

**Documentation of statistics for  
Harvest of Cereals etc. 2017**

## 1 Introduction

The purpose of harvest of grains etc. is to describe the Danish harvest of grain and roughage. The statistics are used for research, EU reporting, GDP calculation and energy and feed accounts. The statistics have been compiled since 1875, but are in their present form comparable from 1971 onwards.

Corresponding statistics on vegetable production: 'Production of fruit and vegetables', 'Nursery production', 'Berry and stone fruit'. This data is collected via the Agriculture and Horticulture Census.

## 2 Statistical presentation

The harvest of cereals, etc. is an annual estimate of the Danish harvest of grain and roughage in area (1000 hectares), average yield (100 kg per hectare), production (million kg), feed value (million Feed Units and 100 Feed Units per hectare). The statistics are calculated by crops and broken down by country.

### 2.1 Data description

**\*\* The harvest of cereals etc \*\***

Calculation of the Danish grain harvest based on reports from farmers. Final harvest statistics go back to 1875. In addition the total production and use of straw is measured.

Crops covered: winter wheat, -barley, -raps, spring wheat, barley, rape, rye, oats, triticale, cereals and field peas.

Annual statistics on straw has been produced since 1970, and straw application since 1972.

The statistics on harvest of cereals etc. is first and foremost a production inventory.

Includes harvest of winter wheat, winter barley, winter rape, wheat, barley, rape, rye, oats, triticale, cereals, field peas and mixed crops. For each crop, questions are asked on arable land, total yield (hekto kilo), average yield (hekto kilo / hectare) and water percent if the production does not appear in dried weight. Water percentage is used to calculate standard moisture content (15 per cent for cereals and peas and 9 per cent for rape).

Harvest of grain maize and corn cob mix is included in the statistics from 2011.

Statistics on straw show the production and use of straw by the above-mentioned crops. Output is measured as a relation between yield (grain, rape and peas) and expected straw yield, while the use of straw is based on questionnaire information on the distribution of straw areas used for firing, for fodder, for other purposes.

From 2006 the results are compiled for the new administrative structure in Denmark (regions). Regions are divided on specific agricultural land (sub-divisions of regions).

**\*\* Harvest of roughage \*\***

Includes harvest of sugar beet, potatoes and roughage plus grain and corn harvested for silage or green fodder.

Data collection: yield estimates from experts. Information is collected from approximately 50 crop

consultants about the yield per. hectare of lucerne, grass (in and outside rotation), green fodder (maize and whole seed), beets (trade beet and fodder beet) and potatoes (consumption, industrial and seed). For grass, whole seed and potatoes, specific information on organic production has been collected since 2002.

From the National Office of Crop central yield estimates are obtained for subsequent crops plus conversion factors between volumes and fodder units. Yield data is combined with area data from the Ministry of Food, Agriculture and Fisheries (since 2005) and Statistics Denmark, from which the total roughage harvest can be calculated.

**\*\* Areas planted with winter crops \*\***

Forecast of areas planted with winter crops for harvest the following year. Crops include: winter wheat, winter barley, rye, triticale and winter rape. The results only calculate total areas, but the results are used for estimation of the size of the next harvest. Forecasts have been conducted since 1967. It is since 2002 based on the quantities of certified seeds.

The forecast is from 2016 prepared by DAKOFO and the Association of Danish plant breeders. DAKOFO is a trade association for grain and feed trade in Denmark.

The basis of data from The Danish AgriFish Agency of certified seed quantity in tonnes. These are compared with historical relations between sowing and cultivated. In addition, an assessment of the following factors: • sales in the Danish market • how much farmers actually sowed. • how much is exported • The time of the sowing and the resulting changes in the seed volumes per hectare.

The assessments are made on the basis of expert estimates and reports from seed companies and Grovvarereselskab are. Due. the element of discretion to the final figures differ from the forecast in a certain extent.

Projections to 2015 are compiled by Statistics Denmark, also based on data from The Danish AgriFish Agency as well as estimates from Seges.

**\*\* Seeds\*\***

Results for seeds (areas, yields per hectare and total production) are compiled for about 20 types. Yield is measured in purified quantity. The statistics are based on data from the Ministry of Food, Agriculture and Fisheries on crop land (administrative information) and production (yield estimates).

## **2.2 Classification system**

**\*\* Geographical breakdown \*\***

The harvest of cereals etc. is divided by [regions and regions](#). Results for the capital area of Copenhagen and North Zealand are combined as a whole. Similarly, the nuts-regions of East Zealand and Western and South Zealand are published combined as Region Zealand.

**\*\* Crops \*\***

All crops follows the EU classifications in [Eurostat Handbook for Annual Crop Statistics](#)

## **2.3 Sector coverage**

The agricultural sector.

## 2.4 Statistical concepts and definitions

Area for application: Agricultural areas comprised by application for direct support to the Agency of Agriculture and Fisheries. Each area specifies a crop.

Area under cultivation: Agricultural areas where a given crop is cultivated. The crop will most often correspond to that specified in the area for application, but may differ as a result of a changed cultivation plan.

Fodder unit: Measure of energy content in crops that can be used for fodder. 1 kg of core yield is converted into 1 fodder units with these factors: Winter wheat 1.0241; Spring wheat 1.0241; Rye 1,0000; Triticale 1,0000; Winter barley 0,9551; Spring barley 0,9551; Oat 0.7944; Mixed seed 0,7944; Winter rape 1,7037; Spring rape 1.7037; Pulses 1,0897; Field peas 1.0897; Corn cobs 1.0638. 1 kg straw yield is converted into fodder units with these factors: winter wheat 0.1848; Spring wheat 0.1848; Rye 0,1322; Triticale 0.1818; Winter barley 0.1801; Spring barley 0,1941; Oat 0.1812; Mixed seeds 0,1812; Winter rape 0,2500; Spring rape 0.2500; Field peas 0.2900; Pulses 0,2900; Corn cobs 0.1322.

Coarse fodder: Fodder crops used more or less unprocessed for fibrous fodder. Includes fodder turnips etc., grass and whole seed for ensilage.

Straw yield: The amount of straw, calculated from the yield of the individual crops.

Yield: The harvested amount of grains for cereals, rape etc. Measured in dry weight. In the StatBank, the average yield is shown in 100 kg per. hectares. The total yield if here referred to as production, measured in million kilo.

Conventional crops: Non-organic crops.

Dry weight: The yield of cereals, etc. is indicated in dry weight (standard humidity). Dry weight means a water content of not more than 15 per cent for cereals/peas and no more than 9 per cent for rape.

Winter crops: Grains harvested in autumn and harvested the following summer. Includes winter wheat, rye, triticale, winter barley and winter rape.

Spring crops: Grains that can not withstand frost and therefore are sown in spring and harvested the same summer. Includes spring wheat, spring barley, oats and mixed seeds plus corn cobs. Spring rape is also harvested the same summer.

Organic crops: Crops grown according to organic principles set by Danish authorities.

## 2.5 Statistical unit

- Area (1000 hectare)
- Average yield (100 kg pr hectare)
- Production (million kilos)

## 2.6 Statistical population

The target population are farmers with production of the covered crops (cereals, canola, pulses, fodder crops).

## 2.7 Reference area

Denmark.

## 2.8 Time coverage

The statistics in their present form are generably available from 1990. However, see 'Comparability over time' for specification.

## 2.9 Base period

The statistics cover harvest in the calendar year.

## 2.10 Unit of measure

- Land: 1000 hectare.
- Average yield: hektokilo per. hectare.
- Production: million kilo.

## 2.11 Reference period

Statistikken dækker høst i kalenderåret. The statistics cover harvest in the calendar year.

\*\* The harvest of cereals, rape etc. \*\*

1 Oct. in the reference year of the statistics.

The end of the harvest each year (typically in early September). In practice, most crops are harvested by the end of September. However, Grain maize and corn cob mix have often later harvest in November.

\*\* Harvest of roughage \*\*

31 Nov. in the reference year of the statistics.

The end of the harvest each year (typically medio November). In practice, most crops are harvested by the end of September. However, Grain maize and corn cob mix have often later harvest in November.

\*\* Areas planted with winter crops \*\*

1. Oct. in the year before the reference year of the statistics.

This date is usually the latest possible time of sowing.

## 2.12 Frequency of dissemination

The statistics are published annually.

## 2.13 Legal acts and other agreements

The Act on Statistics Denmark, corresponding to request in EU regulation on crop statistics, including forecasts. Statistics on coarse fodder are based on voluntary reporting as the respondents (consultants) are not legally liable to report data.

Council Regulation 543/2009 relating to crop statistics and forecasts. Directive 1989/130 relating to production of straw incorporated in the Economic Accounts for Agriculture.

## 2.14 Cost and burden

1.1 man-years.

## 2.15 Comment

Additional information can be obtained from Statistics Denmark.

## 3 Statistical processing

Data for the harvest of grains, rape etc. is collected annually from farmers using questionnaires. The collected data is corrected based on consistency rules and yield limits. Corrected data are raised to the total population.

Harvesting of roughage, Forecast for winter seed and Seed for seedling are collected annually from experts via questionnaires. The collected yields are raised by total areas (application for support).

### 3.1 Source data

In general areas are obtained from the Integrated Administration and Control System (IACS) by the Danish Veterinary and Food Administration, supplemented by Statistics Denmark's Agricultural and horticultural survey.

\*\* The harvest of cereals, rape and peas and straw \*\*

- Questionnaire Based.
- Gross sample of about 2,800 farms (about 8 per cent of all farms). Net Sample: about 2,700 farms.
- Random, stratified sampling.

\*\* Harvest of roughage \*\*

Questionnaire for crop consultants.

\*\* The forecast for winter crops\*\*

Seed information from the Danish Veterinary and Food Administration and from the Knowledge Centre for Agriculture.

\*\* Seed\*\*

Information from the Danish Veterinary and Food Administration.

### 3.2 Frequency of data collection

Annual.

### 3.3 Data collection

Web form:

- [Questionnaire and guide in Danish for 'The Harvest of grain etc.'](#)
- [Questionnaire and guide in Danish for 'The Harvest of roughage'](#)

### 3.4 Data validation

The submitted forms to the 'Harvest of cereals etc.' are validated against deviation from average yields.

### 3.5 Data compilation

**\*\* Water Percentage \*\*** The crop production is calculated according to standard humidity percentages. These are based on optimal, average values of the individual crops at harvest, estimated by SEGES and other experts.

In the study of the harvest of cereals etc. the individual farm states the percentage if it deviates from the standard percentage, and production/yield is converted proportionately. For other crops agricultural consultants correspondingly indicates if the actual harvest differs from the standard rate.

- Used standard water rates \*
- Cereals, field peas and other dry pulses: 15 pct.
- Rape seeds: 9 pct.
- Temporary grasses and grazings: 50 pct.
- Lucerne: 40 pct.
- Green maize: 45 pct.
- Other cereals harvested green (excluding green maize): 17 pct.

### 3.6 Adjustment

No further corrections of data in addition to what has already been described in 'Data validation' and 'Data processing'.

## 4 Relevance

The users are mainly EU and agricultural organizations. The results are included in the agricultural gross factor income. Information on the use of straw for fuel is used, among other things by the DEA.

User needs are covered in the User Committee for food statistics. Statistics Denmark is also in regular contact with key users, including the Ministry of Food and research institutions.

#### **4.1 User Needs**

The most important users are the EU and agricultural organisations. The data on production are also used in compiling the Economic Accounts for Agriculture (EAA). The use of straw for fuel is used by, e.g. the Danish Energy Agency.

#### **4.2 User Satisfaction**

User needs are covered in the User Committee for Food statistics. Statistics Denmark is also in regular contact with key users, including the Ministry of Food and research institutions.

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

Data comply with EU regulations and guidelines.

### **5 Accuracy and reliability**

The response rate for the calculation of the harvest of grains, rapeseed etc. is over 95 per cent. Precision meets EU quality requirements.

For coarse fodder, reliability must be considered reasonable for average yields, while it is high for area information.

The forecast for winter seed areas usually deviates by 5-10 percentage points from the later established cultivated areas.

#### **5.1 Overall accuracy**

The overall accuracy in the survey of the harvest of grain, peas and rape can be described as good. However, there is some uncertainty for crops grown in small regions at national level, particularly with regard to spring rape.

For coarse fodder, reliability must be considered reasonable for average yields, while it is high for area information.

The reliability of the forecast for winter areas must generally be described as less good than the harvest survey.



## 5.2 Sampling error

\*\* The harvest of cereals, rape and peas and pulses \*\*

Sample of approximately 2,800 farms (about 8 per cent of all farms). The response rate in the survey is generally over 95 per cent, and does not give rise to significant uncertainty.

The coefficient of variance of the total harvest of cereals, rape and pulses is about 0.3 per cent., corresponding to ca. 30,000 tons. grain. For crops with limited distribution, the uncertainty is typically up to 5 per cent.

The statistical uncertainty meets the quality requirement in EU act on harvest statistics.

Because of greater spread in the use of straw than in crop yields, the uncertainty of straw use for different purposes is relatively larger than the uncertainty harvest of cereals, rape and peas.

### Harvest of coarse fodder

The response rate in the study of forage harvest is somewhat smaller than 100 per cent., which is a source of uncertainty.

\*\* Areas planted with winter crops \*\*

No sampling errors as such. The ratio of the areas in the forecast and recent areas recorded indicates an uncertainty of the order of 5 per cent of the total areas with winter seed.

\*\* Coefficient of variance (CV) for the main variable in 2017 \*\*

- The harvest of cereals, rape and peas and pulses \*
- Production\*
- Total cereals 0.3
- Winter wheat 0.3
- Spring wheat 1.6
- Rye 0.9
- Triticale 2.2
- Winter barley 0.6
- Spring barley 0.4
- Grain maize and corn cob mix 4.4
- Oats and mixed grain total of 1.3
- Havre 1.3
- Mixed grain 4.7
- Rape, total 0.6
- Winter rape 0.6
- Spring rape 14.3
- Pulses 4.6
- Field peas 4.6

### **5.3 Non-sampling error**

Applications for EU support is the basis for the study of the harvest of grain, etc. Since only a small proportion of farmers have production without EU support, the coverage of the target population is assumed to be accurate.

### **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 overall accuracy in the survey of the harvest of grain, peas and rape can be described as good. However, there is some uncertainty for crops grown in small regions at national level, particularly with regard to spring rape.

For coarse fodder, reliability must be considered reasonable for average yields, while it is high for area information.

The reliability of the forecast for winter areas must generally be described as less good than the harvest survey.

### **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**

Provisional results for harvest of cereals, pulses and rape seed are in line with final results published later on.

Other results are only prepared once every year, and consequently provisional and final figures cannot be distinguished.

## **6 Timeliness and punctuality**

The statistics are usually published without delay to the scheduled date.

Preliminary data for the harvest of cereals, rape and pulses are published in late November. Final statement, including results for provinces and regions are published April of the following year, where the coarse fodder harvest also is published. End of reference Period: October 1. Harvesting of roughage is published April of the following year. End of reference Period: end of November. The forecast for the following year's winter land released in early December. End of reference Period: October 15

### **6.1 Timeliness and time lag - final results**

The statistics are published annually.

Provisional figures for the harvest of cereals, rape and pulses are published at the end of November. Final figures are available in April of the following year, together with the statistics on the harvest of roughage.

The forecast for areas with winter seeds of the following year appear at the beginning of December.

Data on seeds for sowing appear in Statistics Denmark's Statbank.

### **6.2 Punctuality**

The statistics are usually published as scheduled.

## **7 Comparability**

Similar statistics are produced among EU members and are available from the Eurostat's website. The statistics comply with EU standards.

Harvest figures are in principle comparable back to 1900 but with methodological changes along the way. The current calculation method has in principle been used since 1971. The statistics for the new regions of the country are made from 2006. Thus there for 2006 is both a statement of the then counties, and the current regions.

### **7.1 Comparability - geographical**

Similar statistics are produced among EU members and are available from the Eurostat's website. The statistics comply with EU standards.

## 7.2 Comparability over time

The final figures on crop yields are, in principle, comparable as far back as 1900. Changes in methodology must be taken into account, but the present compilation method has been used since 1971. The results on crop yields at regional level are only comparable as from 2006 due to a new administrative structure of regions in Denmark. For 2006, results are compiled on the basis of the former counties as well as the present regions. Figures on coarse fodder are fully comparable as from 1982 and onwards. The change in methodology, which applied for the 2001 survey to the 2002 survey (taking specific account of organic production) as well as the change in the basis of areas (from 2005) may, to a minor extent, have an impact on the data comparability.

## 7.3 Coherence - cross domain

Similar statistics are produced among EU members and are available from the Eurostat's website. The statistics comply with EU standards.

The forecast for areas with winter seeds can be compared with the later results according to the Agricultural and Horticultural Survey.

## 7.4 Coherence - internal

Data is internally consistent, deriving from the same source.

## 8 Accessibility and clarity

The provisional statistics on crop yields\* appear in *Nyt fra Danmarks Statistik* (News from Statistics Denmark). The final harvest inventory are published in Statbank, added regional results.

Annual publications: \*Statistical Yearbook\* and *Statistisk Tiårsoversigt* (Statistical Ten-Year Review).

### 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

[Newsletter and Statbank tables](#)

## 8.5 Publications

[Statistical Yearbook](#) (selection of results from Statbank)

## 8.6 On-line database

[Newsletter and Statbank tables](#)

Individual Statbank tables:

- [Harvest by region, crop and unit](#)
- [Forecast on winter crop products for harvest by crop and unit](#)
- [Frøproduktion efter afgrøde og enhed](#)
- [Halmudbytte og halmanvendelse efter område, afgrøde, enhed og anvendelse](#)

## 8.7 Micro-data access

The survey data can be made available as anonymised micro-data under a special arrangement for researchers.

Harvesting of roughage: 1993-2003, questionnaires registered in Blaise. From 2004 to Excel.

## 8.8 Other

No further accessibility.

## 8.9 Confidentiality - policy

[Confidentiality policy](#)

## 8.10 Confidentiality - data treatment

The statistics are not published on a level that requires confidentialisation.

## 8.11 Documentation on methodology

No other general method documents.

## 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 statistics are in the division of Food Industries. The persons responsible are:

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### **9.1 Contact organisation**

Statistics Denmark

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