

SWEDEN – AGRICULTURAL CENSUS 2020 – METADATA REVIEW

1. Historical outline

Sweden participated in all WCA rounds since 1930, except for the 1990 round. The Agricultural Census (AC) 2020 was the eighth census conducted in the country, from which the data and metadata review are presented here.

2. Legal basis and organization

Legal framework

The legal basis for the AC 2020 was provided by:

- the Swedish Board of Agriculture's regulations on statistical survey of the structure of agriculture, SJVFS 2020:3;
- the Official Statistics Ordinance 2001:100, that regulates how data can be shared between institutions;
- 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 Statistics Division of the Swedish Board of Agriculture (SBA) conducted the AC 2020. The European Union co-funded the AC 2020.

Census staff

The AC 2020 involved six census office staff and nine enumerators.

3. Reference date and period

Reference day: 4 June 2020, for livestock and animal housing.

Reference periods:

- from 1 November 2019 to 31 October 2020, for land use and crops;
- from 1 June 2019 to 31 May 2020, for irrigation and soil management practices, labour force, manure management, all other variables; and
- from 1 January 2018 to 31 December 2020, for rural development measures.

4. Enumeration period

The AC 2020 was conducted from May to November 2020. The SBA did not report any major impact from the COVID-19 pandemic. The questionnaires were sent in May 2020 with an option to answer via CATI, CAWI or post.

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 AC 2020 covered the entire country.

Cut-off threshold and other exclusions

The AC 2020 considered the following thresholds for agricultural holdings: (i) five ha of UAA; (ii) two ha of arable land – outdoor, fruits, berries and nuts (excluding citrus fruits, grapes and strawberries) – outdoor, nurseries – outdoor, or short rotation coppice areas; (iii) 0.25 ha of fresh vegetables (including melons) and strawberries - outdoor, flowers and ornamental plants (excluding nurseries) – outdoor, permanent crops (including young and temporarily abandoned plantations, excluding areas producing for own consumption only) - outdoor; (iv) 0.02 ha of UAA - under glass or high accessible cover; (v) ten cattle or breeding sows, live weight 50 kg or over; (vi) 50 pigs; (vii) 20 sheep; or (viii) 1 000 poultry.

7. Methodology

Methodological modality for conducting the census

The AC 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 module, and all census data related to the thematic modules on rural development and animal housing and manure management were collected directly from administrative registers.

Relation to other censuses

No relationship with other censuses.

Frames

The statistical farm register, used since 1968 as a frame for different agricultural surveys, was the list frame for the AC 2020. It consisted of holdings from the FSS 2016 updated with information from holdings in the livestock survey for the years 2018 and 2019, and holdings applying for subsidies in 2018, 2019 and 2020 from the Integrated Administration and Control System (IACS). The frame was also updated with information from the poultry-, sheep- and pig registers. The last update of the frame was conducted in April 2020. The IACS was combined with the cattle register, and the last known value for other animal and horticulture production.

Complete or/and sample enumeration methods

The AC 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 AC 2020, the sample was selected using a one-stage stratified random sample. The stratification variables were size, location, specialization, and legal status of the holdings. The sample size of 21 000 holdings was determined by doing six different Neyman allocations based on six different variables (pasture, livestock units, sheep, cattle, cereals, and pigs). In each strata the highest sample size was chosen based on the six allocations. The total sample size was iterated until all relative standard error requirements were met according to Annex V of Regulation (EU) 2018/1091. Big holdings that met criteria mostly based on area and on the number of livestock were selected using complete enumeration. Sampling weights were adjusted for non-response. Sample was selected using SAS.

Data collection methods

The AC was conducted by post (mail-out/mail-back), CAWI, and CATI methods, according to the choice of the respondents. Information on livestock, agricultural area, rural development, and animal housing and manure management were collected from administrative registers: IACS, bovine register, ovine register, organic farming register, and rural development measures. In addition, modelling was used for calculating the variables in the animal housing and manure management module. The statistical model was developed based on registered data from different organisations in the country.

Questionnaire(s) and items covered

The AC 2020 used three questionnaires. The questionnaires included variables that could not be obtained from administrative registers. The small questionnaire (L) was sent to 41 000 agricultural holdings. It included pre-printed general information on the holding, and questions on agricultural area and livestock. The bigger questionnaires (SJ and SF) were sent to the rest of the population and included questions on labour force and other gainful activities. The SJ questionnaire was sent to 3 400 juridical agricultural holdings and the SF to 19 600 larger agricultural holdings. The questionnaires covered 16 out of 23 essential items recommended in the WCA 2020¹.

8. Use of technology

CAWI and CATI were used for field data collection. Data entry of paper questionnaires 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. Optical scanning of forms was used for paper questionnaires. Interviewers and staff from central department carried out data validation through data format, completeness, routing, range, and relational checks; data flagging; and comparisons with previous rounds of the data collection. Data validation was done at central collection centre using SAS and Microsoft Excel. Imputation was used to address item non-response considering the following methods: deductive, ratio, cold-deck using previous Farm Structure Surveys and livestock surveys as sources, random hot-deck, and previous data from for the same unit. Staff of the Statistics Division at the SBA carried out the imputation using SAS. For variables collected using sample enumeration, compilation was carried out using design weight adjusted for non-response.

10. Quality assurance

The SBA follows the Generic Statistical Business Process Model (GSBPM) for the statistical production. The quality management group consists of professionals within different statistical areas (statistical methods, statistical production, and data dissemination). During the stage of statistical production, it uses checklists derived from the principles laid down on the Code of Practice (COP). The GSBPM production process requires analysis and evaluation of the statistics after each delivery. Statistics are produced in accordance with the Quality Declaration of the European Statistical System (QDESS). The principles of quality are based on relevance, accuracy, timeliness and punctuality, accessibility, and clarity, as well as comparability and coherence. In accordance with the QDESS, statistics in the country are developed, produced, and disseminated based on sound methodologies, the best international standards and appropriate procedures that are transparent and well documented. For the AC 2020, the following actions were used to minimize non-sampling errors: removal of ineligible units from the records, leaving unchanged the weights for the other units to minimize over-coverage error; pre-testing questionnaire, explanatory notes or handbooks for enumerators or respondents, on-line FAQ or hot-line support for enumerators or respondents, and training of enumerators to minimize measurement errors; follow-up interviews, reminders, and imputation to minimize non-response errors; checks to detect errors from the scanning procedure to minimize processing errors. Standard errors were calculated, and data met the precision requirements in the Regulation (EU) 2018/1091.

¹ The following essential items were not covered: (i) 0107 Main purpose of production of the holding; (ii) 0402 Area of temporary crops harvested (for each temporary crop type); (iii) 0406 Area of productive and non-productive permanent crops in compact plantations (for each permanent crop type); (iv) 0407 Number of permanent crop trees in scattered plantings (for each tree crop); (v) 0411 Use of each type of fertilizer; (vi) 0601 Use of agricultural pesticides; and (vii) 0801 Household size by sex and age groups.

11. Data and metadata archiving

The microdata was disseminated using EU methodology and is available, upon request to statistik@jordbruksverket.se, to external users for research purposes only after removing all identifying information on the holder and the holding. Data from the census is published on the website of the SBA at <https://jordbruksverket.se/om-jordbruksverket/jordbruksverkets-officiella-statistik> and on the statistical database at <https://jordbruksverket.se/om-jordbruksverket/jordbruksverkets-officiella-statistik/statistikdatabasen>.

12. Data reconciliation

All data was revised, validated, and compared to previous data and other data within the agriculture domain before being published. If inconsistencies are identified after the publication, then a new corrected version of the data will be published together with a documentation stating what changes have been made and why.

13. Dissemination of census results and microdata

News releases were published for preliminary and final results on livestock, type of farming, holdings and holders, other gainful activities on agricultural holdings, farm labour force, and full-time farming during late 2020 and first half of 2021. Preliminary and final results at the national and county level were published in Swedish, with summary in English, in a printed publication and online. The following reports were published:

- Livestock: preliminary results published on 15 October 2020 and final results on 29 January 2021;
- use of agricultural land: published on 3 February 2021;
- the Swedish typology of type of farming: published on 13 April 2021;
- holdings and holders: published on 28 April 2021;
- other gainful activities on agricultural holdings: published on 17 June 2021;
- farm labour force: published on 15 June 2021; and
- full-time farming in Sweden: published on 23 June 2021.

All statistical reports published can be found at https://jordbruksverket.se/om-jordbruksverket/jordbruksverkets-officiella-statistik/jordbruksverkets-statistikrapporter#query/*%3A*, and have a methodological paper and a quality declaration attached.

14. Data sources

Eurostat. 2022. *Integrated Farm Statistics - National quality reports 2020: Sweden* [online]. Luxembourg. [Cited 11 November 2022]. https://ec.europa.eu/eurostat/cache/metadata/en/ef_simsif_se.htm

15. Contact

Statistics Division, Swedish Board of Agriculture.
Address: Skeppsbrogatan 2, SE-551 82, Jönköping, Sweden.
Telephone: (+46) 36 155000 (switchboard); (+46) (0) 771223223 (customer service)
E-mail: Saranda.Daka@jordbruksverket.se
Website: www.jordbruksverket.se