



## CHILE – CENSUS OF AGRICULTURE AND FORESTRY 2021 – METADATA REVIEW

### 1. Historical outline

The first agricultural census (AC) in Chile was conducted in 1929/1930. Since 1936, ACs are carried out regularly, on a ten-year basis<sup>1</sup>, normally following the Population and Housing Censuses (PHCs). The present metadata review and data refer to the eighth AC, the 2021 National Census of Agriculture and Forestry (CAF), conducted in the country.

### 2. Legal basis and organization

#### *Legal framework*

The Organic Law of the National Institute of Statistics (INE) N° 17.374 of 15 October 1970 and the Decree of the Ministry of Economy N° 1.062 of 30 October 1970, constitute the basis of the current institutional framework for conducting censuses in Chile. The Organic Law of the INE establishes, at Article 1, that the INE, as an independent, decentralized body, is the legal entity responsible for official statistics and censuses in the Republic of Chile, which is related to the Government through the Ministry of Economy, Development and Reconstruction (MEDR). The Decree of the Ministry of Economy, Development and Tourism (MEDT) N° 75 of 23 December 2020, published on 26 March 2021, indicated the year 2021 for the realization of the CAF 2021 and empowered the National Director of Statistics to set the start date of the CAF by means of a resolution published in the Official Gazette. The Decree of the MEDT N° 20 of 23 February 2021 approved the regulations for the CAF, detailing its organization and operation.

#### *Institutional framework and international collaboration*

For the CAF 2021, the INE was the technical body responsible for the preparation, organization, execution, data processing and dissemination of census results. This was carried out on the command and collaboration of the Office of Agricultural Studies and Policies (ODEPA) of the Ministry of Agriculture.

#### *Census staff*

The staff involved in census activities comprised, for the CAPI data collection method, 16 regional operational coordinators, 82 operational coordinators of the census area, 50 instructors, 354 supervisors, 1770 enumerators, and 48 facilitators<sup>2</sup>. The staff involved in census activities of the CAWI method were 5 analysts and 1 coordinator.

### 3. Reference date and period

#### **Reference day:**

- 10 March 2021 (first enumeration day), for livestock and machinery.

#### **Reference periods:**

- calendar year 2020, for main purpose of holding production, agricultural and household services
- agricultural year 2020/2021 (from 1 May 2020 to 30 April 2021) for land use, crops, irrigation, fertilizers, building facilities, labour, other gainful activities, forestry.

### 4. Enumeration period

The fieldwork was carried out from 10 March to 10 June 2021, with an extension until 30 June 2021 for some regions due to difficulties in contacting producers during the quarantine periods decreed by the national authorities because of the COVID-19 pandemic and considering that some areas had longer quarantines than others. In early 2020, also due to the pandemic, the hiring of enumerators and supervisors, activities related to communications and dissemination, were postponed, in addition to data collection. The INE and the ODEPA postponed the fieldwork from April 2020 to August, then to September

<sup>1</sup> 1936, 1955, 1965, 1976, 1997, 2007 and 2021. It was not possible to carry out the CAF 2017 because the Population and Housing Census was scheduled for that year, so the AC was programmed for 2020. Due to Covid-19 pandemic, it was finally conducted in 2021.

<sup>2</sup> The facilitators conducted with cultural pertinence the census survey among indigenous communities, organizations and associations and their members. Supervisors controlled the quality of the data collection work of the enumerators during the enumeration process, in addition to guaranteeing the territorial coverage of the census area for which they were responsible.

and finally to March 2021. Resources were reallocated to purchase personal protective equipment, testing of field personnel and vaccination, and reprinting of paper material, representing a 22 percent increase in the 2021 goods and services budget. New training modalities were developed, namely in-person training (20 percent), online training (65 percent), and mixed modalities (15 percent). Online data collection, originally planned for a few producers with large land extension, large number of livestock, and/or complex organizational structure, was made available to all producers regardless of size.

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

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

The **statistical unit** was the agricultural productive unit (UPA)<sup>3</sup>, defined as an economic unit of agricultural, livestock, or forestry production, under the sole management of a producer, regardless of tenure or size, which includes all the livestock kept in it and all the land dedicated total or partly for agricultural or forestry purposes. A UPA may comprise of an agricultural property, a property or several adjoining or separate properties, which may be in the same or different region or commune. UPA were classified as being operated by: (i) a natural person; or (ii) a juridical person.

### ***Community-level data***

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

## **6. Census coverage**

### ***Geographic coverage***

The CAF 2021 covered the entire country.

### ***Cut-off threshold and other exclusions***

Agricultural lands for productive or non-productive purposes other than of those in the agricultural and forestry sector were excluded. Other properties classified as "Agricultural Real Estate" but with a different focus such as recreation area, zoo, gardens, or others, were also excluded.

For holdings engaged in agricultural and forestry activities, the exclusion criteria used were area and sales. For those holdings with less than two ha of area and without sales (self-consumption units), an abbreviated questionnaire was collected.

## **7. Methodology**

### ***Methodological modality for conducting the census***

The classical approach was used in the CAF 2021.

### ***Relation to other censuses***

The cartography included information from the Population Pre-Census 2016.

### ***Frames***

For the CAF 2021, the frame was the list of enumeration areas with the approximate number of UPA in each geographic area. To get this latest information, a Reference List was built before the CAF from different sources: (i) properties considered agricultural, forestry and/or agribusiness real estate by the Internal Revenue Service (SII) for the second half of 2018; (ii) producers in the agricultural and forestry area of the CAF 2006/2007; (iii) agricultural companies identified in the Master Business Frame version 2018 maintained by the INE; (iv) list of Agricultural and Indigenous Communities; (v) list of public bodies and non-profit institutions identified by the INE; (vi) list of producers in the forestry-agricultural area not linked to the territory or directories, such as UPA without land; and (vii) other complementary sources.

### ***Complete or/and sample enumeration methods***

The CAF 2021 was a complete enumeration operation of all UPA in the country.

### ***Sample design (if sampling was used)***

No sampling was applied.

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<sup>3</sup> UPA: Unidad Productiva Agropecuaria

### **Data collection methods**

Data collection was done by means of CAWI and CAPI methods. Although the CAWI method was initially intended for those UPA that, due to their large size, could lead to complex administration systems, so that their survey directly on the ground could generate technical difficulties, due to the COVID-19 pandemic, it was decided to open this method to all those producers who voluntarily registered on the Census website, regardless of the size of their UPA, their productive structure and their administrative complexity. For those UPA that did not complete the questionnaire using the CAWI method, data collection was carried out by means of face-to-face interviews, using the CAPI method through tablets. The short questionnaire was collected only using the CAPI method.

### **Questionnaire(s) and items covered**

Two questionnaires were used in the CAF 2021: a complete questionnaire with 282 questions grouped into 16 sections, and a short questionnaire with 20 questions grouped into four sections, applied only to producers who indicated having forestry and agricultural activity in the agricultural year 2020/2021, with less than two hectares of total area, and that they did not make sales. The complete questionnaire covered 21 out of 23 essential items recommended in the WCA 2020<sup>4</sup>.

## **8. Use of technology**

CAWI and CAPI were used for field data collection. Use of digital cartography was incorporated in the CAWI and CAPI methods. Preliminary Census results were disseminated online.

## **9. Data processing**

Direct data capture was ensured by the CAWI and CAPI methods. Integration of both databases was done, and validation was carried out at different levels: (i) 77 validation rules during the filling out the questionnaire using the CAPI method and 119 rules for the CAWI method; (ii) 42 validation rules implemented for the questionnaires collected with the CAPI method in the Agricultural Census Operational Management System (SGOCA) which comprised manual revision of the questionnaires in the event of an inconsistency; and (iii) 341 validation rules (logical consistency, rare information, flow of the questionnaire) implemented weekly by the Project Technical Team on the data collected by both methods. Item non-response and non-valid values were automatically edited and imputed using information from the same questionnaire. Analysis and validation of results were carried out comparing the data with a quality framework based on the analysis and review of existing administrative registers, at different levels of aggregation. In addition, consistency analysis was carried out within the questionnaire. The data processing, analysis and tabulation was carried out in RStudio.

## **10. Quality assurance**

For the CAF 2021, eight pilot census were carried out sequentially between November 2018 and February 2021, culminating in a comprehensive system pilot census, which corresponded to a global test that replicated the survey conditions in the Census execution period and finally two additional tests of usability of the support platforms by the computer technology area, which allowed to test the data transmission technology system that would support the field operation. The questionnaires were prepared from the version of the CAF 2006/2007 and analysed and validated in working groups formed by various ministries and public services, private entities, unions, and other organizations related to issues in the forestry and agricultural area. A supervision system was considered, which includes direct supervision, indirect supervision through re-interviews, and general supervision, which comprise the revision of questionnaires with inconsistencies, where, among other things, the collection of information from the entire production unit was analysed and the recovery of questionnaires with non-responses was possible. On the other hand, web interviews were supervised by web analysts and coordinators to ensure the collection of all the UPA that were part of the CAWI method and to comply with the quality standards established by the project. To monitor the territorial progress in the census coverage, the area surveyed was compared with the geographic reference area defined as the area in the census cartography for the CAPI method and the area surveyed prior to the survey, for the CAWI method. There was a Coverage Report with two levels of disaggregation, regional and communal, to monitor the progress of the collection in terms of area.

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The following essential items were not covered: (i) 0407 Number of permanent crop trees in scattered plantings; and (ii) 1201 Presence of aquaculture on the holding

## 11. Data and metadata archiving

Microdata and its documentation will be available on the INE website in the second half of 2022. Metadata are available on the INE website, published with the previous results. Census data is stored in the institutional servers of the INE.

## 12. Data reconciliation

No data reconciliation process has been carried out.

## 13. Dissemination of census results and microdata

Preliminary results, made up of six representative tables agreed with ODEPA, and a preliminary methodological report were published in January 2022. During the second half of 2022, final results, disaggregated at regional and communal levels, and the final methodological report were published and are available on the census website at <https://www.ine.gob.cl/estadisticas/economia/agricultura-agroindustria-y-pesca/censos-agropecuarios>. Microdata is also available in the same website from October 2022, after the information was submitted to institutional anonymization processes to comply with the legal norm of preserving statistical secrecy. This product is published together with the corresponding methodological documentation and the glossary of census terms. In June 2023, the final report of a panel of experts on the CAF methodology was published and is available on the census website. In the same website, during September 2023, two errata were published regarding irrigation water and summer cattle databases and a Census Memories that aims to deliver in a documented and schematic manner the processes and experiences obtained during all stages of the project: structuring, planning, preparation, execution, census closure, data processing and publication of results.

## 14. Data sources

**Instituto Nacional de Estadística (INE)**. 2022. VIII Censo Agropecuario y Forestal. In: *INE* [online]. Santiago, Chile. [Cited 10 February 2022]. <https://www.ine.gob.cl/estadisticas/economia/agricultura-agroindustria-y-pesca/censos-agropecuarios>.

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