
Canada – Agricultural Census 2011 Explanatory notes

1. Historical outline

The British North America Act of 1867 included the requirement for a census to be taken every 10 years starting in 1871. However, rapid expansion in Western Canada at the turn of the last century made a more frequent census necessary. Starting in 1896, a separate Census of Agriculture was taken every five years in Manitoba, and in Alberta and Saskatchewan. In 1956 the Census of Population and Agriculture were held in all provinces across the country, every five years. Under the Statistics Act of 1971, the Dominion Bureau of Statistics was renamed Statistics Canada and the Act confirmed that a Census of Population and a Census of Agriculture shall be taken every five years.

2. Legal basis and organization

Statistics Canada, a centralized statistical agency, is required by law to conduct a Census of Population and a Census of Agriculture every five years, in the years ending in 1 and 6. The most recent Census was held in May 2011. The relevant provisions of the Statistics Act (amended in 2005) are Subsection 19, Section 20, Subsection 21(1), and Subsection 21(2).

3. Reference period/date

May 10 2011 was the reference date for those characteristics such as livestock, poultry and the value and inventory of farm machinery and equipment for which a single date would be applicable. The reference year 2011 was used for crop and land areas, and the calendar year 2010 for farm labour, financial information, and information on agricultural production methods.

4. Enumeration period

Questionnaires were mailed on May 2 2011. "Census Day" was May 10 2011 and respondents were asked to complete and return their questionnaires on Census Day. Farm operators were offered the option to respond on paper, on the Internet, or by telephone. A second "reminder questionnaire" was mailed in mid-May to those from whom a response had not yet been received. Starting June 1 2011, the still-outstanding questionnaires were followed up by telephone, with the data collection period continuing through the summer and early fall until the close of collection on November 25 2011.

5. Definition of the statistical unit

An agricultural operation is defined as a farm, ranch or other agricultural operation that produces at least one agricultural product intended for sale.

6. Geographical coverage

All of the country including the northern territories.

7. Exclusions and cut-off thresholds

Aquaculture is not included in the Census of Agriculture (it is, however, included in the annual agricultural survey program).

8. Methodology

FAO Modular Approach

No.

Framework

The Canadian Census of Agriculture is conducted in conjunction with the Census of Population. The two are conducted concurrently and share a common “census day” (May 10 2011 for the 2011 censuses). The Census of Population, which is received by all households, including all agricultural households, included a question asking if any household member was the operator of an agricultural operation. This information is provided to the Census of Agriculture during the enumeration period, to supplement the frame; consequently the Census of agriculture is a complete enumeration of all agricultural operations including those operated by agricultural households.

Enumeration of all Agriculture Households or Sample

There was no sampling. The Census of Agriculture enumerated all agricultural holdings and corporate farm enterprises.

Collection Method

The questionnaires are either completed and submitted through the Internet or completed on paper and mailed back to Statistics Canada's Data Operations Centre for data capture. Farm operators could also complete the form on the phone by calling the toll-free Census Help Line. For those who did not self-respond, telephone follow-up was conducted.

Questionnaire(s)

The Census of Agriculture asks the same questions across the country using a single national questionnaire available in both English and French. There are no regional versions of the questionnaire.

The 2011 Census of Agriculture questionnaire had a total of 201 questions across 16 legal-sized pages. Respondents were only required to complete questions that applied to their agricultural operations. An average respondent answered about 20% of the questions. The data collected included: business number, type of operating arrangements, farm operator information, main farm location, size (area) of operation, land use and land tenure, area and type of field crops, area and type of fruits, berries and nuts, area and type of vegetables, area of nursery products and sod, area of Christmas trees, area and type of greenhouse products, area of mushrooms, number of maple taps, number of bee colonies and other pollinating bees, land management practices, chicken and turkey production and inventory, eggs produced, number of birds hatched in commercial poultry hatcheries, number and type of livestock, market value of land and buildings, number and market value of farm machinery by type, total gross farm receipts, farm business operating expenses, use of a personal computer in managing the farm business, use of Internet and high-speed Internet access, value of forest products, number of employees, weeks of paid farm labour, and organic products produced for sale.

Controls to Minimize Non-Sampling Errors

Quality assurance procedures to ensure collection of complete and accurate information from every agricultural operation in Canada, and to ensure an accurate and up to date frame, are reviewed and improved for each census.

In 2011, Canada Post delivered a Census of Agriculture questionnaire to the addresses contained on the frame. Prior to mail-out, the addresses from the previous census were updated using information from recent agriculture surveys, information from the income tax system, and from membership lists obtained from agricultural associations.

To ensure all farm operations were identified, the Census of Population questionnaire asked if there was a farm operator living in the household. This question triggered a follow-up from head office to help ensure that new farms were identified and enumerated for the Census of Agriculture.

Telephone follow-up was used to contact respondents who received questionnaires but did not return them. In addition, the data processing sequence includes several safeguards that can find 'missing' farms that were on the frame but did not return a questionnaire in 2011.

A coverage evaluation study is undertaken during the period of follow-up collection. This study determines the level of Census of Agriculture under-coverage in three important dimensions: farm count, land area and total sales. The resulting under-coverage estimates inform the data certification process and are published to advise users on data quality.

Innovative Methodologies

An important benefit of conducting the Census of Agriculture with the Census of Population is that data from the two can be matched or linked by computer. Since all farm operators are also members of a household and therefore also complete a Census of Population questionnaire, linking information from the two questionnaires provides a social profile of the farm population including information such as marital status, the language of farm operators and the size of farm families.

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

The Census of Agriculture and Census of Population questionnaires go their separate ways once they arrive at Statistics Canada's Data Operations Centre. They are sorted, electronically scanned and the data automatically captured using Intelligent Character Recognition (ICR) software, a technology that reads data from images. Any responses not recognized by the ICR process are sent to a Statistics Canada employee who views the questionnaire image and enters the correct data into the system. Questionnaires completed and submitted on the Internet also go to the Data Operations Centre.

Once the data have been captured, they are loaded to an automated processing system that takes them through detailed edit, follow-up and imputation processes. The data are first subjected to a series of rigorous quality control and processing edits to identify and resolve problems related to inaccurate, missing or inconsistent data. A Statistics Canada employee then followed up on these problematic records, which could not be resolved in editing to clarify the missing or incomplete data. Finally, those situations that cannot be resolved through either edit or follow-up are handled by an imputation procedure that replaces each missing or inconsistent response either with a value consistent with the other data on the questionnaire or with a response obtained from a similar agricultural operation.

10. Data Dissemination and Use

The 2011 Census of Agriculture had three major releases, online and free of charge:

1. Basic counts and totals for all farm and farm operator variables were released on May 10 2012. These data are tabulated at the national, provincial and three sub-provincial areas (census agricultural region, census division, census consolidated subdivision). All farm and farm operator data were also available on that date in a dynamic format for self-serve user-defined tables. These data were also later (in 2014) made available in CANSIM.
2. Selected historical farm and farm operator data (some series covering 1921-2011) were released on December 10 2012. These data are available in CANSIM, Statistics Canada's online main database.
3. Selected data on social characteristics of farm operators, census farm families and the farm population, based on the agriculture-population linkage database were released on November 27 2013. These data are available in CANSIM.

The 2011 Census agricultural regions boundary file and reference guide, as well as reference maps were published on May 10, 2012; the Agricultural ecumene boundary file and reference guide was

published on August 21 2012. Starting in February 2014, the 2011 edition of Agriculture Division's publication, "Canadian Agriculture at a Glance", became available. Maps, full-colour photos, graphs and charts give its diverse array of subjects an eye-catching and informative visual interpretation to complement the articles. The online publication is designed with students in mind, avoiding jargon and explaining issues in understandable terms. All publications are available from Statistics Canada's website free of charge.

The Data and Subject Matter Consulting Unit of the Census of Agriculture is available to tailor products and tabulations to meet the special data requirements of clients, on a "for fee" basis. Custom tabulations allow the user to create unique tables from the 2011 Census of Agriculture and agriculture-population linkage databases (from 1971 to 2011 except for the 1976 Census), as well as selected historical data (every census year since 1921).

The Census of Agriculture is the cornerstone of Canada's agriculture statistics program. Governments use Census of Agriculture data to develop, operate and evaluate agricultural policies and programs. Statistics Canada uses the data as benchmarks for evaluating and adjusting the methods used on surveys that are conducted to produce estimates of crops, livestock and farm finances between census years. Information from each census is also used by Statistics Canada to improve the frame for the agricultural surveys conducted between censuses. Users in the private sector see the Census of Agriculture data as an important window on the agricultural industry for decision-making and analysis of long-term trends.

Agribusiness evaluates market potential, and makes production and investment decisions based on census data; farm boards and organizations use Census of Agriculture data as a foundation for their discussions with governments and trade organizations. Governments and farm organizations use census data to evaluate the impact of natural disasters (such as floods, drought and ice storms) on agriculture and to react quickly. Academics base much of their economic analysis of agriculture on data from the Census of Agriculture. The Census of Agriculture serves all of these needs by offering a variety of products and services.

11. Census data quality

Following the close of the collection period, a data validation and certification process is conducted. Preliminary census estimates are grouped into themes (i.e., sets of variables are created according to commodity, financial, land use, etc), and small teams are assigned to scrutinize the values. Estimates are compared to previous census estimates, contemporary survey results, information from the taxation system, published estimates from other sources such as provincial statistical offices, ministries of agricultural or agricultural associations. Analysts also consult regional and commodity experts to learn of any trends or events that may have influenced the data reported. Analysis is also performed by looking at subsets of estimates taking into account entries and exits of farms by commodity and by geography. Where warranted, respondents may be recontacted to confirm or clarify reported figures. Once the analysts had completed their evaluations, they presented the results to an expert review panel for final certification.

12. Data source

FAO ESS World Census of Agriculture 2010, Country Documents
www.fao.org/economic/ess/ess-wca/wca-2010/countryinfo/en/

13. Contact

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