

MEXICO – AGRICULTURAL CENSUS 2022 – METADATA REVIEW

1. Historical outline

The first agricultural census in Mexico was carried out in 1930, followed, by those carried out in 1940, 1950, 1960, 1970, 1981, 1991 and 2007. The Agricultural Census (AC), to which the present metadata review and data refer, was conducted in 2022.

2. Legal basis and organization

Legal framework

The legal basis of the AC 2022 included the following legal framework:

- Articles 26 and 73 of the Constitution of April 7, 2006, establishing the National Statistical and Geographic Information System (SNIEG);
- the Law of the SNIEG of 11 March 2008, last reformed published on May 20, 2021.

The article 59 of the SNIEG Law entrusts the National Institute of Statistics and Geography (INEGI) with carrying out national censuses.

Institutional framework and international collaboration

The AC 2022 was carried out exclusively by the INEGI.

Census staff

The staff involved in census activities consisted of 26 083 people, distributed as follows: 15 948 enumerators, 866 coordinators, 3 339 managers, 737 instructors, 528 auxiliaries, 441 information analysts, 236 cartographers, 182 IT staff, 120 broadcasting staff, and 2 806 verifiers.

3. Reference date and period

Reference day:

- The day of the interview, for demographic characteristics; and
- 15 September 2022, for livestock, machinery, and equipment.

Reference periods:

- from 1 October 2021 to 30 September 2022, for temporary and permanent crops, forestry, land variables, technologies, agricultural practices, irrigation, labour force, credit, insurance, government support and other services, etc; and
- the last five years, for deforestation and forest planting.

4. Enumeration period

The enumeration period of the AC 2022 was from 19 September to 30 November 2022. A stage of enumeration of missing holdings was implemented during December 2022. The enumeration included the complete listing and enumeration of producers in localities with up to 15 000 inhabitants, and the direct visit to producers in localities with more than 15 000 inhabitants using directories. Due to COVID-19 pandemic, the training of enumerators was developed with a hybrid scheme, with in-person and remote activities. The rest of the census activities were not affected by the COVID-19 pandemic.

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

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

The **statistical unit** was the production unit defined as the economic unit made up of one or more land plots located in the same municipality, where at least some of them carry out agricultural or forestry activities, under the administration of the same holder with the same production elements, such as equipment, machinery, vehicles, and labor, available for these activities. The AC 2022 considered two types of units, agricultural production units and forestry production units. Agricultural production units that raised livestock but did not have their own land were also covered by the AC 2022. Households with livestock activities were covered by the census but were not considered as a production unit. Households with agricultural activities in the backyard only for self-consumption or recreational purposes were not covered by the census.

Community-level data

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

6. Census coverage

Geographic coverage

The AC 2022 covered the entire country.

Cut-off threshold and other exclusions

No thresholds or other exclusions were applied in the AC 2022.

7. Methodology

Methodological modality for conducting the census

The classical approach was used in the AC 2022

Relation to other censuses

No relationship with other censuses.

Frames

In the AC 2022 the updated Master Frame for Agricultural Sector Statistics (MMESAGRO) was used to identify and collect data from agricultural and forestry production units. The frame is made up of all rural land plots in the country, including those with and without agricultural and/or forestry activities. The MMESAGRO comes from the Update of the Agricultural Census Frame, an exhaustive field work carried out in 2016 in which the INEGI obtained the complete mosaic, the general data and the basic characteristics of all rural lands in the country. This frame was updated with data from the National Agricultural Surveys 2017 and 2019, administrative registers, satellite images to verify crop areas, and the identification of parcels in communal land in all ejidos larger than two ha. Information from AC 2022 will be used to update the master frame which will be the basis for the development of future statistical projects related to the sector. The geographical structure of MMESAGRO was based on the National Geostatistical Frame (MGN) updated in November 2021, made up of 2 451 municipalities. From the MMESAGRO, the Directory of holders by municipality, the List of land plots, and the Directory of holders without code were prepared, which were updated through ejidal presidents, representatives of settlers, and institutions and organizations related to the sector.

Complete or/and sample enumeration methods

The AC 2022 was conducted using complete enumeration.

Sample design

No sampling was used.

Data collection methods

In the AC 2022 data was collected using the CAPI, PAPI and CAWI methods. The PAPI method was used in high-risk areas, and then these questionnaires were captured using the mobile computing device (meebox) used in the CAPI method. The CAWI method was available to collect data from large production units, but only the 0.14 percent of these units responded through this method.

Questionnaire(s) and items covered

Three questionnaires were used for data collection: (i) a basic questionnaire for small and medium-sized agricultural production units; (ii) an expanded questionnaire for large agricultural production

units¹; and (iii) a questionnaire for forestry production units. The census questionnaire covered 19 out of 23 core items recommended in the WCA 2020².

8. Use of technology

CAPI and CAWI were used for field data collection. Digital cartographic files and satellite images preloaded on mobile computing devices were integrated into cartographic modules that allowed their simultaneous visualization to support the identification processes of the production units and lands of the holders. Census results were disseminated online.

9. Data processing

Direct data capture was ensured by the CAPI and CAWI method using systems developed by INEGI through Delphi. For the PAPI method, the mobile computing device used in the CAPI method was used to capture data. Various stages of data analysis and validation were carried out, namely: online validation, monitoring, coding, normalization, validation within each questionnaire, validation between questionnaires, imputation, and analysis of preliminary tabulations. Additionally, during data processing, satellite images were used to complement the data analysis and validation. Staff from headquarters and from states offices operated systems developed by INEGI for data processing. Information analysts at the national and state levels addressed possible inconsistencies reported by systems and processes. Imputation was carried out through the Hot Deck methodology for missing data in selected variables. For complete non-response in large agricultural production units, an imputation was carried out using data from National Agricultural Surveys 2017 and 2019, and validation processes were carried out, both at the unit and aggregate level, to guarantee the consistency of the data. The census database was developed using an Oracle database. SAS and R were used for data processing.

10. Quality assurance

From 4 October to 16 November 2021, INEGI carried out the Public Consultation on the AC 2022 methodology, established by the SNIEG Law, to collect proposals, opinions, suggestions and comments on the conceptual, operational, generation and dissemination of results. From 28 March to 8 April 2022, a pilot census was carried out to test questionnaires, inputs, procedures and systems applied to the field operation. From 16 to 18 May 2022, a test of the basic questionnaire, adjusted after the pilot census, was carried out for small and medium-sized production units. The daily monitoring and control of the Census was carried out through the platform called IKTAN-web with progress reports on: households visited, holders, agricultural production units, land covered and questionnaires collected, as well as the identification of the different situations detected in the field. The Graphic Coverage Control System allowed graphic monitoring of the operational situation of land plots. Meetings were held, at least once a week, to support and provide feedback to the staff in solving the difficulties presented, review the progress and the quality of the information captured. Supervision, advice and support activities were carried out on a permanent basis through central, regional and state staff.

11. Data and metadata archiving

Metadata was published on November 21, 2023 and is available at <https://www.inegi.org.mx/rnm/index.php/catalog/867/study-description>. Data was published during 2023 and is available at <https://www.inegi.org.mx/programas/ca/2022/>. Microdata anonymization is guaranteed by Articles 37 and 38 of the SNIEG.

12. Data reconciliation

There was no reconciliation process of AC 2022 data.

13. Dissemination of census results and microdata

¹ Based on the results of the AC 2007 and over recent years with the support of the National Agricultural Surveys, a set of large agricultural production units has been formed, which includes those that have reported the highest production values in the country, representing close to half of the value of national production. Likewise, derived from the analysis of other variables such as the planted area, the irrigated area, the volume of livestock stocks and the high degree of mechanization, there are other production units that were classified as large.

² The following essential items were not covered: (i) 0801 Household size by sex and age groups; (ii) 0901 Whether working on the holding is the main activity; (iii) 0902 Working time on the holding; and (iv) 1201 Presence of aquaculture on the holding.

Preliminary results were published on 31 May 2023 in a publication called Timely Results. The final results were published at the national and federal entity level on 21 November 2023 through tables, a digital map of Mexico, an interactive consultation system, a microdata laboratory, infographics and monographs. A methodological report was published in 2023. The microdata is available to staff of Mexican State institutions, graduate student and researchers, and officials of international organizations or counterpart institutions from other countries, through an in-person microdata laboratory or by remote processing. Access is obtained by sending an email to microdatos@inegi.org.mx. For general users, INEGI offers a service of processing service at a cost, sending the results as long as confidentiality is not compromised. The results, reports, microdata and information on processing services, as well as additional information are available on the census website (<https://www.inegi.org.mx/programas/ca/2022/>).

14. Data sources

Instituto Nacional de Estadística y Geografía (INEGI). 2024. Censo Agropecuario 2022. In: *INEGI* [online]. Aguascalientes, México. [Cited February 23th. 2024]. <https://www.inegi.org.mx/programas/ca/2022/>.

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