

**Standard Report
on
Methods and Quality

For

Census of Agriculture**

This documentation applies to the reporting period:

June 2010 onwards

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1 Overview

The Census of Agriculture 2010 conducted by the Central Statistics Office (CSO) in June 2010. Principal results from the previous Census of Agriculture conducted in June 2000 allow for detailed comparisons over the ten-year period. The 2010 Census of Agriculture was the first instance that utilised these administrative databases.

The statistical register compiled for the 2010 Census of Agriculture was updated administrative sources held by the Department of Agriculture Food and the Marine (DAFM) and administrative sources were also used to supplement other data collected directly from agricultural holdings with a postal questionnaire.

Questionnaires were issued to approximately 150,000 holdings in the week preceding the reference date of 1st June 2010. Five reminders were issued at approximately fortnightly intervals to maximise the response rate.

2 General Information

2.1 Statistical Category

Combination of administrative data and agricultural surveys.

2.2 Area of Activity

Agricultural statistics.

2.3 Organisational Unit Responsible, Persons to Contact

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2.4 Objectives and Purpose; History

The Census of Agriculture 2010 is a detailed snapshot of agricultural activity in Ireland. This is the first full Census of Agriculture conducted since June 2000. It is in line with the general practice since 1980 of conducting a full Agricultural Census approximately every ten years to provide structural information on agriculture.

The purpose of the Census of Agriculture is to collect detailed statistics on the structure of farming in Ireland. This information is crucial in determining the development of agricultural policy in Ireland and the European Union. The Census was undertaken within the framework of the statistical programme of the European Union, and, Regulation (EC) No 1166/2008. Similar Censuses were conducted in all EU member states during 2009/2010 to provide comparable statistics across the European Union.

Farm Structure Surveys were conducted in 2003, 2005 and 2007 to track changes in the agricultural sector since the Census of Agriculture 2000. Some data from these surveys will be revised based on the Census of Agriculture 2010 final results.

2.5 Periodicity

Decennial census

2.6 Client

General EU & National Requirements

2.7 Users

- Eurostat (the statistical service of European Commission)
- EU Commission
- DAFM
- Other sections within the CSO.
- Semi-State organisations such as Teagasc.
- General Public

2.8 Legal basis

The Census of Agriculture 2010 was conducted in accordance with:

- Statistics Order (Census of Agriculture) 2010 (S.I. No. 181 of 2010), made under the Statistics Act, 1993.
- Regulation (EC) No 1166/2008 of the European Parliament and of the Council of 19 November 2008 on farm structure surveys and the survey on agricultural production methods and repealing Council Regulation (EEC) No 571/88.
- Commission Regulation (EC) No 1200/2009 of 30 November 2009 implementing Regulation (EC) No 1166/2008 of the European Parliament and of the Council on farm structure surveys and the survey on agricultural production methods, about livestock unit coefficients and definitions of the characteristics.

3 Statistical Concepts, Methods

3.1 Subject of the Statistics

Land Utilisation, Livestock Numbers, Farm Structure and Farm Labour.

3.2 Units of Observation/Collection Units/Units of Presentation

An "agricultural holding" or "holding" means a single unit, both technically and economically, which has a single management and which undertakes agricultural activities listed below within the economic territory of the European Union, either as its primary or secondary activity:

- growing of non-perennial crops
- growing of perennial crops
- plant propagation
- animal production
- mixed farming
- support activities to agriculture and post-harvest crop activities

3.3 Data Sources

Census of Agriculture questionnaires were sent to approximately 153,906 farmers in the week preceding the reference date of 1st June 2010 to be completed and returned to the CSO by Tuesday 8 June 2010. Five reminders were issued to maximise the response rate.

To reduce the response burden on farmers, all questions relating to cattle, cereals and potatoes were eliminated from the Census of Agriculture 2010 questionnaire as the relevant data was available from existing administrative data sources from DAFM. The Census of Agriculture 2010 was therefore the first census to use a combination of administrative records and completed paper questionnaires to collect the required data as described below:

- The results for cattle were obtained from DAFM's Animal Identification and Movement (AIM) system. This system was introduced at the beginning of 2000 and involves electronically recording data on animal movements.
- The results for cereals and potatoes are based on data obtained from the 2010 DAFM Single Payment Scheme.
- The results for pigs are based on data obtained from both the Census of Agriculture 2010 questionnaire and the CSO June 2010 Pig Survey.
- The results for poultry and sheep are based on data obtained from the Census of Agriculture 2010 questionnaire.
- Data for UAA is based on data obtained from both the Census of Agriculture 2010 questionnaire and the 2010 DAFM Single Payment Scheme.

3.4 Reporting Unit/Respondents

Farms where the agricultural area used was at least 1 hectare (2.47 acres) may be included in the Census of Agriculture. Farms with less than 1 hectare may also be included if they were engaged in intensive production.

3.5 Type of Survey/Process

Postal Survey & DAFM administrative data.

3.6 Characteristics of the Sample/Process

3.6.1 Population and Sampling Frame

For the Census of Agriculture 2010, the register of agricultural holdings used to contact farmers was constructed by amalgamating the CSO intercensal Agriculture Register and DAFM's 2009 Corporate Client System.

3.6.2 Sampling Design

Full census of farm holdings

3.7 Survey Technique/Data Transfer

The census is carried out by post and follow up reminders are sent to non-respondents.

3.8 Questionnaire (including explanations)

The questionnaire is an eight-page questionnaire which is simple in design to allow easy usage.

Please see the following URL to view the survey form =>

https://www.cso.ie/en/media/csoie/methods/censusofagriculture/Census_of_Agriculture_2010_Survey_Form.pdf

3.9 Participation in the Survey

An 8-page A4 sized questionnaire (see [Annex A. COA 2010 Questionnaire](#)) was issued to all farm holdings in the week prior to June 1st 2010 to be completed and returned to the CSO by Tuesday 8th June 2010. This was accompanied by an information booklet (see [Annex B. COA 2010 Information Booklet](#)) with detailed notes on each section of the questionnaire. Five reminders were issued in order to maximise the response rate.

Also carried out as a sample survey was the module of Agricultural Production Methods - a separate 4-page A4 sized questionnaire (see [Annex C SAPM 2010](#)) was also issued to all sample of farm holdings.

The paper questionnaires returned to the CSO were batched, receipted and scrutinised. They were then electronically scanned, verified and edited.

The Census data was collected entirely by post (i.e. no interviewers). Each questionnaire issued included a pre-addressed freepost reply envelope. The return address on the reply envelope was to some dedicated Post Office Boxes which were used exclusively for the Census of Agriculture. The advantage of this method was that post was segregated from other post when it was delivered to the CSO and the national Post Office was able to provide an exact count of how many envelopes were returned this way. The envelopes were mechanically cut open across the top and the questionnaire held within was removed manually.

The survey is a voluntary survey on respondents.

3.10 Characteristics of the Survey Process and its Results

Data are collected for the following main categories

Sheep

- Breeding Females
- Other Sheep

Cattle (from administrative source)

- Dairy cows
- Other cows
- Bulls
- Male cattle 2 years and over
- Female cattle 2 years and over,
- Male cattle 1-2 years
- Female cattle 1-2 years
- Male cattle under 1 year
- Female cattle under 1 year

Crops

- Cereals
- Pulses
- Potatoes
- Fodder roots and brassicas
- Industrial plants
- Vegetables for sale
- Fruit
- Flowers
- Seeds and seedlings
- Nurseries, horticulture etc.
- Other crops (includes fallow land, miscanthus and other energy crops)

The final results publication also reports the area covered (in hectares) by silage, hay, pasture and rough grazing at county level.

Pigs

Data are collected for the following categories of pig in the Census of Agriculture

- Piglets under 20 kg
- Breeding sows over 50 kg
- Other pigs

Poultry

Data are collected for the following categories of poultry in the Census of Agriculture

- Broilers
- Laying hens
- Other poultry

Labour Force

Data are collected for the following Labour Force categories in the Census of Agriculture

- Farm holder – Age, Sex and Farm Work
- Farm manager – Age, Sex and Farm Work
- Farm work of family members
- Farm work of non-family members
- Other Gainful Activities

3.11 Classifications used

The classifications used are listed at 3.10 above and are based on Eurostat legal requirements.

3.12 Regional Breakdown of Results

A regional breakdown of the Census of Agriculture results is published as part of preliminary and final publications. A Census of Agriculture micro data set was also submitted to Eurostat for validation. Data was also published at county level.

The composition of the Regions breakdown is outlined below.

Border, Midland and Western NUTS 2 Region

Border Cavan, Donegal, Leitrim, Louth, Monaghan and Sligo

Midland Laois, Longford, Offaly and Westmeath

West Galway City & County, Mayo and Roscommon

Southern and Eastern NUTS 2 Region

Dublin Dublin City, Dun Laoghaire-Rathdown, Fingal and South Dublin

Mid-East Kildare, Meath and Wicklow

Mid-West Limerick City & County, Clare and North Tipperary

South-East Waterford City & County, Carlow, Kilkenny, Wexford and South Tipperary

South-West Cork City & County and Kerry

4 Production of the Statistics, Data Processing, Quality Assurance

4.1 Data Capture

Forms are scanned, and the dataset is then entered into the Data Management System (DMS) for edit checks etc. Administrative data from the DAFM is then merged with the scanned returns.

A clean dataset is exported from the Data Management System to SAS for analysis.

4.2 Coding

No coding used within survey process.

4.3 Data Editing

Data editing is performed using the DMS. Edit rules focus on difference between current and previous year's returns. Cases where the change from one year to the next is outside certain bounds are examined to ensure that the change is not due to an error on the returned form. Data from administrative sources is not edited.

4.4 Imputation (for Non-Response or Incomplete Data Sets)

Sheep: The annual Sheep & Goat Census carried out by the Ministry of Agriculture, which provides a register of all sheep producers with a reference date of December of each year. This was used to impute for missing sheep data.

Labour: Where the age of the holder was not provided, or a unit was not sampled, administrative files were first checked for a date of birth. If this failed, the age at the last FSS in 2007 was checked if available and adjusted accordingly. Finally, if the age could still not be confirmed, the distribution of holder ages across all returns was examined and this distribution was used to randomly assign ages to the missing cases. In returns where the labour force section was left completely blank or in cases where the farm was not directly surveyed in 2007, regression techniques were utilised to provide a model for labour component of farms based on all available explanatory variables including area farmed, number of livestock, age of holder, gender of holder amongst others. Time spent was also regressed on explanatory variables.

Grass: Where no grassland area was provided for farms with bovines, the number of bovines in each category were used as explanatory variables in predicting a value for area of grassland.

Also, imputation from administrative data or previous surveys was also used to account for unit non-response.

4.5 Grossing and Weighting

Results are based on the created full population data set, so no grossing or weighting is used.

4.6 Computation of Outputs, Estimation Methods Used

The results for cattle are obtained from administrative sources. The pig survey is a de facto census of the specialised pig farms that are responsible for the clear majority of pig farming within the State. A series of SAS programmes are run to identify all farmers who responded in the current year and in the previous year. Then, for each category of livestock (where matched sampling is used for total estimation) the percentage change between the two years is calculated. This percentage change is then applied to the published totals for the previous year to come up with estimates for the totals for the current year. Using the matched sampling methodology and administrative sources the "Crops and Livestock Survey June 2010 Provisional estimates" are released in September 2010.

The Census data is processed and merged with all administrative sources. Final areas of crops and numbers of livestock for June 2010 were published in the first quarter of 2011 as "Crops and Livestock June 2010 Final Results". This publication provided details of crops at national and regional level and cattle at national, regional and county level, and results for sheep, pigs and other livestock at national and regional level.

Preliminary and final Census publications detailing farms by size, type, economic size and detailed farm labour force data is published once National Methodological Report and Census of Agriculture 2010 dataset have been validated and accepted by Eurostat. The data tables will be accompanied by background notes on data collection, derivation of farm typology, livestock unit coefficients and a copy of the questionnaire.

4.7 Other Quality Assurance Techniques Used

- Cross referencing of surveys results against DAFM's Sheep & Goat and Pig Censuses.
- Consistent Macro edits within DMS are performed which compare totals over a number of years.
- Consultation with experts within industry to ascertain reasons behind emerging trends.

5 Quality

5.1 Relevance

The main groups of national characteristics surveyed are decided based on EU Census of Agriculture legislation, i.e. Regulation 1166/2008.

A small number of additional variables were collected for national purposes. The need for these variables was identified through a consultation process with the main stakeholders prior to the survey design stage. Specifically, these variables related to:

- Sheep: A more detailed breakdown of sheep, consisting of rams, ewes (both under and over 2 years) and other sheep (both under and over 1 year).
- Poultry: The sub-division of both broilers and turkeys into breeding birds and table birds.
- Equidae: The sub-division of equidae into thoroughbred, other horses and mules, jennets and asses.
- Deer: Number of farmed deer.

Administrative Burden: the number of minutes taken to complete the CAO2010 questionnaire.

5.2 Accuracy and Reliability

5.2.1. Sampling Effect & Representativity

There was no sampling effect as the Census of Agriculture 2010 was carried out as a Census of all Irish Agricultural farms. The total number of active farms in June 2010 was estimated to be 139,860. Of the 153,906 potential farms on the register which were issued with a Census of Agriculture questionnaire, 138,370 responded. Of these, 120,644 indicated that they were actively engaged in farming and/or maintaining the land in good agricultural and environmental condition in order to receive Single Farm Payment. The remaining 17,726 respondents stated they were not engaged in farming although 3,803 of these were later identified as active farm holdings from DAFM administrative records.

Of the 15,567 who didn't respond to the 2010 Census of Agriculture, 13,765 of these were also identified as active farm holdings from DAFM administrative records. A further 1,648 new holdings were also identified from DAFM administrative records. These had not been on the original register used for issuing Census of Agriculture questionnaires. This arose as the register was partly built using DAFM's 2009 databases. Thus, a total of 19,216 farms were identified as active from administrative records, of which 17,568 were listed on the original farm register and a further 1,648 which were not on the register.

5.2.2. Non-Sampling Effects

5.2.2.1 Quality of the Data Sources used (other than survey register)

No other data sources (besides administrative) used in preparation of results.

5.2.2.2 Register Coverage

All necessary steps are taken to ensure full coverage of the population. The Agriculture Register, finalised after FSS 2007 was further updated in April 2010 (prior to the Census of Agriculture 2010), new 'births' which had been identified as newly-active holdings on Ministry of Agriculture's administrative databases were added. Therefore, the Agriculture register was considered very comprehensive. The only units that could have been excluded were those farming but not registered on either of the two administrative databases (CCS & Bovine Register). However, the likelihood of a new farm not falling into one of these two databases is considered low.

While new 'births' were added to the register, it is not always easy to identify farm 'deaths'. However, page 1 of the Census questionnaire asks the respondent to indicate if the holding has been sold or leased or if the registered holder has retired or is deceased. These units are subsequently marked as inactive and considered 'out-of-scope'.

5.2.2.3 Non-response (Unit and Item)

Unit Non-response

Unit non-response occurred when a sample unit declined to respond to the questionnaire, despite the issuing of five reminders. Non-response was assumed (as opposed to out-of-scope/inactivity) when a form wasn't returned. Administrative data was utilised where possible for farms which were found to be active on administrative files despite providing no response. Otherwise, imputation was used to impute certain characteristics for the non-sampled units to compile a full census.

Full non-response was addressed by using administrative data to confirm level of activity and provide data. Therefore, bias due to non-response is considered to have been addressed.

Item Non-response

As all data on bovines were collected from administrative records, only variables collected in the Census paper questionnaire were affected by item non-response. This seemed to occur mostly in the farm labour, OGA, and training sections. The Census is a self-completed postal questionnaire (8 pages) and as such there may be respondent fatigue by the time these sections are reached. The data being collected are complex and do not work well in a postal questionnaire with no trained interviewer present during completion. It can therefore be difficult also to determine if the cells are empty due to non-response or are in fact real zero.

Where available, administrative data is used to impute for item non-response or to confirm real zero. In the absence of administrative data, data were imputed using regression if appropriate explanatory variables could be identified.

5.2.2.4 Measurement Errors

Measurement errors are not formally calculated for the Survey. The questionnaire is clear and unambiguous and easily understood by respondents. Crop, cattle and goat published totals are taken from DAFM administrative data.

5.2.2.5 Processing Errors

The potential for processing errors are limited due to well defined processes within the DMS. Numerous edit checks are performed to ensure reasonableness of the data used at aggregation stage. Macro edit checks, where totals for each category are compared with previous years are performed on all results to ensure consistency and identify processing errors.

5.2.2.6 Model-related Effects

No known model related effects.

5.3 Timeliness and Punctuality

5.3.1 Provisional Results

Preliminary Census of Agriculture 2010 results were published in February 2012.

5.3.2 Final Results

Final Census of Agriculture 2010 results were published in December 2012, results could not be published until the dataset and National Methodological Report have been validated and accepted by Eurostat.

5.4 Coherence

At micro level data was examined throughout the editing process. Different data sources were used to evaluate the data that was to be processed. Sources included the FSS 2007, Census 2000 and administrative sources from the Ministry.

Wherever possible, Census data were also compared with other available sources and data in other domains. For example, results were compared with annual crop and animal production surveys.

Consistency checks are also performed against other data providers, namely Teagasc, Bord Bia and DAFM.

5.5 Comparability

As a common legislative framework is in place across the European Union for this survey, results are comparable against other European Union countries.

5.6 Accessibility and Clarity

5.6.1 Assistance to Users, Special Analyses

All assistance within the bounds of maintaining confidentiality is given to users. Decisions on whether to perform special analyses are taken on a case by case basis.

5.6.2 Revisions

Revisions do not usually occur from one survey to the next, but revision may take place due to changes in methodologies and data collection methods.

5.6.3 Publications

5.6.3.1 Releases, Regular Publications

Census of Agriculture 2010 – Preliminary Results
Census of Agriculture 2010 – Final Results

The releases are available on the CSO website at 11am on the day of publication.

<https://www.cso.ie/en/statistics/agriculture/>

5.6.3.2 Internet

Agricultural Holdings by County, CensusYear and Size of Holding

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA07&PLanguage=0>

Agriculture Holdings by Selected Electoral Divisions, CensusYear and Size of Holding

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA08&PLanguage=0>

Agricultural Holdings by Rural District, CensusYear and Size of Holding

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA09&PLanguage=0>

Area of Selected Crops by County, Year, Statistic and Type of Crop

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA13&PLanguage=0>

Area of Selected Crops by Selected Electoral Divisions, Year and Type of Crop

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA14&PLanguage=0>

Area of Selected Crops by Rural District, Year and Type of Crop

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA15&PLanguage=0>

Number of Farms with Livestock by County, Type of Livestock

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA10&PLanguage=0>

Number of Livestock by Selected Electoral Divisions

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA11&PLanguage=0>

Number of Livestock by Rural District, CensusYear and Type of Livestock

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA12&PLanguage=0>

Farm Labour Input by Selected Electoral Divisions, Year, Type of Farm Labour Input and Statistic

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA19&PLanguage=0>

Farm Labour Input by Rural District, Year, Type of Farm Labour Input and Statistic

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA20&PLanguage=0>

Farm Labour Input by County, Year, Type of Farm Labour Input and Statistic

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA21&PLanguage=0>

Farms by County, Year and Age of Holder

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA16&PLanguage=0>

Farms by Selected Electoral Divisions, Year and Age of Holder

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA17&PLanguage=0>

Farms by Rural District, Year and Age of Holder

<https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=AVA18&PLanguage=0>

5.6.4 Confidentiality

All data from respondents are treated as strictly confidential in accordance with the Statistics Act 1993. Care is taken to ensure that disclosure of potentially confidential results is avoided.

6 Additional documentation and publications

The entry for this statistic under StatCentral (the portal to Ireland's official statistics) is at

<http://www.statcentral.ie/viewStat.asp?id=144>