member states must submit an application with a corresponding description of the administrative sources to be used to Eurostat. When using administrative data, the European Commission assumes that this data is of at least the same quality as that from statistical surveys. After the application is checked by the Commission, a vote is taken in the Standing Committee for Agricultural Statistics and confirmed in a regulation/decision after approval.

There is also an initial check of the administrative data by Statistics Austria in which the results from the various sources are compared against each other to determine their level of congruity. In 1995, for example, the land area data was recorded both in the Farm Structure Survey and in subsidy applications in IACS. Use of administrative data was not possible then because of the EU legal situation at the time even though there was found to be a good level of agreement between the two data sources. It was

therefore decided at a meeting of the Advisory Council for Agricultural Statistics to submit an application to the Commission for the use of administrative data. An application was then submitted to the Commission together with a detailed description of the administrative data for the Farm Structure Survey 1997. After approval by the Standing Committee for Agricultural Statistics, the relevant EU legal situation was amended.

The discrepancies when merging the administrative data for individual holdings with the corresponding data from the Farm Structure Survey 2005 result from the different objectives pursued by "funding" bodies and "statistical" bodies.

The problems were primarily a result of
- different holding numbers for funding and statistics
- the merger or separation of operational units in funding systems
- the different handling of alpine associations (*Almgemeinschaften*)
- different definitions used by funding and statistical bodies

To enable the correct merger of datasets from the different sources, discrepancies had to be "corrected" by research, contacting respondents or in discussions with experts.

Coverage (misclassifications, undercoverage/overcoverage)

The likelihood of undercoverage of agricultural holdings is extremely low, since newly established holdings generally submit applications for funding and are therefore incorporated in the Agriculture and Forestry Register as a result of the transfer of administrative data. There has been a sharp decline in the number of small agricultural holdings which – for various reasons – do not submit funding applications. There is underrecording of forestry/woodland holdings as there is currently incomplete information about all forestry/woodland operators in Austria. Because of the separation of forestry from agriculture (e.g. through disposal of land or sale of forest/woodland), available information about new forestry/woodland operators is often scarce. Meetings looking into this problem are currently being held with experts and solutions to the problem are being discussed (possible development of other administrative sources). The following table clearly shows the differences in reported woodland areas (in ha) in the different sources (Farm Structure Survey or Forestry Inventory). Even the lower threshold of 3 ha in the Farm Structure Survey (for simple forestry holdings) does not satisfactorily explain the difference in areas.

Wooded areas – comparison of the different sources

Area in ha

FSS		Forestry Inventory 2000/2002			Cadastral area 2003 acc. to Fed. Office of Surveying and Metrology
2005	1999	with yield	without yield	total	
3 306.331	3 256.645	3 371.000	589.000	3 960.000	3 623.489

Since only one return can be submitted for each holding number, there has been practically no overrecording.

Missing responses (unit non-response, item non-response)

Contact errors

Questionnaires posted to approx. 800 holdings (roughly 2% of the holdings to which questionnaires were sent) were returned to Statistics Austria due to an incorrect or incomplete address. With assistance from the municipalities, the correct addresses were identified for approx. 300 holdings and the questionnaires were resent. In the remaining cases, the municipalities were unable to provide information on the successor holding or more information on the holding to be surveyed either because the owner of the holding had died and the successor holding had not yet been established, the owner of the holding had moved to an unknown address, or the person named in the address was not known.

If the holdings were unable to be activated and thus subsequently entered in the survey even after research or processing of blank forms, these holdings were recorded as non-responses in the survey (see under "Unit non-response").

Unit non-response

The response rate for the 40 000 surveyed agricultural and forestry holdings after processing and checking the data was ultimately 88.9% (~35 500 units) and, according to EU criteria, 82.5% (~33 000 units). The following data shows the reasons for missing units and the relevant number of holdings:

- holding shut down: 1 035
- holding no longer meets survey criteria: 2 826 (5 357 according to EU criteria)
- refusal to supply information: 196
- other reason (e.g. holder of the holding deceased – no successor; holder moved abroad, address not known; blank response because of merger of holding; etc.): 403

In the sample surveys, non-responses from sample holdings must be taken into account in the projection. A distinction is made here between "genuine" and "non-genuine" non-responses. "Genuine" non-responses were from holdings that existed but did not submit a return. "Non-genuine" non-responses were from those units that no longer existed at the time of the survey. Whereas "non-genuine" non-responses were included in the survey as blank forms and had no effect on the projection factor, the projection factor needed to be adapted to take account of the "genuine" non-responses.

Item non-response

The Internet questionnaire was designed so that the form could not be sent until the mandatory fields had been properly filled out, which succeeded in significantly reducing the item non-response rate in comparison to earlier surveys. This meant that each holding had to specify a holder of the holding or operation manager. In the paper-based questionnaires in previous surveys, these characteristics frequently came back uncompleted, particularly in the case of groups of natural persons and holdings of legal persons.

Similarly, to prevent individual pages of the questionnaire being inadvertently missed out, a marker was placed on each page of the Internet questionnaire which had to be set to signify either that the page had been completed or that there were no data entries to make on the given page. In addition, various monitoring measures were carried out in the plausibility check.

Measurement errors (entry errors)

The recording errors that were made by respondents or survey assistants in isolated cases (e.g. wrong unit of measurement for cultivated area) were able to be adjusted during the plausibility checks.

There were occasional Internet problems where datasets could not be sent or only incomplete datasets could be sent. The missing data was then completed by a phone call or by resending the data.

Processing errors

Incorrect or implausible values were checked and corrected accordingly during the plausibility check.

When merging primary and secondary data – based on holding number – a few holdings initially could not automatically be assigned to each other. After relevant research all discrepancies were corrected, thus ensuring the success of the merge.

Model assumption effects

None known.

6.3. Timeliness and punctuality

The reporting date for the survey was 1 December 2005. In accordance with national legislation, all documents were to be returned to Statistics Austria by 15 January 2006. As a result of technical problems at the start of the survey phase, this deadline was extended to 31 January 2006. Although the reminder process continued up until March 2006, it was possible to send the data on individual holdings on time to Eurostat at the end of September 2006. The data was first published in October 2006 in the form of a press release.

6.4. Comparability

Over time

When looking at comparability over time, it should be noted that, as a result of changing requirements and structural changes in agriculture and forestry, there have had to be modifications to the lower thresholds of the survey. Thus, during the last modification in 1999, the main results of the Farm Structure Survey 1995 were recalculated in line with the amended criteria in order to ensure the comparability of the two surveys.

A further milestone was accession to the EU, which entailed modifications to some definitions as a result of relevant EU legislation (e.g. pensioners who helped out on agricultural and forestry holdings were to be included as workers).

The Agriculture and Forestry Register on which the Farm Structure Survey is based is constantly being enhanced in terms of technical aspects and content maintenance as a result of increased updating options (administrative data, other registers etc.). This in turn reduces the comparability over time.

Over time/geographic

According to the business principle, the land areas of a holding are assigned to the municipality/federal province in which the farmer's place of business is located. According to the business principle, relocation or amalgamation of the place of business (e.g. where several large forestry holdings are amalgamated to form a business unit) or leasing may distort regional results if the area affected is assigned to a different administrative unit as a result of the change.

Geographic

When comparing national with EU results, the differing survey criteria need to be taken into account. Whereas in the European Union only holdings with land used for agricultural purposes is of interest, in Austria holdings with land used for forestry are also included because of their economic significance. Furthermore, it should be noted that, in some EU publications, units below one European Size Unit (ESU) are not included (1 ESU = 1 200 Euro Standard Gross Margin). This is done to improve comparability between individual EU member states. This means that only limited comparisons can be made with the published results from the national analysis.

6.5. Coherence

Data on individual topics is also available from various statistical surveys (e.g. Livestock Survey, Crops on arable land, Basic Vineyard Survey, Labour Force Survey etc.; available in German only). However, the various results can only be compared to a limited extent due to differing objectives, definitions, etc. To cite an example illustrating the problematic issues: According to the definition of the Basic Vineyard Survey 1999 (without lower land area threshold), 32 044 holdings were recorded with a planted vineyard area of 48 557.67 ha. With a lower survey threshold for pure vineyard holdings of 0.25 ha, the Farm Structure Survey 1999 only reported 24 657 holdings with a vineyard area of 51 214 ha, which also included temporarily setaside or cleared vineyard areas.

Some data is also recorded by Agrarmarkt Austria (AMA) during the processing of multiple applications for subsidies. This however always relates solely to the criteria on which the subsidy requirements are based or to those holdings that have made the relevant application. At holding level this data is to some extent comparable and is therefore included in the surveys as administrative data or is at least used for plausibility checks.

When evaluating data relating to area, it should also be noted that the area in the Farm Structure Survey must always be considered in relation to agricultural and forestry holdings (place of business) and cannot therefore be compared with the area reported according to the land register or the cultivated area according to the location principle.

According to the relevant legislation, the production potential in agriculture and forestry should be surveyed in the Farm Structure Survey, including cultivated areas, livestock numbers, the labour input in agriculture and forestry and other holding-specific characteristics in units that reach the threshold values in relation to size of area/farm animal numbers. It is irrelevant here whether agriculture and forestry is practised as a main or secondary activity in these units. In the Farm Structure Survey only the agricultural and forestry part – and the related characteristics – are taken into account; there is no classification by main area of activity as, for instance, in business statistics.

The machines (e.g. tractors) reported in the Farm Structure Survey refer to machinery and equipment of the surveyed agricultural and forestry units. In contrast to vehicle statistics, for example, tractors of service companies or those used in the non-agricultural sector are not included in the Farm Structure Survey.

A further example is the workforce issue. In the Workforce Survey the focus is on the employed persons whereas in the Farm Structure Survey the surveyed workforce data is designed to measure the actual labour input in agriculture and forestry, i.e. the Farm Structure Survey should include even family members who provide only a very few hours of assistance irrespective of their main employment activities as well as retired persons.

Reference to supplementary documentation/publications

After completion of the Farm Structure Survey, Eurostat was to be provided with a detailed Methodology Report.

Glossary and list of abbreviations

AA	Arable area
AMA	Agrarmarkt Austria
BMLFUW	Federal Ministry of Agriculture, Forestry, Environment and Water Management (also known as Ministry of Life)
Disadvantaged region	In accordance with EU provisions, disadvantaged regions are subdivided into three subcategories: mountain region, other disadvantaged region and small region
EAA	Economic Accounts for Agriculture
ESU	European Size Unit (I ESU = 1 200 Euro Standard Gross Margin)
EUROFARM	Database set up at the Statistical Office of the European Communities
Eurostat	Statistical Office of the European Communities
FSS	Farm Structure Survey
GD Agri	The European Commission's Directorate-General for Agriculture and Rural Development is responsible for agricultural and rural development policy. It handles all aspects of the Common Agricultural Policy (CAP), including market measures, rural development policy, financial matters, as well as international relations relating to agricultural issues.
GLÖZ G land	Grassland that should be maintained in a good agricultural and ecological condition and that is no longer used for production. Only annual minimum maintenance measures for prevention of forest or bushy growth or degradation are performed (e.g. chopping) and there is no annual use of the plant growth by harvesting or grazing.
IACS	The Integrated Administration and Control System is the legal basis on which the EU regulates subsidy payments. All regulations governing land-related and animal-related aid are included in this system. In addition to the regulations governing IACS applications and amendments, the IACS also operates an

	IT-based verification procedure, on-site controls and monitoring, as well as sanctions.
LBG	LBG Wirtschaftstreuhand- und Beratungsgesellschaft m.b.H. oversees the network of holdings that voluntarily keep accounts.
LFBIS	The Information System for Agricultural and Forestry Holdings (LFBIS) enables the Federal Government to consolidate data on individual holdings (data from holding statistics and agricultural funding). The LFBIS master file is maintained by Statistics Austria, while the LFRZ is responsible for technical support.
LFR	Agriculture and Forestry Register
LFRZ	The Computing and Technology Centre for Agriculture, Forestry and Water Management handles databases with different technologies, such as LFBIS. The LFRZ is also responsible for the data collected by AMA in the course of administering funding.
LK Österreich	Austrian Chamber of Agriculture
MA	Multiple application for land areas The multiple application for land areas, which consists of several forms (cover application form, cultivated area, animal list, etc.), is used by applicants to apply for funding via the competent district chamber of agriculture.
MÖST	Reimbursement of mineral oil tax (for agricultural diesel)
NA	National Accounts
ÖPUL	The Austrian programme for the promotion of an environmentally sustainable, extensive agriculture that conserves the natural world represents the national implementation of agricultural environmental measures for rural development.
SA	Statistics Austria
Standard Gross Margin (SGM)	According to Commission Decision 85/377/EEC, the Standard Gross Margin is the difference between the standardised monetary value of the gross output and the standardised monetary value of the various inputs that can easily be assigned to this output. Costs that should not be deducted include labour costs, mechanisation costs, building costs and the costs for most work by third parties, particularly harvest costs. The SGM is an economic criterion expressed as a monetary value. In the case of crops this is per hectare of land used for agriculture and in the case of livestock it is per animal. The calculations are always performed excluding VAT.
TA	Total area