STATISTICS DENMARK

Documentation of statistics for Agricultural and Horticultural Survey 2023

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1 Introduction

The purpose of the survey is to describe the structure of agriculture, e.g. number of farms by size and geography.

The statistics have 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 are yearly and 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, 2018 and 2021 it concerned production of vegetables in green house, in 2016, 2019 and 2022 vegetables grown in the open and in 2017, 2020 and 2023 fruits and berries.

2.2 Classification system

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

2.3 Sector coverage

Agriculture and horticulture

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 farms in Denmark.

2.7 Reference area

Denmark.

2.8 Time coverage

For farms, crops and livestock comparable figures are available back to 1982 and for labour force back to 2007.

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

14-06-2023

2.12 Frequency of dissemination

Yearly.

2.13 Legal acts and other agreements

The Act on Statistics Denmark.

Regulation (EEC) No. 2018/1091

2.14 Cost and burden

The response burden is estimated to 0,3 mio. Danish kroner in 2012. No more recent calculation is available, but the burden is presumably somehow bigger i 2023 with more farms in the sample , about 14.000 against 8.500 in 2012.

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 cattle is collected from registers, and is thereby not reported by every single farmer.

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

3.1 Source data

The information comes from the questionnaire, IACS and the livestock register In 2023 the sample had a size of 8.500 farms, about 40 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 Virk.dk

Information on the survey can be found here: Information

The text is Danish.

3.4 Data validation

The statistics go through a validation 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 e.g. 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 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

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.

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 was about 1,0 per cent, in 2019.

Both in 2019, 2021 and 2022 most farms smaller than 25 hectares are imputed. These farms constitute about 50 percent of all farms.

2020 was special by being a total census where in principle all farms answer and non response does not exist. That is not possible in practice so about 9 percent of the farms were imputed in 2020. However,, they have only about 2. per cent of the agricultural area so it is mainly small farms which are imputed.

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 being 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 provide 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 2020.

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4.2 User Satisfaction

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.

There is no user board for agricultural statistics nor has there ever been conducted any survey on user satisfaction.

4.3 Data completeness rate

The survey meets the legal requirements of EU regulation 2018/1091.

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. In the same way the uncertainty is high for small geographical units, e.g. Bornholm.

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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 2021 survey had 69 strata. 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 %
- Winter wheat, hectares: 1,1 %
- Spring wheat, hectares: 5,8 %
- Straw berries, hectares: 15,9
- Cattle, number of animals: 0,9 %
- Pig, number of animals: 1,3 %
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- Minks, , number of animals: 3,2 %

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: 1.231 farms in 2021
- Non response: 1,0 per cent in 2021

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.

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5.6 Quality assessment

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

- The sample is rather big, about 65 per cent. if including farms being imputed.
- 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, normally 1 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 The Integrated Agricultural Control Register 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

Provisional figures are published in July whereas 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 had until the autumn 2020 about 800 farms with fur animals with no other agricultural activities, neither other livestock nor crops. After 2020 mink farming has almost ceased to exist in Danish agriculture.

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, 2010 and 2020.
- The following surveys have been sample surveys: 1984, 1986, 1988, 1990-98, 2000-09, 2011-19 and 2021.

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 m2
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. The accounts statistics for agriculture includes only farms with at least 25.000 euros in standard output and have 17.518 farms in 2021 against 31.395 farms in the farm structure survey.

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, and in the analyses of Statistics Denmark, see this analyse on [Analyse]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.

8.3 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.

8.2 Release calendar access

The Release Calender can be accessed on our English website: Release Calender.

8.4 News release

[https://www.dst.dk/da/Statistik/nyheder-analyser-publ/nyt/NytHtml?cid=38302)

8.5 Publications

Thematic publication

This is a thematic publication on Danish agriculture written in Danish but with an English summary. The publication focuses on number of farms, livestock, production of pigs, investments in agriculture and farm shops.

8.6 On-line database

- Farms
- Labour
- Crops
- Livestock

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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 1989-2019. 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, 2016 and 2020. Finally also researchers may get access to anonymous survey data.

8.8 Other

Not relevant for these statistics.

8.9 Confidentiality - policy

The rules on confidentiality of Statistics Denmark are observed.

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 is in Food Industries, Business Statistics. The person responsible is Karsten Larsen, tel. + 45 21 29 55 76, e-mail: kkl@dst.dk

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