



GERMANY – AGRICULTURAL CENSUS 2020 – METADATA REVIEW

1. Historical outline

Beginning with the first one in 1949, agricultural censuses have been carried out in the Federal Republic of Germany in 1960, 1971 and 1979. The Agricultural Census (AC) 1991 was the first carried out in the unified Germany, followed by the ACs conducted in 1999 and 2010. The AC 2020, to which the present metadata review and data refer, was the fourth AC to be conducted in the country.

2. Legal basis and organization

Legal framework

The legal framework of the AC 2020 included:

- the Federal Statistics Act of 20 October 2016 (Federal Law Gazette I p. 2394), last amended by Article 6 of the Act of 22 February 2021 (Federal Law Gazette I p. 266);
- the Agricultural Statistics Act of 17 December 2009 (Federal Law Gazette I p. 3886), last amended by Article 109 of the Act of 20 November 2019 (Federal Law Gazette I p. 1626);
- the Act on Equal status for Set-Aside and Agricultural used Areas of 10 July 1995 (Federal Law Gazette I p. 910), amended on 8 July 2016;
- Regulation (EU) 2018/1091 of the European Parliament and of the Council of 18 July 2018 regarding integrated statistics on agricultural holdings, that regulates and details the information that the countries of the European Union must provide.

Institutional framework and international collaboration

The implementation of the AC 2020 in Germany was decentralized. Technical and methodological organization and coordination was carried out by the Federal Statistical Office (FSO) in consultation with the statistical offices of the federal states (*Länder*), which were responsible for the data collection and processing at the *Länder* (state) level, whereas the FSO was responsible for the processing of federal results and their submission to Eurostat. The ministry of Food and Agriculture is responsible for the national agricultural statistic law and was involved in the major aspects of the AC 2020.

Census staff

The staff involved in the AC 2020 amounted to approximately 200 persons.

3. Reference date and period

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

Reference periods:

- year 2020, for legal form, location, land use and crops, organic farming and types of land tenure, holding manager;
- the last 12 months, for manure management, participation of holding's manager in vocational training courses, renewable energy;
- from March 2019 to February 2020, for labour force;
- calendar year 2019, for irrigation, animal grazing and incomes;
- from 2019 to 2020, for crop rotation;
- from 2018 to 2020, for rural development support;
- the last two years, for areas leased for the first time and with changes in the lease price; and
- the fiscal year 2019/2020, for determination of profits and taxes;

4. Enumeration period

The AC 2020 was conducted between February and April 2020. Some minor delays and issues with data collection were experienced due to COVID-19 pandemic, but preparation was accomplished by February 2020, well before the lockdown. Data collection started early in Germany. Due to the German federal structure, each *Länder* was responsible for data collection.

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

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

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. The intention of the holdings to make a profit was not required. Agricultural holdings that produce olive oil from olives for personal use were included in the scope of the regulation, but were not relevant for Germany in the context of the AC 2020. The breeding and keeping of ostriches, emus and rabbits, as well as bee-keeping were not relevant for Germany, too.

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

Germany applied the following threshold: (i) five ha of UAA; (ii) 0.5 ha of hops or tobacco or of area for fruit-growing; under vines or tree nurseries; or of outdoor vegetable or strawberry cultivation; or (iii) one ha of permanent outdoor crops; (iv) 0.3 ha of outdoor flower or ornamental plant cultivation; (v) 0.1 ha of crops under glass or other accessible protective cover or mushrooms; or (vi) ten cattle, 50 pigs, ten breeding sows, 20 sheep, 20 goats, 1 000 poultry.

7. Methodology

Methodological modality for conducting the census

The modular approach combined with the use of administrative registers was implemented in the AC 2020. The AC was composed of a core module and three thematic modules on labour force and other gainful activities, rural development, and animal housing and manure management. Administrative registers were used to collect data partially for the core module and the animal housing and manure management modules, and completely for the rural development module.

Relation to other censuses

No relationship with other censuses.

Frames

The frame used in the AC 2020 was the Central Farm Register for Agricultural Statistics (zeBRA). The statistical offices of the *Länder* maintain and constantly update the frame with previous surveys and administrative data sources.

Complete or/and sample enumeration methods

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

Sample design

In the AC 2020, the sample was selected using a one-stage (stratified) sample with controlled selection independently in each stratum. The stratification variables were the NUTS-2 regions, size classes of UAA, crops and livestock characteristics, the economic method of the farm (organic/conventional) and the main production areas. The strata plan for the IFS2020 included various full coverage strata, e.g.

holdings with large numbers of livestock and organic farming. The total sample size was approximately 78 000 holdings. This sample was used in all thematic modules. The sampling weights were adjusted for nonresponse.

Data collection methods

In the AC 2020, data was collected through the CAWI method using CATI for follow-up. In justified individual cases, the responsible *Länder* statistical office allowed the use of paper questionnaires. A letter with the access data and brief instructions for the online or paper questionnaire was sent by the statistical offices of the *Länder* to respondents. The characteristics concerning land use, location, manure management, land leasing, cattle population, animal housing, and rural development support were obtained from administrative data sources. Collecting data on the module on manure management was complex and a lot of telephone support was needed.

Questionnaire(s) and items covered

One electronic questionnaire (CAWI/CATI) was used in the AC 2020. The questionnaire covered 20 out of 23 essential items recommended in the WCA 2020¹.

8. Use of technology

CAWI and CATI were used for field data collection. Census data were collected directly from administrative registers to reduce the response burden. Census results will be disseminated online.

9. Data processing

Direct data capture was ensured by the CAWI method. The development of the online questionnaire included the creation of plausibility checks stored in it so that the first possible errors were recognized and corrected by the respondent when filling out the questionnaire. The statistical offices of the *Länder* then checked the completeness of the incoming questionnaires with the help of entry control systems and transferred the data from the online questionnaires, paper questionnaires and the administrative data sources into the processing and plausibility check programme AGRA 2010. This program provided more than 800 plausibility checks at the holding level data and flagged erroneous and suspicious data, which were corrected manually or automatically, or supplemented by telephone inquiries with the respondents. Missing data were imputed using cold deck procedures with sources like previous census or administrative registers or hot-deck methods using similar holdings as data sources. Anonymization and tabulation were made using AMT/GHman, a specific software. For any further workflow step, specific software or SAS were used.

10. Quality assurance

The FSO applied a variety of systematic quality assurance measures that ensured the production of high-quality statistical information on the basis of methodologically sound and efficient production processes. With its Statistical Quality Offensive, the FSO introduced a comprehensive quality management system based on Total Quality Management (TQM). The conceptual framework was the EFQM (European Foundation for Quality Management) Excellence Model, which provides the basic structure for this assessment and review of the capability and service delivery and fulfilment (performance) of the organization in general. The chosen quality assurance and assessment procedures that were carried out included peer reviews, quality reports, and a quality manual. The AGRA 2010 processing programme was the main instrument for making edits of completeness and plausibility. Estimation of the relative standard error was used as a measure of the sampling error. Census results estimated from sample enumeration were shown with a quality label which indicates the sampling error class. The accuracy required by Regulation (EU) 2018/1091 of a relative standard error of less than five percent for relevant crops and livestock characteristics of agricultural holdings was compiled at NUTS2 level for the sample part of the census. To reduce non-sampling errors, the zeBRA register is continuously updated by the statistical offices of the *Länder*, the agricultural census was arranged as an exercise with an obligation to provide information, and statistical offices of the *Länder* set up helplines to assist respondents. Estimates were compared with those of previous surveys, censuses and administrative data.

¹ The following essential items were not covered: (i) 0407 Number of permanent crop trees in scattered plantings; (ii) 0601 Use of agricultural pesticides; and (iii) 0801 Household size by sex and age groups.

11. Data and metadata archiving

Microdata and metadata are available in the Research Data Centre of the Federal and the *Länder* statistical offices (<https://www.forschungsdatenzentrum.de/de/agrar/lwz-h>) for scientific research purposes.

12. Data reconciliation

There was no reconciliation of current statistics and surveys with the newly AC 2020 data in order to improve previous estimates. However, the consistency of census data was checked with former data and administrative data sources.

13. Dissemination of census results and microdata

First key results of the AC 2020 were presented during a press conference in January 2021. During 2021, additional results were published online on the census website. Nationwide raster maps with comparison to previous surveys and censuses were published in the atlas of agricultural statistics (<https://agraratlas.statistikportal.de>). Detailed results of the AC 2020 in different formats can be obtained from the GENESIS-Online database system (<https://www-genesis.destatis.de/genesis/online>). The Federal Ministry of Food and Agriculture published the statistical yearbook on food, agriculture and forestry in the Federal Republic of Germany (<https://www.bmel-statistik.de/archiv/statistisches-jahrbuch>). The statistical offices of the *Länder* have their own publications on their corresponding websites (<https://www.statistikportal.de/de/statistische-aemter>). In addition to the classic publication products, the results of the AC 2020 were published in the form of Story Maps (<https://www.statistikportal.de/de/veroeffentlichungen/landwirtschaftszaehlung-2020>). The results of the AC 2020 are shown by the Federal Statistical Office for the entire federal territory and broken down by *Länder*. The statistical offices of the *Länder* also publish results below the state level, for example, district and partially municipal results. The regional data of core variables are available at NUTS level 3 and the regional data of the module data are available at level 2.

14. Data sources

Eurostat. 2022. *Integrated Farm Statistics - National quality reports 2020: Germany* [online]. Luxembourg. [Cited 11 April 2022]. https://ec.europa.eu/eurostat/cache/metadata/EN/ef_simsif_de.htm

Federal Statistical Office (FSO). 2021. *Landwirtschaftszählung 2020*. In: *FSO* [online]. Wiesbaden, Germany. [Cited 8 October 2021]. https://www.destatis.de/DE/Themen/Branchen-Unternehmen/Landwirtschaft-Forstwirtschaft-Fischerei/Landwirtschaftszaehlung2020/_inhalt.html.

15. Contact

Federal Statistical Office.

Address: Bonn branch office, Graurheindorfer Straße 198, 53117 Bonn, Germany.

Telephone: (+49) 611 752405; (+49) 228 996438651

E-mail: agrarstruktur@destatis.de; carsten.schreiner@destatis.de

Website: https://www.destatis.de/DE/Home/_inhalt.html