

IRELAND – CENSUS OF AGRICULTURE 2020 – METADATA REVIEW

1. Historical outline

Ireland has participated in all WCA rounds. Agricultural censuses were conducted in 1929, 1949, 1960, 1970, 1980, 1991, 2000, and 2010. The metadata and data presented here refer to the last CA, carried out in 2020.

2. Legal basis and organization

Legal framework

The legal basis for the CA 2020 was provided by:

- the Statistics Act 1993 (No. 21 of 1993);
- the Statistics (Census of Agriculture) Order 2020 (S.I. No. 281 of 2020);
- Regulation (EU) 2018/1091 of the European Parliament and of the Council of 18 July 2018 on integrated farm statistics and repealing Regulations (EC) No 1166/2008 and (EU) No 1337/2011; and
- Commission Implementing Regulation (EU) 2018/1874 of 29 November 2018 on the data to be provided for 2020 under Regulation (EU) 2018/1091 of the European Parliament and of the Council on integrated farm statistics and repealing Regulations (EC) No 1166/2008 and (EU) No 1337/2011, as regards the list of variables and their description.

Institutional framework and international collaboration

The Central Statistics Office (CSO) was the governmental agency responsible for the organization and implementation of the CA 2020, in cooperation with the Department of Agriculture, Food and the Marine (DAFM) on the subject of its farm registers. The CSO set up an internal project board committee to monitor the progress of the CA 2020. Agricultural experts from the Agriculture and Food Development Authority (Teagasc) assisted on this project by providing advice on how to collect some variable and providing data on standard outputs. A grant was provided by Eurostat to the CSO to carry out the CA 2020.

Census staff

The CA 2020 involved two statisticians, two higher executive officers (HEO), three executive officers (EO), four clerical officers (CO), and 12 temporary clerical officers (TCO). Other CSO staff from support sections from graphic design, printing, IT, Irish office and more, assisted the census in relevant stages.

3. Reference date and period

Reference day: 1 June 2020, for livestock, and animal housing.

Reference periods:

- from 1 January to 31 December 2020, for land variables obtained from the Integrated Administration and Control System (IACS), irrigation and soil management practices, manure management, labour, land use; and
- from 1 January 2018 to 31 December 2020, for rural development measures.

4. Enumeration period

The CA fieldwork was conducted from September 2020 to January 2021. Due to the COVID-19 pandemic, the CSO had to postpone data collection (core data from administrative sources) from June to September 2020. Ireland recorded just under 80 percent of response rate for core data collected from non-administrative sources (including postal system). The CAWI method was introduced and used in ten percent of the interviews.

5. Scope of the census and definition of the statistical unit

The **census scope** covered agricultural (crop and livestock production) activities.

The **statistical unit** was the agricultural holding, defined as a single unit, both technically and economically, that has a single management and that undertakes economic activities in agriculture in accordance with Regulation (EC) No 1893/2006 belonging to groups A.01.1, A.01.2, A.01.3, A.01.4, A.01.5 or to the "maintenance of agricultural land in good agricultural and environmental condition" of group A.01.6 within the economic territory of the Union, either as its primary or secondary activity, as it is stated in the Regulation (EU) No. 2018/1091 of the European Parliament and of the Council on integrated agricultural statistics. Regarding activities of class A.01.49, only the activities "Raising and breeding of semi-domesticated or other live animals" (except for raising of insects) and "Bee-keeping and production of honey and beeswax" were included.

Community-level data

There were no community-level data collected along with the census.

6. Census coverage

Geographic coverage

The CA 2020 covered the entire country.

Cut-off threshold and other exclusions

In the CA 2020 the following thresholds were applied: (i) five ha of UAA; (ii) two ha of arable land; (iii) 0.5 ha of potatoes (including seed potatoes) - outdoor, or fresh vegetables (including melons) and strawberries - outdoor; (iv) 0.3 ha of fruits, berries and nuts (excluding citrus fruits, grapes and strawberries) and other permanent crops including other permanent crops for human consumption - outdoor; (v) 0.2 ha of seeds and seedlings, aromatic, medicinal and culinary plants, flowers and ornamental plants (excluding nurseries) and nurseries - outdoor; (vi) 0.01 of greenhouses or cultivated mushrooms; or (vii) 1.7 livestock units. The animal housing and manure management module covered the subset of the population of agricultural holdings defined before with at least one cattle, pig, sheep, goat, or poultry.

7. Methodology

Methodological modality for conducting the census

The CA 2020 used the modular approach combined with the use of administrative registers. It comprised a core module and three thematic modules on labour force and other gainful activities, rural development, and animal housing and manure management. Some census data for the core and the animal housing and manure management modules, and all census data related to the thematic module rural development were collected directly from administrative registers.

Relation to other censuses

No relationship with other censuses.

Frames

The Agriculture Register, hosted in the CSO Data Management System, was the list frame used in the CA 2020. The register was finalised after the Farm Structure Survey (FSS) 2016, was updated annually and in April 2020 (prior to the Census) to add 4 687 new births identified as newly active holdings in the Department of Agriculture, Food, and the Marine's administrative databases. Administrative databases include IACS, Bovine, Ovine, Poultry and Organic farming Registers.

Complete or/and sample enumeration methods

The CA 2020 used a combination of complete and sample enumeration. The core and the rural development modules were collected using complete enumeration, while data for the supplementary thematic modules referred to labour force and other gainful activities, and animal housing and manure management were collected using sample enumeration.

Sample design

In the CA 2020, the sample was selected using a one-stage stratified random sample of size 10 000 for each supplementary thematic module. The stratification variables were the NUTS 3 regions and size, location, and specialization of the holdings. The sample size was designed and calculated at

NUTS 2 to meet the precision requirements set out in Annex V of Regulation (EU) 2018/1091, that is, relative standard error less than five percent for variables in the precision table where 7.5 percent or more of the UAA in the region or 7.5 percent or more of the livestock units in the region and five percent or more of the variable in the country. Sample size was allocated between strata using proportional allocation. The intensive pig and poultry enterprises were selected using complete enumeration. Sampling weights were adjusted for non-response within the sampling strata. Different samples from the original census frame were chosen for each of the two modules.

Data collection methods

The CA was conducted by post (mail-out/mail-back), CAWI and CATI methods. CAWI and CATI were used to collect information on grassland, farm labour, livestock that did not fall into the cattle, sheep pigs or poultry categories, animal housing and manure management variables. Information on livestock, crops, and rural development were collected from administrative registers: IACS, bovine register, ovine register, organic farming register, and rural development measures.

Questionnaire(s) and items covered

Three questionnaires were used in the CA 2020: one for the core module, and two for the supplementary thematic modules referred to labour force and other gainful activities, and animal housing and manure management. The questionnaires covered 22 out of 23 essential items recommended in the WCA 2020¹. Data for 18 essential items were collected from administrative sources².

8. Use of technology

CAWI and CATI were used for field data collection. Data entry of paper questionnaires received by post was carried out using OCR. Census data were collected directly from administrative registers to reduce the response burden. Census results were disseminated online.

9. Data processing

Direct data capture was ensured by the CAWI and CATI method. For paper questionnaires, optical scanning of forms was used. This software was configured to flag errors or erroneous data at scanning. Staff then used the CSOs Data Management System (DMS) software to correct data. Ineligible digits and data were highlighted and corrected on screen by referring to previous returns or by deduction. The data then enters the edit phase where data was passed through a range of pre-programmed edit checks carried out by staff from local departments. Arithmetic checks, range checks and comparison with previous rounds of the data collection and with other domains in agricultural statistics were carried out and the data was examined. These edits were processed through the DMS before more edits were carried out in SAS and R-Studio. Imputation was carried out using deductive, cold deck and random hot deck methods. Administrative data within the reference year was available for close to 100 percent of the unit non-responders. This also meant that it could be determined if there was true item non-response when data was missing. The nature of the core data collected using the census instrument and the available auxiliary information meant that accurate deductive imputation could be performed. Most of the imputation was performed in SAS with imputation of a small proportion of INSPIRE grid cell codes performed using SAS in parallel with R-Studio. For data compilation, design weights obtained from the inverse of the inclusion probabilities adjusted for non-response within sampling strata were used.

¹ The following essential item was not covered: (i) 0107 Main purpose of production of the holding.

² The following essential items were covered by administrative sources: (i) 0101 Identification and location of agricultural holding; (ii) 0103 Legal status of agricultural holder (type of holder); (iii) 0104 Sex of agricultural holder; (iv) 0105 Age of agricultural holder; (v) 0201 Total area of holding; (vi) 0202 Area of holding according to land use types; (vii) 0203 Area of holding according to land tenure types; (viii) 0302 Area of land actually irrigated: fully controlled and partially controlled irrigation; (ix) 0402 Area of temporary crops harvested (for each temporary crop type); (x) 0406 Area of productive and non-productive permanent crops in compact plantations (for each permanent crop type); (xi) 0407 Number of permanent crop trees in scattered plantings (for each tree crop); (xii) 0411 Use of each type of fertilizer; (xiii) 0501 Type of livestock system; (xiv) 0502 Number of animals; (xv) 0503 Number of female breeding animals; (xvi) 0601 Use of agricultural pesticides; (xvii) 0801 Household size by sex and age groups; and (xviii) 1201 Presence of aquaculture on the holding.

10. Quality assurance

The CSO carried out different procedures to assure and assess quality: training courses, use of best practices, quality guidelines, and self-assessment. The CSO Quality Strategy 2020-2023 has led to several improvements in quality procedures. A new metadata management application (Colectica) is being utilized across the office which has modernized and standardized the processes around questionnaire design, variable specifications, and metadata management. This will be very valuable over the remainder of the decade for IFS data collections. Several actions were carried out to minimize non-sampling errors in the CA 2020: update of registers to minimize under-coverage; explanatory notes or handbooks for enumerators or respondents to minimize measurement errors; reminders, imputation, and weight adjustment to minimize non-response error; different team members worked on the same questionnaires at each stage of the process to minimize processing errors. Sampling errors were calculated and of the 65 eligible cases for the precision requirements in relation to Regulation (EU) 2018/1091, five were not met.

11. Data and metadata archiving

Microdata was anonymised before it was transferred to Eurostat for validation. This was done in SAS. Microdata is stored on secure CSO servers according to CSO data security policy. People who have access to this sensitive microdata are closely controlled by the CSO. Data is stored on the CSO servers alongside the relevant metadata. Access to the CSO servers is closely controlled and monitored by the CSO.

12. Data reconciliation

There was no reconciliation process of AC 2020 data.

13. Dissemination of census results and microdata

Preliminary results were published on 9 December 2021 and detailed results on 26 May 2022 (<https://www.cso.ie/en/statistics/agriculture/censusofagriculture/>). CA 2020 statistics can be viewed using the CSOs online database (PXSTAT) available at <https://data.cso.ie/>. Results are available at county level.

14. Data sources

Eurostat. 2022. *Integrated Farm Statistics - National quality reports 2020: Ireland* [online]. Luxembourg. [Cited 14 October 2022]. https://ec.europa.eu/eurostat/cache/metadata/en/ef_simsif_ie.htm

Central Statistics Office (CSO). 2022. *Census of Agriculture 2020*. In: CSO [online]. Cork, Ireland. [Cited 14 October 2022]. <https://www.cso.ie/en/methods/agricultureandfishing/censusofagriculture/censusofagriculture2020/>.

15. Contact

Central Statistics Office, Agriculture Surveys Section
Address: Skehard Road, Cork T12 X00E, Ireland
Telephone: (+353) 21 453 5000
E-mail: agri@cso.ie
Website: <http://www.cso.ie/en/index.html>