



## THE UNITED STATES OF AMERICA<sup>1</sup> – Census of Agriculture 2017 – Metadata review

### 1. Historical outline

The first census of agriculture (CA) in the United States of America was conducted in 1840 as part of the sixth decennial census of population. After the 1920 census, the census interval was changed to every five years until 1945. The CA continued to be implemented as part of the decennial census through 1950. From 1954 to 1974, the census took place in the years ending in 4 and 9. In 1976, the Congress changed the five-year data collection cycle to years ending in 2 and 7, to coincide with other economic censuses, cycle that continues to this day. The CA 2017 was the 29th Federal census of agriculture and the fifth to be conducted by the National Agricultural Statistics Service (NASS) of the United States Department of Agriculture (USDA).

### 2. Legal basis and organization

#### *Legal framework*

The CA is required by law under the “Census of Agriculture Act of 1997, Public Law 105-113 (Title 7, United States Code, Section 2204g). The law directs the Secretary of Agriculture to conduct a CA every five years. The CA includes each State, Puerto Rico, Guam, the U.S. Virgin Islands, the Commonwealth of Northern Mariana Islands, and American Samoa.

#### *Institutional framework and international collaboration*

The NASS of the USDA is the government agency with responsibility for the CA.<sup>2</sup> Farmers are required by law to respond to the CA. Throughout development of the census, NASS sought advice and input from the data user community and its partners, including the Advisory Committee on Agriculture Statistics, state departments of agriculture and other state government officials, federal agency officials, land grant universities, agricultural trade associations, media, and various community-based organizations.

#### *Census staff*

The NASS employs 230 full-time personnel for the purpose of carrying out the CA program. The NASS entered into an agreement with the National Association of State Departments of Agriculture (NASDA) to collect data for the CA 2017.<sup>3</sup>

### 3. Reference date and period

**Reference day:** 31 December 2017 for stock items such as livestock, machinery and equipment inventories.

**Reference period:** the calendar year 2017 (from 1 January to 31 December 2017) for items such as on crops and land areas, crop and livestock sales, other farm-related income, hired farm labour, use of pesticides, fertilisers and irrigation, and farm expenses.

### 4. Enumeration period

The enumeration was conducted from December 2017 to July 2018 (see also Section 7 “Data collection methods”).

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

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

<sup>1</sup> The census results related to the United States of America bear only upon the continental territory of the country (without considering U.S. Territories and Outlying Areas).

<sup>2</sup> The U.S. Department of Commerce, Bureau of the Census conducted the census of agriculture for 156 years (1840-1996). The 1997 Appropriations Act contained a provision that transferred the responsibility for the census of agriculture to NASS.

<sup>3</sup> A complete account of all NASDA employees involved in the CA 2007 was not available.

The **statistical unit** for the CA 2017 was the farm, an operating unit<sup>4</sup> defined as “any place from which USD 1 000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year”.<sup>5</sup>

### **Community-level data**

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

## **6. Census coverage**

### **Geographic coverage**

The CA 2017 covered the continental territory of the country.

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

The agricultural operations that did not produce and sell USD 1 000 or more of agricultural products during the census year or did not have the potential were excluded from the CA.

## **7. Methodology**

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

The classical approach was used in the CA 2017. No administrative data were used to source census data.<sup>6</sup>

### **Relation to other censuses**

As part of its Census of Agriculture Program, NASS conducted special studies which provided more detailed data on a particular subject area. Following the CA 2017, NASS conducted the 2018 Census of Aquaculture, 2018 Irrigation and Water Management Survey, 2019 Census of Horticultural Specialties, 2019 Organic Survey, and 2020 Local Food Marketing Practice Survey.

### **Frame**

NASS maintains a list of farmers and ranchers from which the Census Mail List (CML) of agricultural operations that potentially meet the farm definition was compiled.<sup>7</sup> The developing of the CML 2017 started in 2014 by updating list information from respondents to the CA 2012. Between 2015 and 2017, NASS conducted a series of National Agricultural Classification Surveys (NACS) on approximately 1.6 million records, which included non-respondents from the CA 2012 and newly added records from outside list sources.

NASS used its June Area Survey (JAS) to quantify the number and types of farms not on the CML. The records in the JAS that were not on the CML were named the Not-on-the-Mail List (NML) domain. The NML farms were used to measure coverage associated with the census. The JAS was based on an area frame, which covered all land in the U.S. and included all farms.

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

The CA 2017 was an enumeration of all known agricultural holdings meeting the USDA definition of a farm.

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<sup>4</sup> The enumeration of all farms and ranches required the identification of individual reporting units called *operations*. For census purposes, the operation refers to the farm, ranch, or other agricultural activity controlled or operated by the person, farm or business indicated on the cover page of the report form. For census purposes, the principal operator is the person in charge, such as a hired manager, business manager or other person primarily responsible for the on-site, day-to-day operation of the farm or ranch business in 2012.

<sup>5</sup> The definition has changed nine times since it was established in 1850. The current definition was first used for the 1974 CA. This definition is consistent with the definition used for current USDA surveys. The farm definition used for each U.S. territory varies.

<sup>6</sup> However, administrative data from the Farm Service Agency were used for data editing of a few items, such as Conservation Reserve Program acreage.

<sup>7</sup> The CML compilation began with the list used to define sampling populations for NASS surveys conducted for the agricultural estimates programme. NASS builds and improves the list on an ongoing basis by obtaining outside source lists. Sources include state and federal government lists, producer association lists, seed grower lists, pesticide applicator lists, veterinarian lists, marketing association lists, and a variety of other agriculture-related lists. NASS also obtains special commodity lists to address specific list deficiencies. These outside source lists are matched to the NASS list using record linkage programs. Records not on the NASS list are treated as potential farms until NASS can confirm their existence as a qualifying farm. Staff in NASS regional and field offices routinely contact these potential farms to determine whether they meet the farm definition. For the 2017 Census of Agriculture, NASS made a concerted effort to work with community-based organizations not only to improve list coverage for minorities but also to increase census awareness and participation.

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

No sampling was used in the CA 2017.<sup>8</sup>

### **Data collection method(s)**

Data collection was accomplished primarily through the mail-out/mail-back method. It was supplemented with Computer-assisted Web Interviewing (CAWI) on the Internet, Computer-assisted Telephone Interviewing (CATI) and Computer-assisted Personal Interviewing (CAPI).<sup>9</sup>

Pre-notification of census data collection began on 17 November 2017. The producers with an active e-mail address on the CML received a message informing them of the upcoming census data collection period and encouraging them to utilize the census web form. From 27 to 30 November 2017, the respondents received a letter with their access code and instructions for completing their census online.<sup>10</sup> Mail packets were mailed in December 2017 and January 2018.<sup>11</sup> Follow-up mail packets were mailed in mid-February 2018 and in mid-March 2018. Beginning in mid-April 2018 and continuing through July 2018, extensive efforts were made to collect data for the non-respondents (sampled records), including an additional CAWI push, autodial calls, CATI, and CAPI.

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

The CA 2017 used four versions of the questionnaire:

- (i) General form (17-A100)
- (ii) Short form (17-A200)
- (iii) Hawaii form (17-A101)
- (iv) American Indian form (17-A300).

The general form facilitated reporting crops and livestock most commonly grown and raised in the U.S. The short form expedited reporting specific crops or livestock for pre-identified farms and ranches in the U.S. The latter report form versions were designed to facilitate reporting on the crops most commonly grown within specific regions.<sup>12</sup>

The CA 2017 covered 19 out of the 23 essential items recommended in the WCA 2020.<sup>13</sup>

## **8. Use of technology**

Mail-out/mail-back, CAWI, CAPI and CATI methods were used for census data collection. Optical scanning was used for data capture of mailed paper questionnaires. An online database enabled users to retrieve customized tables with census data at the national, state and county level.

## **9. Data processing**

The completed printed forms were scanned and Optical Mark Recognition (OMR) was used to capture categorical responses and to identify the other answer zones in which some type of mark was present. Captured data were processed through a computer formatting program that verified that records were valid. Rejected records were referred to analysts for correction. Accepted records were sent to a complex computer batch edit process. The computer edit system determined the best value to impute for reported responses that were deemed unreasonable and for required responses that were absent. The complex edit ensured the full internal consistency of the record. After tabulation and review of the aggregates, a comprehensive disclosure review was conducted.

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<sup>8</sup> The National Nonresponse follow-up was carried out using sampling. See also Section 10 "Quality assurance"

<sup>9</sup> Operating concurrently with NPC's mail data collection efforts, NASS Data Collection Centers targeted selected groups of census nonrespondents for CATI. NASS regional field offices targeted selected groups of census nonrespondents for CAPI.

<sup>10</sup> The letter encouraged producers to report online early to avoid receiving mail and phone follow-up.

<sup>11</sup> Each packet contained a cover letter, instruction sheet, a labelled report form, and a return envelope. The Census Bureau's National Processing Centre (NPC) in Jeffersonville, IN was contracted to perform mail packet preparation, initial mailout, and two follow-up mailings to nonrespondents. The initial mailout was followed by a thank-you reminder postcard that was delivered in January 2018 to all operations that received mail packets.

<sup>12</sup> The Hawaii form targeted crops and livestock specifically grown or raised in Hawaii. The American Indian form focused on crops and livestock for farms and ranches on reservations in Arizona, New Mexico, and Utah. All of the report forms allowed respondents to write in specific commodities that were not prelisted on their report form.

<sup>13</sup> The following essential items were not covered: (i) 0107 Main purpose of production of the holding; (ii) 0407 Number of permanent crop trees in scattered plantings (for each tree crop); (iii) 0501 Type of livestock system; and (iv) 0503 Number of female breeding animals.

Cell suppression was used to protect the cells that were determined to be sensitive to a disclosure of information.

#### **10. Quality assurance**

NASS conducted an extensive program to follow-up all non-responses. NASS also used capture-recapture methodology to adjust for under-coverage, non-response, and misclassification. To implement capture-recapture methods, two independent operations were required - the CA 2017 (based on the CML) and the JAS 2017 (based on the area frame). Records in the JAS 2017 were matched to the CA 2017 using probabilistic record linkage. Historically, NASS has been careful to maintain the independence of these two operations.

#### **11. Data and metadata archiving**

Completed report forms were automatically checked in by scanning devices that identified each case by the bar code in the address label of the form. The report forms were then scanned to create images used for data keying. Data from each report were subjected to a detailed computer edit.

#### **12. Data reconciliation**

There was no reconciliation process of CA 2017 data.

#### **13. Dissemination of census results and microdata**

The CA 2017 final report was published in April 2019. The complete data series from the census is available from the NASS website free of charge in multiple formats, including Quick Stats 2.0 – an online database to retrieve customized tables with agricultural census data at the national, state and county levels. The CA 2017 provided information on a range of topics, including typology and specialty crops.

NASS provided access of CA record level data to approved researchers in secure Data Labs. Researchers has to sign non-disclosure forms and all summary and analysis must be passed a disclosure review before they left the NASS Data Lab.

#### **14. Data sources**

**United States Department of Agriculture, National Agriculture Statistics Service (USDA, NASS).** 2020. Census of Agriculture. In: *USDA, NASS* [online]. United States. [Cited 30 June 2020]. <https://www.nass.usda.gov/Publications/AgCensus/2017/index.php>

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