



Overview of the new international guidelines on the World Programme for Census of Agriculture 2020

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Abstract

For past decades, FAO has been preparing guidelines for designing and implementing the census of agriculture with the World Programme for Census of Agriculture (WCA). The contents and modality of implementation of these programmes were mainly updates of past programmes and were quite similar.

However, starting with WCA 2010 published in 2005, both the approach and content of the Census Programme and the modalities of its implementation have substantially changed. The policy, statistical methodology and technology environment, have significantly evolved during the last two decades. Considerable developments have taken place regarding statistical methods for generating statistical data such as the use of administrative sources and phenomenal developments have taken place regarding technological tools that are relevant to conducting agricultural censuses and surveys in the 21st Century. The growing demand for more diversified data, more frequently, (including data at low geographical level) and at the same time the scarcity of resources for census taking in many countries create new challenges for ensuring that the census is conducted in the most cost-effective way and relevant to the needs of a wide range of users. In response to some of these challenges, WCA2010 introduced the modular approach to conducting the census with a core module composed of a limited data items covered though a complete enumeration and one or more detailed supplementary module (s) to be conducted through sample surveys.

The new guidelines for WCA 2020 introduces further substantial changes with innovative approaches taking into consideration new features, advances in statistical methodology and the fast growing digital and mobile technology (so called 'data revolution'). The new guidelines aim at building synergies and complementarity with the wide range of existing methods, results and publications of relevant statistical programmes.

This paper will provide an overview of the new international guidelines on the World Programme for Census of Agriculture 2020 and how it addresses the existing challenges, building on recent advances in methodology and technology. Some country examples will be provided to illustrate some of the new features and innovations.

Keywords: *Census of agriculture, data revolution, innovations, cost, effectiveness.*



1. Growing challenges with past approaches to agricultural census

Despite its recognised importance as a backbone of the agricultural statistics system in many countries, agricultural census programmes are facing growing challenges. There is an increasing demand for more diversified data, more frequently, (including data at low geographical level) in times when there is scarcity of resources for census. The statistical environment is changing at global and country levels both in terms of demand and possible sources of data as well as tools and technology that can be used.

The main challenges that drive the need for change have been analysed in several papers and include:

(i) Relevance

The fundamental purpose of the Census of Agriculture has not changed as it is always defined as a statistical operation for collecting, processing and disseminating data on the structure of agriculture, covering the whole or a significant part of the country. Its basic objectives remain:

- To provide data on the structure of agriculture, especially for small administrative units, and to enable detailed cross-tabulations;
- To provide data to use as benchmarks for and reconciliation of current agricultural statistics;
- To provide frames for agricultural sample surveys.

However, the last decades have been characterized by considerable changes in the global and national development policy agenda, and corresponding data requirements. At global level, the new 2030 Sustainable Development Agenda (SDA) adopted by the UN in September 2015 (and successor to the Millennium Development Goals) defines 17 Sustainable Development Goals (SDGs) and 169 individual targets, including 19 multidimensional agricultural-related SDG targets and 25 global indicators for monitoring the progress towards the goals and targets. Many of these indicators require diversified data sources for their compilation beyond traditional censuses and surveys.

At national level, statistical offices are confronted with increasing and more complex demands for data for topics such as food security, the environment, farm labour, special agricultural practices like organic farming etc. The use of the traditional approach to the census which involves a complete enumeration of all holdings of a country in one-off operation, cannot meet such demands in a cost effective way without over-burdening the census operation. Therefore, innovative approaches are required for the Census Programme to remain relevant to priority policy agenda.

WCA 2020 emphasizes that the census of agriculture must not be carried out in isolation but as a component of an integrated system of agricultural censuses, surveys and registers to provide all the required agricultural data. This integrated system creates synergies, preventing duplication of statistical activities, avoiding releasing conflicting statistics, and using standard



concepts, definitions and classifications. In this way, the census of agriculture does not need to be overburden but rather focused on a coherent and manageable set of items.

(ii) Timeliness

Traditionally agricultural censuses are conducted every five or ten years, and in the past, the results could take between one and 3 years for some developing countries to be made available. This has been a serious criticism of the census which is seen as providing only historical data when more up to date and frequent data is needed. This is a considerable limitation to the use of the census data. Without evolution, alternatives to the Census are sought and utilized.

(iii) High Cost

Like the Population Census, the Census of agriculture in the traditional approach is one of the largest and costliest exercises conducted in most countries, and one of the most expensive statistical activities. This high cost has prevented some countries (particularly developing countries) from conducting the agricultural census or not being able to follow the recommended frequency of at least once every 10 years (Keita, N., 2015). Recent analysis by FAO Statistics Division Census Team of unit cost per holding for an agricultural census shows a wide diversity among countries with costs ranging from around 2 US \$ to above 20 US \$ per holding in developing and transition countries. The wide range due mainly to varying field work costs. This is a considerable amount for large developing countries with limited resources.

(iv) High burden on respondents

In many developed countries, there is a growing concern about the burden of the census operation on citizens and a respondent fatigue.

2. Opportunities to use new methodology and new technology for census taking

(a) New approaches and methodology for conducting the Census

In order to address some of the challenges discussed above, the FAO World Programme for Census of Agriculture 2010 introduced the modular approach. This approach aimed at introducing some flexibility in the way the census can be conducted in order to meet the need for a wider range of data from the agricultural census, while minimizing the cost of census-taking. In this approach, a census may include: (i) a core module to be conducted on a complete enumeration basis but with a limited number of key structural items (16) and (ii) one or more census supplementary modules to be conducted on sample basis after the core module to provide more detailed structural data.

The guidelines for the new FAO World Programme for Census of Agriculture 2020 takes into account the lessons learnt from the implementation of WCA2010 as well as the emerging data and technology environment and proposes more approaches and modalities and data sources for conducting the census of agriculture in the next decade. The guidelines recommend that the census of agriculture may be carried out using different approaches and in various ways, depending on available resources and national conditions. The following four modalities for conducting a census of agriculture are recommended:



- (i) *classical approach* in which a census is conducted as a single one-off operation in which all the census information is recorded;
- (ii) *modular approach with a core module* by complete enumeration and supplementary module(s) on sample basis, using information collected in the core module as the frame for the supplementary module(s) and conducted shortly after the core module ;
- (iii) *integrated census and survey modality* with a census core module (which could be lighter than in the modular approach) to be carried out on a complete enumeration basis and rotating thematic modules to be conducted annually or periodically on sample basis over a longer period between two census core modules (usually ten years) through a permanent agricultural survey programme such as the FAO Agricultural Integrated Survey programme (AGRIS); and
- (iv) *using administrative registers as sources of census data* which uses registers and administrative records as a source of all or part of the census data.

It is considered that regardless of the census modality and way of conducting a census, the crucial principle is to achieve the main objectives of a census of agriculture depending on country statistical capacity, national preferences and the availability of resources and data sources. The increasing use of multiple sources in census programmes is a trend that will be increasingly followed by many countries in coming agricultural censuses.

(b) Intensive use of emerging technology for conducting the Census

The availability of digital and mobile computing tools for data capture, handheld geo-positioning devices at affordable prices, and more precise and cheaper remote sensing images have provided new cost-effective alternatives to traditional way of conducting the agricultural census. This technical revolution is likely to be accelerated in coming years and there may be technology available in the next decades that are not known or affordable now. There are currently technologies that can be used in Agricultural census for support to enumerators' work during field operation, for the control, supervision and monitoring, or provide the tools to create a system that integrates enumeration with control and monitoring. The main technologies that can be used for the agricultural census include (FAO, 2017):

- i. Remote sensing and aerial/orto photos:** Remote Sensing (RS) and aerial photos for agricultural statistics can be used for (i) cartography and frame building, (ii) supporting field work, (iii) crop estimation (Delince, J and al, 2017). The Census of Agriculture 2016 of Morocco and the Census of Agriculture of Colombia, provide good examples of use of remote sensing images and orto-photos for conducting agricultural census.
- ii. Handheld GPS devices:** The handheld GPS can provide support to field activities: geo-referencing plots, holding location; or measuring the area of a plot or landscape patch or for building frames.
- iii. Mobile digital devices** (smartphones, tablets , etc.): Computer Assisted Personal Interview (CAPI) applications are being developed to leverage these devices for data collection. When equipped with GPS, they can be also used for Geo referencing



holdings, optimizing logistics and supporting enumerators and for collecting and compiling paradata for effective monitoring of census progress. The use of CAPI substantially reduces the time needed for data processing and increases the timeliness of the census results. The Census of Agriculture of Iran 2014 made an extensive use of CAPI (7500 tablets were needed) which allowed the production of preliminary results in less than six months. CAPI has also been used in agricultural censuses in Argentina (2008), Brazil (2006), Colombia (2014), Finland (2010), France (2010), French Guyana (2010), Jordan (2007), Lithuania (2010), Malta (2010), Martinique (2010), Mexico (2007), Mozambique (2009), Slovenia (2010), Thailand (2013) and Venezuela (2008).

- iv. **Other uses of technology for data collection:** include new ways of collecting data remotely combining various devices such as telephone and computers (Computer assisted telephone interview CATI), use of internet for data collection (Computer assisted Self Interview CASI or CAWI) etc. CATI and CASI have been mainly used in agricultural censuses in European countries, Canada and USA.
- v. **Use of technology for wider and faster data access and dissemination:** In addition to printed material, census results can be made widely available through online dissemination, social media and other electronic methods. New dissemination formats such as infographics and thematic GIS maps greatly enhance the readability and comprehensibility of the census results. Also protocols, methods and tools are available for a safe access to microdata.

3. Concluding remarks

The growing demand for more data more frequently and the high cost of the census in a context of scarcity of resources imply to take a fresh look at cost effective options and ways of meeting the need for structural data on agriculture at low administrative level. The improvement in administrative registers in many developed countries, the tremendous revolution in technology and increasing pressure to reduce respondent burden offer new opportunities for a range of new possibilities of conducting the census.

FAO World Programme for Census of Agriculture is being adapted to the changing statistical and technological environment. Starting with WCA 2010 and with more emphasis in WCA 2020, it is recommended to plan and implement the Census as an element of an integrated census/survey programme with various modalities depending on country situation and to make use of new technologies and alternative sources of data such as administrative registers.

Going further, some national statistical offices are 'looking to shift from taking a traditional collection focus' to 'a new solutions focus' (Duncan, 2015¹). In the traditional 'collection-centred Model' a Census will be conducted and then consideration is given to how this

¹ This paper discusses the case of Population Census, but the analysis apply to a large extent to the Census of Agriculture.



collection can best meet information requirements and provide public value. The change to a solution-orientation will be characterized by an increased focus on information requirements rather than statistical collections. This concept is illustrated in the graph in the annex extracted from (Duncan, 2015).

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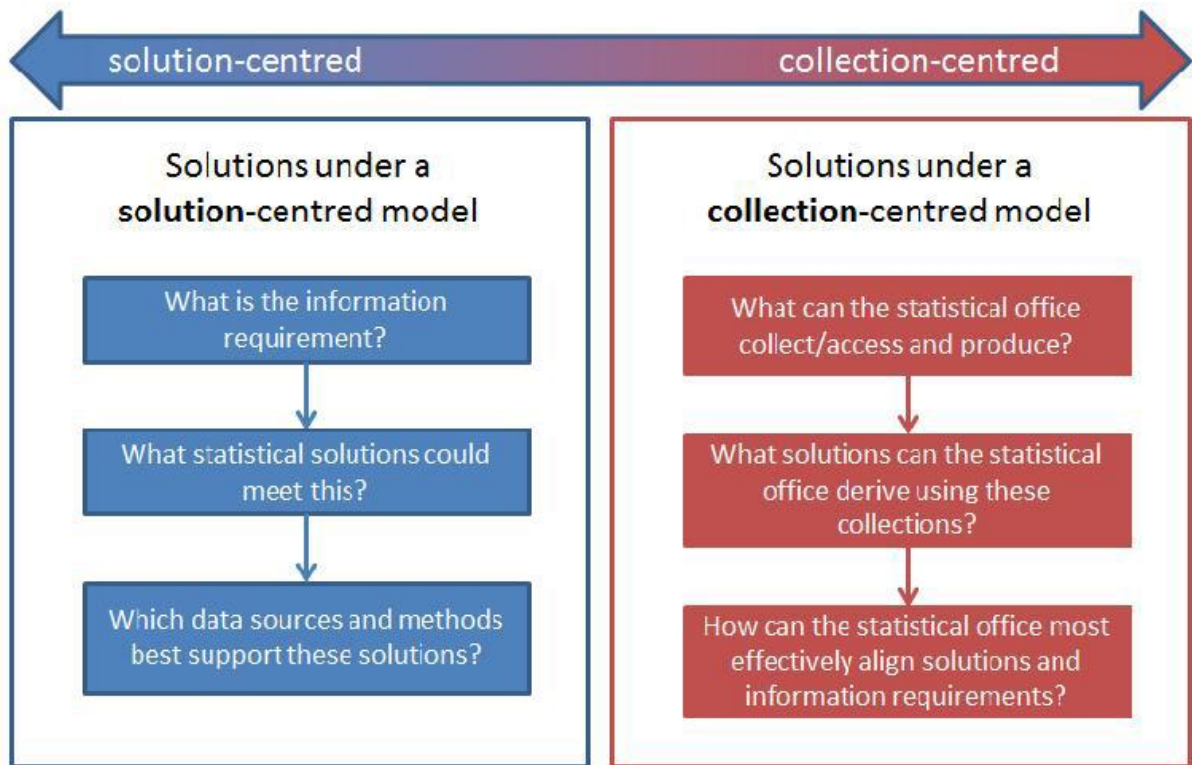
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ANNEX



Source: Duncan, 2015