
ITALY - Census of Agriculture 2010 – Explanatory notes

1. Historical Outline

The Agricultural Census is carried out every 10 years in Italy. Six agricultural censuses have been conducted in Italy in the years 1961, 1970, 1982, 1990, 2000 and the latest being 2010.

2. Legal Basis and Organization

Article 15 of Legislative Decree n. 322/89 identifies the National Statistical Office known as ISTAT as the agency responsible for census activities. The general measures for the 6th Agricultural Census are stated in Article 17, of the Law, Decree 25 September 2009, n.135, and the Law 20 November 2009, n.166. The Decree of the President of the Republic, n. 154 of 23 July 2010 establishes the rules of its execution.

This organization for the 2010 Census was different from that in the past. For the 2010 Census, a Census Committee was created with an advisory function. It was composed of members of ISTAT, Regions, Ministry of Agriculture, some Research Institutes and representatives of Municipalities and Provinces. In 2010 every Region was encouraged to have a direct and active role in the Census activities starting with the planning process, through data collection, validation, and data dissemination.

3. Reference Period or Date

The reference date of the Agricultural Census is 24th October 2010. Information on land use, agricultural and animal production methods, labour force and other gainful activities related to the farms refer to the agricultural marketing year (1st November 2009 to 31st October 2010).

Data on the professional status of the holder, his/her family and related, on the head of farm, agricultural skills of farm manager refer to the 12 months prior to the census day. Characteristics concerning the landscape features and rural development support refer to the last three years

4. Enumeration Period

The fieldwork started October 25, 2010 and ended on January 31, 2011, with the exception of one Region.

5. Definition of the Statistical Unit

EC Regulation 1166/2008 defines the statistical unit as an agricultural holding.

„Agricultural holding“ or „holding“ means a single unit, both technically and economically, which has a single management and which undertakes agricultural activities listed in Annex I to the European Parliament and Council Regulation (EC) No 1166/2008 within the economic territory of the European Union, either as its primary or secondary activity. In addition, the EU regulation determines thresholds of size.

Italy applied regional thresholds for the utilised agricultural area in the range from 0.2 ha to 0.4 ha. No threshold minimums have however been applied to the holdings with flowers and ornamental plants, vegetables, vineyards and fruit trees because of their relevant economic value.

6. Geographic Coverage

Covered the entire country.

7. Exclusions and Cut-Off Thresholds

Regional thresholds were used for the utilised agricultural area. No threshold minimums have been applied to the holdings with flowers and ornamental plants, vegetables, vineyards and fruit trees because of their relevant economic value.

8. Methodology

Use of the FAO Modular Approach

No

Frame

The frame is defined as the statistical units identified by a pre-census list established by ISTAT. The list of agricultural holdings has been obtained by the integration of administrative and statistical sources which contain information concerning the agricultural population and its units. Specific sources are: the Integrated Administration and Control System³ (AGEA) – year 2009, the System for the Identification and Registration of Bovine Animals and other species (AA.ZZ.) – Year 2009, the Lands' property Incomes (Tax Agency) year 2007, the Land registry – year 2009. General sources are: the Chambers of Commerce – year 2008, the VAT and Tax Revenue declarations (Tax Agency) - year 2007.

Statistical sources are the 2000 Census of Agriculture and the Business Register – year 2007.

Complete or Sample Enumeration Methods

The 2010 Agriculture Census was an enumeration of all agricultural holdings in the list.

Sample Design

Not applicable.

Collection Method

With the aim to increase the number of individuals using the Internet based electronic questionnaires, a link to the questionnaire web page was established as well some videos of the experiences of respondents who had already made use of the online questionnaire. Despite the introduction of the online Internet questionnaire, however, respondents were still offered the option of a personal face-to-face interview.

Respondents received a code for questionnaire Internet access. The questionnaire was very simple to complete with the filter questions and the online guide. After sending the questionnaire to ISTAT respondents were emailed a confirmation of its receipt and informed how to print their completed questionnaire.

Interviewers were responsible for data recording, validation and confirmation of the questionnaires in their assignment area whether they were the self-enumerated online version on the Internet or the printed questionnaire completed by the interviewer in a face-to-face interview.

Questionnaire(s)

EU Regulations require information on holding location and geo-coordinates, legal status, ownership and tenancy, land use and crops grown, irrigation, livestock, organic farming, machinery (mandatory in 2013 FSS), renewable energy installations, other gainful activities, socio-economic circumstances (full and part-time farming), labour force (family, non-family, contractors), agricultural and vocational training of the manager, inclusion in rural development support programmes, soil tillage methods, crop rotation, and erosion protection, livestock keeping places and keeping methods, animal grazing, manure application and manure storage and treatment facilities, maintenance and installation of landscape features.

Additional characteristics were added to the Italian Agriculture Census to address National requirements: items on number of land parcels in the holding; use of information technology; more detailed information on fruit trees, vineyards and irrigation; participation in quality schemes; type of accounting; types of revenue of the holding (agriculture, other gainful activities; other); marketing of the holding's production. The requests for additional more detailed information come mainly from the Ministry of Agriculture, the Regions, the National Accounts Service of ISTAT, INEA, and ISPRA.

There was one comprehensive Census questionnaire available either as printed form or as Internet based electronic version that could be completed online and was available in four languages Italian, German, English or Slovenian.

Controls to Minimize Non-Sampling Errors

The non-sampling errors were identified and treated by an Editing and Imputation System, preserving as much as possible the collected information. The edit and imputation activities were grouped in three main stages. The first stage refers to the checks performed at the data-gathering phase. The second stage concerns the activities carried out in order to provide the provisional figures. The last stage relates to the procedures aiming to release the final data.

The edit and imputation process was monitored by the analysis both of the data distributions and of the performance of the scheduled editing steps. By computing a set of tables, at the regional and provincial level, the final results of the procedures have been compared with the available statistical and administrative sources.

In case of electronic questionnaires, the interviewers monitored the completeness of information. If the questionnaires were partly completed they contacted holders to revise the questionnaire. Sometimes however, it was necessary to conduct a face-to-face interview to resolve some of the problems with the electronic questionnaire.

Innovative Methodologies

There was a possibility of using CAWI - self-compilation of the electronic questionnaire in the web by the holder. CATI was used for the post-census quality control survey.

9. Data Entry, Edits and Imputations, Estimation and Tabulation

The Editing and Imputation System has been one of the main projects launched to improve census data quality. The main purpose of the edits and imputations was to identify and treat the non-sampling errors, preserving as much as possible the information that was collected.

For detecting outlier values, a special procedure, based on the robust technique of Forward Search (Atkinson and Riani, 2000; Riani et al., 2012) has been implemented in partnership with the University of Parma and centrally applied by ISTAT. The selection of outliers was done by using a procedure to detect holdings in which the collected information by the census was not in agreement with that coming from the register kept by the General Agency for Agricultural

Subsides (AGEA). This method was developed on the hypothesis that the differences between two data sources depend on the differences due to the classification schemes, the reference time, or observation field. The outlier detection was carried out within strata of holdings defined according to farm size, the region, and the area corresponding to the following main surfaces, utilised agricultural area, total area, vineyard and olive plantation areas.

The imputation process used was a combination of the following methodologies:

- (1) Deductive imputation, if the values to impute are uniquely determined by the values assumed by other variables,
- (2) Rule based imputation (based on deterministic rules "if then"),
- (3) Nearest neighbour imputation,
- (4) Model based imputation (preferred for the imputation of continuous variables),
- (5) Interactive imputation.

10. Data Dissemination and Use

Preliminary results were disseminated on 5th July 2011 on the web by a press release and 23 tables were made available to users at www.censimentoagricoltura.istat.it.

Final results were released in July 2012. Main form of dissemination is web data warehouse.

11. Census Data Quality

To evaluate the quality of the 2010 Agriculture Census ISTAT implemented two post-Census surveys, a *Coverage Survey* and a *Re-Interview Survey*. The *Coverage Survey* was designed with the aim to

obtain reliable estimates of any under or over-count, for each of the Regions in the country, using another independent list of units existing in a sample of cadastral maps. The *Coverage Survey* was an effort to identify any specific coverage problems inherent the Census data and provide a means for them to be quantified.

The *Re-Interview Survey* was carried out thorough a re-interview of a sample of agricultural holdings already interviewed by the Agricultural Census in order to quantify the response error due to the respondent and/or enumerator. The survey was carried out on a sample of about 50,000 holdings selected with a one-stage stratified sample from the Census frame. The survey was conducted from May 2011 to January 2012. An external specialized company carried out, the re-interview through a Computer Assisted Telephone Interview (CATI).

Administrative sources were used in two steps of the Census activities, preparation of the pre-census list and for data control and correction.

The edit and imputation process was monitored by the analysis both of the data distributions and of the performance of the scheduled editing steps. By computing a set of tables, at regional and provincial level, the final results of the procedures have been compared with the available statistical and administrative sources.

At the completion of the edit and imputation process and before final data release, a special procedure was arranged, to check data consistency according to the validation rules listed in the Eurofarm Manual for Data Suppliers". The EU recommended that the Statistical Office compute the following indicators for each item of the questionnaire for each geographic level of aggregation:

- (1) Imputation rate
- (2) Net imputation proportion
- (3) Cancellation proportion
- (4) Modification proportion

12. Data Sources

Eurostat:

http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_census_2010

Final report:

http://ec.europa.eu/eurostat/documents/749240/749313/IT_NMR_FSS_2010_vers2.pdf/9f98a6b9-2b70-4b1e-b5d6-4d5744595f00

13. Contact

Department of Censuses, Administrative and Statistical Registers,
Italian National Institute of Statistics (ISTAT),
Address: Via Cesare Balbo 16 00184, Rome, Italy
Telephone: +39 06 46731

Website

National Institute of Statistics: <http://www.istat.it/en/>