

# Censuses of agriculture and COVID-19: Global situation and lessons

Jairo Castano

*Senior Statistician and Team Leader, Agricultural Censuses, Statistics Division, Food and Agriculture Organization of the United Nations (FAO), Rome, Italy*

*E-mail: Jairo.Castano@fao.org*

**Abstract.** A review of the status of censuses of agriculture in 150 countries and territories shows that the impact of COVID-19 has not discriminated between developed and developing countries. However, some countries have fared better than others when faced with the challenges posed by the pandemic. Earlier improvements in national statistical systems, a wide range of ICT solutions and the sourcing of census data from administrative registers have enabled these countries to significantly reduce their reliance on physical contact for tasks such as final preparation of field activities, training and data collection. The experience has confirmed the usefulness of these efforts and will likely further accelerate the pace of innovation, even though most of these countries expect that farmers' non-response rates will be higher than in the past. At the same time, the COVID-19 crisis has been a lesson to other countries on the need to improve the working environment, diversify census data collection and training methods, and make use of administrative registers in future census rounds.

**Keywords:** COVID-19, census of agriculture, World Programme for the Census of Agriculture (WCA), alternative data collection methods, administrative registers

## 1. Introduction

As many countries went into lockdown in early 2020 as a measure to contain the COVID-19 pandemic, plans and preparatory activities related to agricultural censuses began to experience disruptions. The level of disruption has varied depending on the stage of advancement of the respective censuses, with different impacts experienced at the planning (i.e. staffing, procurement, preparation of frames, questionnaires), fieldwork (field training and enumeration) and data processing/analysis stages. These activities generally involve human contact and gatherings in the census agency, as well as face-to-face interaction with farmers.

The reference period for a census of agriculture is the agricultural year. Countries therefore carefully schedule their agricultural census activities to ensure that crop and livestock data is collected at the right time.<sup>1</sup> A delay in census activities can be critical and may result in the

postponement of the enumeration by a full year if the agricultural season is missed.

FAO is coordinating the World Programme for the Census of Agriculture 2020 (WCA 2020) [10], which supports national censuses of agriculture conducted during the 2016–2025 round. FAO has conducted three assessments of the impact of the pandemic on the implementation of censuses of agriculture in this round [1–3]. This paper presents the findings of the third assessment, conducted in September 2020.

## 2. The status of national censuses of agriculture

Figure 1 shows the status of censuses of agriculture in the 150 countries and territories that provided an update to FAO [2]. The map indicates that over half

---

operations may be better carried out at certain periods of the year for operational reasons (transportation, heavy rains, farmers' availability, etc.).

---

<sup>1</sup>Some countries have more than one cropping season and field

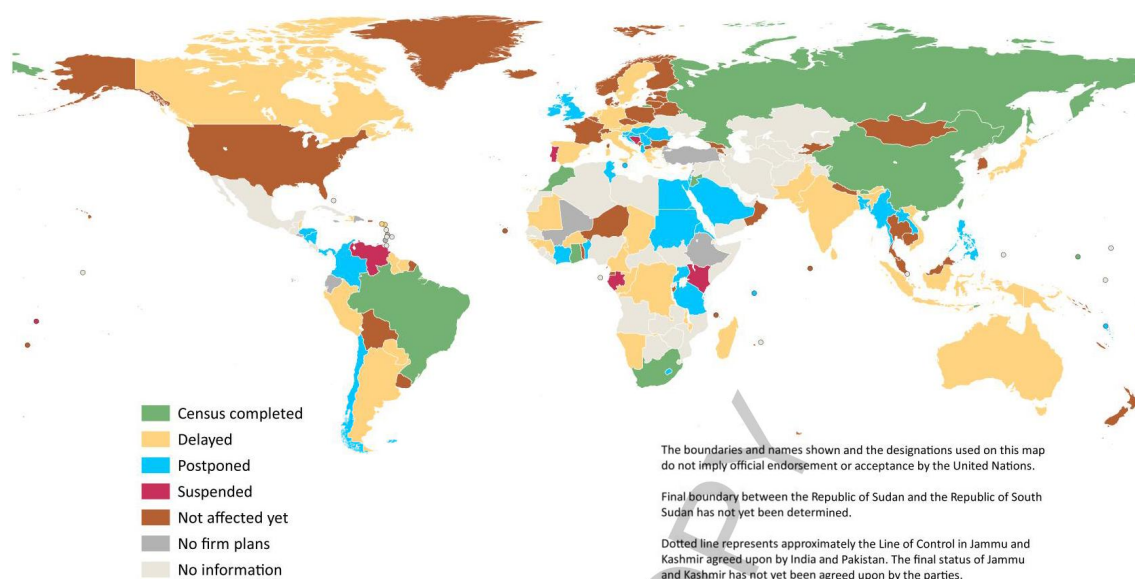


Fig. 1. Current status of censuses of agriculture (WCA 2020 round).

of the countries reported that the census of agriculture activities were either delayed, postponed or suspended [1,3], similar to the situation for censuses of population and housing [4]. Most of the delays in census activities were reported in Africa (29% of countries with delays), followed by the Americas (26%), Europe (21%), and Oceania (10%). In turn, most of the postponements were reported in Africa (35% of countries with postponed censuses), Europe (26%) and Asia (21%).

Just under one-third of the countries have not been affected yet, but over a half of these countries are at early planning stages and aiming to conduct their census enumerations between 2022 and 2025 (see below). The remaining countries in this category, mostly in Europe, have been able to weather the crisis and continue with major census activities. Another 7% (10 countries)<sup>2</sup> had completed their agricultural censuses before the crisis struck.<sup>3</sup> The remaining countries did not have plans for a census of agriculture in the WCA 2020 round (10 countries) or provided no information (63 countries, mostly with no census plans).

<sup>2</sup>Censuses of agriculture have been completed in China, Brazil, Bhutan, Jordan, Ghana, Micronesia, Morocco, South Africa, Timor-Leste, and Russia.

<sup>3</sup>This excludes the following countries that completed a census of agriculture earlier in the round but plan a second one later in the same round: Australia, Canada, India, Japan, Republic of Korea, United States of America and its territories and Outlying Areas (American Samoa, Guam, the Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands), and Viet Nam.

Figure 2 focuses only on countries with ongoing census activities (130 countries and territories). It excludes 20 countries that either already completed or reported having no firm plans for an agricultural census. For countries with censuses of agriculture that are underway, the picture is starker. Some 63% of ongoing censuses have been affected: either delayed (32% of countries), postponed (26%) or suspended (5%).

Over 80% of the countries that reported delays (34 out of 42 countries) were at an early stage of census planning and preparation. In the remaining countries, the delays were at the enumeration<sup>4</sup> (12% of countries with delays) and data processing<sup>5</sup> stages (7%). More than half of the countries that postponed census activities were at initial preparation stages (18 out of 34 countries) while the remaining countries were compelled to postpone either their census enumeration (15 countries<sup>6</sup>) or data analysis.<sup>7</sup> Regarding suspended censuses of agriculture, most of the affected countries (5

<sup>4</sup>Delays in agricultural census enumeration reported in Austria, Germany, Japan, Spain, and Sweden.

<sup>5</sup>Delays in agricultural census data processing and analysis reported in Argentina, Belize, and Fiji.

<sup>6</sup>Countries that postponed agricultural census enumeration were Bangladesh, Benin, Chile, Comoros, Côte d'Ivoire, Croatia, Hungary, Ireland, Lao PDR, Malta, Serbia, Slovenia, Tanzania, Uganda, and UK

<sup>7</sup>Israel postponed its census data processing in April 2020 and continues to be delayed.

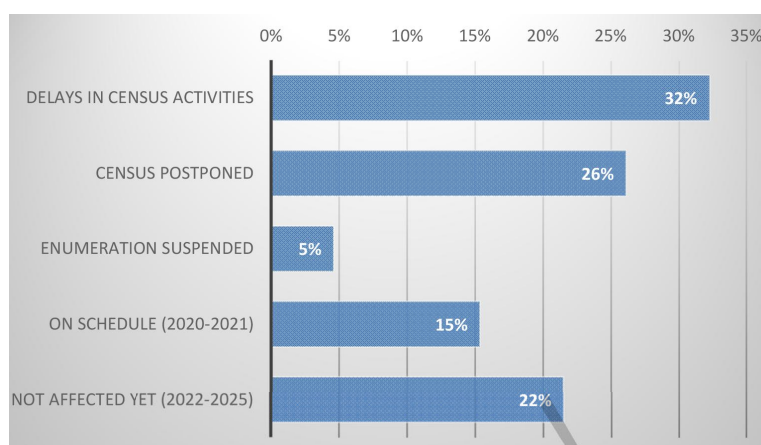


Fig. 2. Impact of COVID-19 on censuses of agriculture underway. Note: Delays: mainly census preparation activities delayed; Postponed: preparation or enumeration postponed to a later date; Suspended: enumeration will not resume until further notice; On schedule: enumeration in 2020–2021; Not affected yet: enumeration planned in 2022–2025.

out of 6 countries<sup>8</sup>) were in the middle of their census enumeration, while one (Bosnia and Herzegovina) was fine-tuning its census frame.

### 3. Implications for the affected censuses of agriculture

Countries that have seen their censuses of agriculture delayed, postponed or suspended have reported concerns about the possibility of successfully resuming and completing these massive operations, including:

- There is a risk of postponement of the census enumeration to the following year, which would cause an unwanted shift in census reference periods and a jump in the time series.
- The continued financing of the census of agriculture once it is resumed is uncertain, as governments may be faced with competing priorities in light of the COVID-19 crisis.
- Data quality issues may arise, as census data may not reflect the new reality of the agricultural sector after the crisis is over.
- Census data collected before the full impact of COVID-19 made itself felt on some agricultural activities (crops, livestock, etc.) may make sampling frames outdated and induce bias in samples for subsequent agricultural surveys.

- Postponing the census may imply the need to change national legislation on the census of agriculture for 2020.
- Delays in the population census could defer plans for the census of agriculture in countries that depend on the population census to set up the frame, i.e. the list of households engaged in own-account agricultural activities for the census of agriculture. A delayed population census could also force the deferment of the census of agriculture in countries that can organize only one census at a time [5,7].

### 4. Censuses of agriculture that have not been affected (yet)

A total of 48 out of 130 countries and territories with ongoing census activities (37% of countries) reported that their plans had not been affected. As pointed out earlier, most of these countries (28 countries) are still in early planning stages with census enumerations not due to take place before late 2021.

The remaining 20 countries and territories (16 European countries, three French territories and the Republic of Korea)<sup>9</sup> have continued their census operations largely unaffected. Agricultural census enumeration in these countries was about to start, was underway, or

<sup>8</sup>Agricultural censuses were suspended in March 2020 in Gabon (80% data collected, resumed in September), Kenya (80% collected, resumed in August), Portugal (50% collected, resumed in June), Samoa (5% collected, resumed in May and finished in August), and Venezuela (Bolivarian Republic of, under 40% collected).

<sup>9</sup>These countries are Belarus, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France (including three of its territories: Guadeloupe, Martinique and Réunion), Iceland, Latvia, Lithuania, Luxembourg, Macedonia, Norway, Poland, Republic of Korea, and Switzerland.

had been completed by the end of 2020.<sup>10</sup> All have developed statistical systems, solid information and communication technology (ICT) and use administrative records to fill part of their census data needs.

In these countries, final census preparation activities continued through teleworking and training via elearning whereas data collection was implemented using a myriad of data sources such as administrative registers<sup>11</sup> and remote data collection methods, as initially planned. The latter methods involved Computer-assisted Web Interviewing (CAWI), Computer-assisted Telephone Interviewing (CATI) and post (mail-out/mail-back). For example, countries such as Belgium, Czech Republic, Estonia, France, Lithuania, and Republic of Korea are curtailing face-to-face interviews and trying to widen the use of CAWI, CATI and/or post. Other countries such as Iceland and Luxembourg sourced their census data mainly from administrative registers.

However, most of these countries expect that the crisis may affect negatively farmers' willingness to cooperate and provide all the required information. This has already been seen in the slow updating of several registers such as the EU Integrated Administration and Control System (IACS)<sup>12</sup> and national administrative registers, which are critical sources of census data. The non-response rate from farmers is therefore expected to be higher than for past censuses.

Another potential challenge in some countries is undertaking data processing through teleworking. Regulations may mandate that this sort of work is carried out only from the office due to confidentiality concerns.

## 5. Preliminary lessons

The pandemic has affected most censuses of agriculture to a greater or lesser extent in both developed and developing countries. Twenty countries and territories have coped better than others with the challenges posed by the crisis, helped by well-developed statistical systems, good ICT solutions and the use of administrative registers to source some census items.

Valuable lessons can be drawn from these experiences, including:

- the key role of elearning and online courses to train trainers, supervisors and enumerators;
- the importance of stable remote access to systems to develop census IT infrastructure (e.g. databases, digital questionnaires, processing systems);
- the need to reduce reliance on face-to-face interviews and to introduce alternative remote data collection modalities, encouraging respondents to use CAWI, CATI and mail [8] – it is worth mentioning that the use of such methods was already integrated in the census plans of successful countries, although the pandemic shifted the balance in their favour;
- the usefulness of consulting administrative records to meet some census data needs and avoid unnecessary duplication of effort to collect data that is already available [9];
- Possible quality issues as a result of higher non-response rates – despite the use of remote methods – due to the pandemic's impact on farmers' willingness to cooperate and provide all the required information.
- quality issues due to not fully updated administrative registers.
- difficulties in assessing census data quality through post-enumeration surveys or similar procedures.

Successful countries have strengthened their capacity to collect information from a wide array of sources, very rapidly, with minimal physical contact. However, this does not happen overnight. Efforts to modernize and streamline census methods and processes had already been initiated in the previous census round.

The way censuses of agriculture are implemented has been evolving over the past decades in the light of technological developments, societal changes, increased information requirements and pressure to be cost-efficient [6,7]. Countries that made earlier innovations in the way their censuses are implemented were better prepared to meet the challenges posed by COVID-19. As physical distancing restrictions increased and face-to-face interviews became impossible, these countries were able to devote more efforts to promoting the use of CAWI, CATI and mail interviews. The COVID-19 experience has validated these efforts and will likely further accelerate the pace of innovation (e.g. through the use of big data and geospatial information, increased use of administrative registers).

Likewise, the COVID-19 crisis has been a wake-up call for other countries to diversify their census data

<sup>10</sup>By September 2020, the following countries had completed census data collection: Belarus, Iceland (mainly registers), and Luxembourg (mainly registers).

<sup>11</sup>Administrative registers are databases held by the government, collected and used for the purposes of administering taxes, benefits (e.g. agricultural subsidies) or services (e.g. extension).

<sup>12</sup>IACS is a database administered at national level on the basis of EU legislation. It centralizes data on agricultural subsidies paid by the European Union in each member state.

collection and training methods in future rounds. Some countries will take longer to switch to modern technologies due to poor infrastructure, high cost of access and lack of necessary skills [8]. The use of CATI and CAWI methods requires access to reliable and well-developed national telecommunication infrastructures. Some rural remote areas may not have access to high-speed Internet. Mailed questionnaires might not be feasible in areas where postal boxes are far from respondents' homes. Furthermore, the postal service may not work adequately in times of a pandemic. Other challenges could be related to education and literacy levels. Computer- and web-illiterate respondents might be reluctant or unable to use CAWI. Nonetheless, these countries may start using CAWI and CATI methods initially for specific groups of respondents, for instance with holdings in the non-household sector (e.g., enterprises, cooperatives). Conversely, other countries may be able to leapfrog, but not without adequate testing of elearning solutions as well as CAWI, CATI and mail methods prior to their adoption [8,9].

## References

- [1] Castano J. (2020). Impact on censuses of agriculture and some mitigation measures. In: "How COVID-19 is changing the world: a statistical perspective, Volume II," Committee for the Coordination of Statistical Activities (CCSA). [https://unstats.un.org/unsd/ccsa/documents/covid19-report-ccsa\\_vol2.pdf](https://unstats.un.org/unsd/ccsa/documents/covid19-report-ccsa_vol2.pdf)
- [2] Castano J. (2020). Impact of COVID-19 on national censuses of agriculture (Status overview). FAO Policy Brief, Rome. [www.fao.org/3/ca8984en/CA8984EN.pdf](http://www.fao.org/3/ca8984en/CA8984EN.pdf)
- [3] Castano J. (2020). National agricultural census operations and COVID-19. FAO Policy Brief, Rome. [www.fao.org/3/ca8605en/CA8605EN.pdf](http://www.fao.org/3/ca8605en/CA8605EN.pdf)
- [4] UNFPA (2020). 2020 Census round at risk of falling behind. In: "How Covid-19 is changing the world: a statistical perspective, Volume I," Committee for the Coordination of Statistical Activities (CCSA). <https://unstats.un.org/unsd/ccsa/>
- [5] Castano J. Linking the Population and Housing Census and the Census of Agriculture for the 2020 round: Advantages and challenges. *Journal of the International Association for Official Statistics*. 2020; 36: 231235.
- [6] Castano J. Streamlining the cost of the census of agriculture. Eighth International Conference on Agricultural Statistics (ICAS-VIII), New Delhi, India, 2019.
- [7] Castano J, Cara O. Integrating agricultural censuses and surveys for optimal sectoral data collection. 62nd session of the WSC, Kuala Lumpur, Malaysia, 2019.
- [8] Castano J. Technological Innovations in the Census of Agriculture. *Statistika*. 2018; 98(4): 377-384.
- [9] FAO. World Programme for the Census of Agriculture 2020 Volume 2: Operational guidelines. FAO. Rome, 2018.
- [10] FAO. World Programme for the Census of Agriculture 2020 Volume 1: Programme, concepts and definitions. FAO. Rome, 2015.