

**Documentation of statistics for  
Agricultural and Horticultural Survey 2018**

## **1 Introduction**

The statistics have time series comparable time series going back to 1982. The agricultural statistics, however, are much older than that with figures for number of farms, livestock, crops etc. going back to around 1900.

## **2 Statistical presentation**

The farm structure statistics include figures on number of farms, livestock and crops distributed by for instance size and geography.

### **2.1 Data description**

The survey unit is the farm, and this is reflected in the statistical tables where the users can find figures for number of farms, employment, crops and livestock distributed by size and region.

For crops and livestock the tables show area and number of animals. Also number of farms growing a crop and number of farms with at least one animal are shown.

All survey characteristics could in principle be cross tabulated so that the users may see e.g. number of animals distributed area size of the farms.

From 2015 the special surveys on production of horticultural products have been integrated in the farm structure survey. In 2015 and 2018 it concerned production of vegetables in green house, in 2016 vegetables grown in the open and in 2017 frits and berries

### **2.2 Classification system**

The farm structure survey must include all farms which grow either crops or have livestock. For this reason the survey should also include firms which have the main activities in other branches than agriculture, for example forestry. The survey should furthermore include small farms with no business number.

### **2.3 Sector coverage**

Agriculture, horticulture and fur animals.

### **2.4 Statistical concepts and definitions**

Agricultural Farms in Denmark: A farm is a technical and economic unit producing agricultural products, either livestock or crops.

### **2.5 Statistical unit**

The survey unit is the farm. A farm is always identical with a local unit the Business Register marked as active in agriculture, irrespective of the NACE code.

## **2.6 Statistical population**

The population includes all local units in the Business Register marked as active in agriculture

## **2.7 Reference area**

Denmark.

## **2.8 Time coverage**

The figures have been published at a comparable level from 1982-2018.

## **2.9 Base period**

Not relevant for these statistics.

## **2.10 Unit of measure**

- Number of farms
- Number of animals
- Number of with the animal
- Hectares of a crop
- Number of farms growing the crop
- Employment

## **2.11 Reference period**

13-05-2018

## **2.12 Frequency of dissemination**

Yearly.

## **2.13 Legal acts and other agreements**

The Act on Statistics Denmark.

Regulation (EEC) No. 1166/2008 November 19 2008.

## **2.14 Cost and burden**

The response burden is estimated to 0,3 mio. Danish kroner in 2012. No never calculation is available.

## **2.15 Comment**

No other information.

### **3 Statistical processing**

The information is collected by means of a yearly questionnaire based survey where the farmers complete the questionnaire online. The answers are validated for non probable values.

Information on crops and the animals cattle and fur animals is collected from registers, and is thereby not reported by every single farmer.

The survey is most often a sample survey stratified by region, size and type of farming.

#### **3.1 Source data**

The information comes from the questionnaire, IACS, the livestock register and information from the fur animals farmers' organisation.

The farm structure survey is almost always a sample survey. In 2018 the sample had a size of 9.000 farms, about 25 per cent all farms in Denmark.

The sample is stratified by regions, size and type of farming (e.g. pig farms, cattle farms and plant production).

#### **3.2 Frequency of data collection**

The survey is yearly.

#### **3.3 Data collection**

The farmer reports the information on a web questionnaire on <http://www.Virk.dk>

Information on the survey can be found here: [Information](#)

The text is Danish.

#### **3.4 Data validation**

The statistics go through an error detection process which falls into three steps:

1. In connection with the online reporting it is secured that all questions are answered. It could for example be yes/no questions where a farmer might answer that he does not have any livestock on his farm.
2. In the next step all the answers are treated and are subject to a validation, a plausibility check. Errors are corrected immediately, sometimes after telephone contact with the farmers.
3. In the last step the results are analysed by regions and extreme developments – big increases or decreases – are identified. In this step it is often possible to find a few but rather big mistakes which for one or any reasons have been overlooked in the first two steps.

### **3.5 Data compilation**

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The extrapolation into a total level takes place by obtaining certain known targets:

- Number of farms and area are distributed by size based on the farmer's application for agricultural subsidies. (The single payment scheme).
- Number of pigs in pig surveys April and July same years.
- Number of fur animals and farms with fur animals according to information from the farmer's organisation.

In case of non response the farm is excluded from the sample and the extrapolation is increased accordingly for stratum where non response occurs. The non-response is about 5-10 per cent, in 2016 6 per cent.

Imputation is normally not done in the farm structure census. If it nevertheless is done the method is to find a donor farm which has answered the question and is rather similar to the farms with a missing answer. One example could be use of water for irrigation where a farmer in the same region and having a similar composition of crops. Use of water for irrigation is not included in the survey every year.

### **3.6 Adjustment**

No corrections are made besides what is described in data validation and data compilation.

## **4 Relevance**

The statistics fulfill a need for structural information on the Danish agriculture, e.g. number of farms by size and region. Important users are EU, the ministries and agricultural organizations.

#### **4.1 User Needs**

The farm structure survey fulfils a general need for a structural statistics on the Danish agriculture where the business is described by size, geography, type of farming and other aspects.

However, agricultural statistics are more than just business statistics. It is also environmental statistics and the farm structure statistics provides also the users with number of animals and land use in agriculture.

The users are in particular EU, the ministries, farmer's organisations, but also students and interested people in general. EU uses the statistics as a tool in the planning of the common agricultural policy.

Many users are interested in figures by municipalities. This need, however, can only be met for years where Statistics Denmark has carried through total censuses. For sample surveys reliable figures by municipalities cannot be made. The most recent total censuses took place in 2010 and 1999. The next total census will presumably be in 2020.

#### **4.2 User Satisfaction**

The farm structure survey is discussed at meetings in user board on agricultural statistics. The members may put forward suggestions to new questions on the questionnaire as well new statistical tables for publication. The main impression is that most users are satisfied with the statistics but often they have wishes about more detailed regional figures with figures for municipalities and also more agro environmental statistics.

#### **4.3 Data completeness rate**

The survey meets the legal requirements of EU regulation 1166/2008.

### **5 Accuracy and reliability**

The precision varies for the different items of the statistics. The precision is thus highest for the total agricultural area and less precise for specific crops, especially crops grown by only few farmers. Likewise the precision is best for livestock which many farmers have. This is in particular true for cattle.

## 5.1 Overall accuracy

Coverage: The population includes all active farms in Denmark and is integrated in the Statistical Business Register (ESR), which is kept by Statistics Denmark. In order To ensure that the population is up to date Statistics Denmark regularly makes register merges with IACS and the Central Livestock Register (CHR). The assumption is that if a farm applies for crop subsidies or reports livestock to the livestock register it must be expected to be active in agriculture and should accordingly be marked as such in the register of Statistics Denmark. The sample is selected so that the lowest possible sample error is obtained with respect to agricultural area, pigs, cattle, fur animals and standard output. The farms are divided into groups - strata- by typology and size of standard output. The 2011 survey had 180 strata and 2012 survey 224. Farms known to be specialized horticultural or poultry farms are selected exhaustively. As a general rule the bigger a farm is the more likely it is to be selected. Information on crops is selected from IACS kept by the Ministry of Agriculture. When a farmer applies for subsidies he has to specify his crops carefully. IACS must therefore be assumed to be an extremely reliable source. Information on cattle is collected from the Central Livestock Register and fur animals are collected from The Association of Danish Fur animals farmers. For both these types of livestock the farmer answers yes/no, and for farmers having answered yes the number of animals is taken from respectively The Central Livestock and The Association of Danish Fur animals farmers.

Control: Several computer validations and checks are made before publishing the results.

Due to many different survey characteristics it is not possible to give one figure for the sample error but just some examples:

- Total agricultural area, hectares: 0,6 per cent
- Winter wheat, hectares: 1,1 per cent
- Spring wheat, hectares: 5,8 per cent
- Straw berries, hectares: 15,9 per cent
- Cattle, number of animals: 0,9 per cent
- Pig, number of animals: 1,3 per cent
- Sheep, number of animals: 10,4 per cent
- Minks, , number of animals: 3,2 per cent

Certain figures are often reported as round figures, for instance 12.000 chickens. However, there is no reason to assume that there should be any systematic over- or under estimation in the figures. Farmers may forget to answer certain questions. Such errors are difficult to find when it comes to livestock of minor importance like sheep, goats and horses. Questions on work time for the farmer and spouse can be difficult to answer for part time farmers.

## 5.2 Sampling error

- Total agricultural area, hectares: 0,6 %
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### **5.3 Non-sampling error**

- Coverage errors must be assumed to be very small. The business register contains information about all Danish agricultural farms. The unit is the local unit. Big efforts are made to secure that all business units of importance with agriculture are included in the register. Among other measures Statistics Denmark uses information from administrative agricultural registers.
- Over coverage: 1.887 farms in 2017
- Non response: 3,4 per cent in 2017

### **5.4 Quality management**

Statistics Denmark follows the recommendations on organisation and management of quality given in the Code of Practice for European Statistics (CoP) and the implementation guidelines given in the Quality Assurance Framework of the European Statistical System (QAF). A Working Group on Quality and a central quality assurance function have been established to continuously carry through control of products and processes.

### **5.5 Quality assurance**

Statistics Denmark follows the principles in the Code of Practice for European Statistics (CoP) and uses the Quality Assurance Framework of the European Statistical System (QAF) for the implementation of the principles. This involves continuous decentralized and central control of products and processes based on documentation following international standards. The central quality assurance function reports to the Working Group on Quality. Reports include suggestions for improvement that are assessed, decided and subsequently implemented.



## 5.6 Quality assessment

The quality of the statistics could be assumed to be good for the following reasons:

- The sample is rather big, between 25-35 percent.
- The sample is stratified by size, region and type of farming. It means that for example all big pig farms are included in the sample.
- All answers are subject to a thorough validation and control.
- The non-response is small, 5-10 percent. An even smaller non-response for big farms is achieved, for instance by contacting farmers by telephone.

The survey is of course subject to sample errors. The sample errors are biggest for livestock and crops which only few farms have, e.g. sheep and straw berries, and smaller for frequent occurring livestock like cattle and winter wheat.

Here are some examples on sample errors from the farm structure survey:

- Total agricultural area, hectares: 0,6 per cent
- Winter wheat, hectares: 1,1 per cent
- Spring wheat, hectares: 5,8 per cent
- Straw berries, hectares: 15,9 per cent
- Cattle, number of animals: 0,9 per cent
- Pig, number of animals: 1,3 per cent
- Sheep, number of animals: 10,4 per cent
- Minks, , number of animals: 3,2 per cent

The coverage is expected to be good due to frequent updates with sources like IACS and the livestock register.

## 5.7 Data revision - policy

Statistics Denmark revises published figures in accordance with the [Revision Policy for Statistics Denmark](#). The common procedures and principles of the Revision Policy are for some statistics supplemented by a specific revision practice.

## 5.8 Data revision practice

In the recent years only final estimates have been made.

## 6 Timeliness and punctuality

The survey is published about 9-12 after the survey day. This difference is due to the fact that survey varies in size from year to year, both with respect to the questionnaire and the sample size.

### 6.1 Timeliness and time lag - final results

There is no provisional publication. The final figures are published in May the year after the survey.

## **6.2 Punctuality**

As planned.

## **7 Comparability**

The survey is almost comparable from 1982 onwards. There is also a high degree of comparability with other European countries. Between 2009 and 2010 there is, however, a small break in the comparability since the statistics from 2010 onwards includes a number of small farms and additionally farms with fur animals. It means that the number of farms in 2010 is about 1.200 bigger than it otherwise would have been.

From around 1900 to 1981 the statistical surveys also included very small farms with an area of only hectares. These figures are available for the users in paper publications, but not online.

### **7.1 Comparability - geographical**

Since 2010 all member states in EU has used the same threshold for inclusion of farms in the farm structure surveys. For this reason there is a high degree of comparability between countries. Denmark includes farms with fur animals – no other EU country does so. Denmark has about 800 farms with fur animals with no other agricultural activities, neither other livestock nor crops.

## 7.2 Comparability over time

The figures from the statistics are almost perfectly comparable from 1982 onwards.

- The following surveys have been total censuses: 1977-83, 1985, 1987, 1989, 1999 and 2010.
- The following surveys have been sample surveys: 1984, 1986, 1988, 1990-98, 2000-09 and 2011-16.
- The next total census will presumably be held in 2020.

Generally the sample has been quite big with a participation of about 20-35 per cent of all holdings, in 2003, 2005 and 2007 even about 50 per cent.

The surveys have always had a lower threshold so that small holdings are excluded from the survey. This threshold has currently been revised through the years:

- 1977-82: The surveys included all holdings with at least 0,5 hectares or at least a production with a value corresponding to 0,5 hectares with barley.
- 1983-1994: The surveys included all holdings with at least 5,0 hectares or at least at standard gross margin of 3.000 euros at 1985 prices.
- 1995-2009: The surveys included all holdings with at least 5,0 hectares or at least a standard gross margin of 4.000 euros at 1990 or 1995 prices.

From 2010 Eurostat introduced in co-operation with the EU member states a harmonization of the thresholds for inclusion of holdings in the survey. These thresholds are described in regulation 1166/2008 in Annex II. They are minimum requirements which could be complemented by more strict national requirements. Hereafter Statistics Denmark includes all holdings which fulfill just one of the following criteria:

1. An agricultural area of at least 5,0 hectares
2. A standard output of at least 7.500 euros
3. Fruits, berries and nursery area of at least 0,5 hectares
4. Vegetables and strawberries of at least 0,5 hectares
5. Greenhouse and mushrooms of at least 1.000 m<sup>2</sup>
6. At least 10 cattle
7. At least 50 pigs
8. At least 10 sows
9. At least 20 sheep
10. At least 20 goats
11. At least 1.000 poultries
12. At least 40 fur animals

From 2010 Statistics Denmark has included holdings with fur animals in the agricultural and horticultural survey.

These new thresholds mean that the number of farms is about 1.200 bigger than it would have been otherwise.

## 7.3 Coherence - cross domain

The statistics are comparable the statistics on pigs and cattle.

## **7.4 Coherence - internal**

For each survey all the collected answers are stored in one register with all survey characteristics included in the survey. There is one and only one extrapolation factor per farm. For this reason no inconsistency can occur.

## **8 Accessibility and clarity**

The survey is published here: Online, <http://www.Statbank.dk>, New from Statistics Denmark, Statistical ten years review, Statistical Yearbook and in the analyses of Statistics Denmark, see this analyse on <https://www.dst.dk/da/Statistik/Analyser/visanalyse?cid=29376>

### **8.1 Release calendar**

The publication date appears in the release calendar. The date is confirmed in the weeks before.

### **8.2 Release calendar access**

The Release Calendar can be accessed on our English website: [Release Calendar](#).

### **8.3 User access**

Statistics are always published at 8:00 a.m. at the day announced in the release calendar. No one outside of Statistics Denmark can access the statistics before they are published.

### **8.4 News release**

[Nyt fra Danmarks Statistik](#)

### **8.5 Publications**

[Thematic publication](#)

This is a thematic publication on Danish agriculture written in Danish but with an English summary.

### **8.6 On-line database**

- [Farms](#)
- [Labour](#)
- [Crops](#)
- [Livestock](#)

## **8.7 Micro-data access**

Every survey results in a final survey register for all farms which took part in the survey. Only authorised colleagues at Statistics Denmark have access to these registers as they contain confidential information. The surveys are, however, delivered digitally to the National Danish Archive. Till now surveys for these years have been delivered: 1985 and 1989-2013. Also Eurostat receives the surveys according to EU regulations on farm structure statistics for agriculture. The data are individual but anonymous. Eurostat has an obligation to treat the information confidentially so only a few colleagues have authorization to access the data. Based on this arrangement Statistics Denmark has delivered the surveys to Eurostat for these years: 1989, 1993, 1995, 1997, 1999, 2003, 2005, 2007, 2010, 2011, 2013 and 2016. Finally also researchers may get access to anonymous survey data.

## **8.8 Other**

Not relevant for these statistics.

## **8.9 Confidentiality - policy**

[confidentiality](#)

## **8.10 Confidentiality - data treatment**

When designing statistical tables the aim is to secure that no table cells contain very few farm, less than 5. It means that for example certain distributions by size of livestock are shown for the whole country only and not geographically.

## **8.11 Documentation on methodology**

See various passages in the yearly publication:

<https://www.dst.dk/da/Statistik/Publikationer/VisPub?cid=16604>

## **8.12 Quality documentation**

Results from the quality evaluation of products and selected processes are available in detail for each statistics and in summary reports for the Working Group on Quality.

## **9 Contact**

The administrative placement of these statistic are in the division of Agriculture. The person responsible is Karsten Larsen, tel. + 45 39 17 33 78, e-mail: [kkl@dst.dk](mailto:kkl@dst.dk)

### **9.1 Contact organisation**

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