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## LESSONS LEARNT FROM COUNTRY EXPERIENCES IN IMPLEMENTING THE WORLD PROGRAMME FOR THE CENSUS OF AGRICULTURE 2010 IN AFRICA

### ABSTRACT

*This paper presents an overview of the progress made towards implementation of the World Programme for the Census of Agriculture 2010 (WCA 2010) promoted by FAO which covers the agricultural censuses and surveys undertaken during the period 2006-2015. Besides reporting on the current status around the world, the paper focuses on practices of African countries. The paper reviews the application of the new features of WCA 2010 by countries in the region and lessons learnt.*

## I. INTRODUCTION

### 1.1 Background

The first round of the World Census of Agriculture (WCA) was carried out in 1930 under the auspices of the International Institute of Agriculture (IIA), Rome. After its formation in 1946, FAO assumed responsibility for agricultural censuses and, beginning with the 1950 round, has been preparing and advocating decennial programmes for the World Census of Agriculture (WCA). These programmes have provided guidance to countries in conducting agricultural censuses following standard concepts, definitions and classifications, and at the same time have promoted the availability of internationally comparable data on the structure of agriculture.

The programme for the 2010 round of WCA is the ninth decennial programme of agricultural censuses. It was published in 2005 and covers the period 2006-2015. The WCA 2010 Programme provides guidance on 12 themes and 87 data items including many completely new or significantly modified data items [FAO, 2005]. An indicative classification of crops based upon Common Product Classification is suggested to be used for greater international comparability of data

collected through agricultural census. The Programme advocates integrated planning of surveys, proposing a modular approach to collection of data and greater coordination between population and agricultural censuses to gain cost-efficiencies and to increase the scope of data collection. A community survey on agricultural infrastructure is also advocated to be carried out with the agricultural census to make data available for decentralized planning and targeted area development.

## **1.2 Importance of the census of agriculture**

A census of agriculture is a statistical operation for collecting, processing and disseminating data on the structure of agriculture, covering the whole or a significant part of the country. Typical structural data collected in a census of agriculture are: size of holding, land tenure, land use, crop area harvested, irrigation, livestock numbers, labour and other agricultural inputs.

The agricultural census data are useful for a variety of economic and social fields including monitoring progress towards the Millennium Development Goals, and in analyzing poverty, food security and gender issues. Other uses of agricultural census data include planning and policy making and improving current agricultural statistics.

The main objectives of the census of agriculture, as defined in WCA 2010, are: (a) To provide data on the structure of agriculture, especially for small administrative units, and to enable detailed cross-tabulations; (b) To provide data to use as benchmarks for current agricultural statistics; (c) To provide frames for agricultural sample surveys; (d) To provide data to help monitor progress towards global development targets, in particular the MDGs. The WCA 2010 advocates a census not as an isolated exercise but as centre piece in the system of agricultural surveys. [FAO, 2005].

## **1.3 Advocacy and Training**

In order to promote the implementation of the new recommendations of the 2010 WCA Programme by countries, FAO organized a series of round table technical meetings in all regions to present and discuss the recommendations with the national leaders of the agricultural censuses. The roundtable meetings were organized in Bangkok, Thailand (2005), Santiago de Chile, Chile (2008), Cairo, Egypt (2008), Budapest, Hungary (2009). In addition, specific capacity building workshops on special subjects like “Sampling for Agricultural Censuses and Surveys (Accra, Ghana, 2010; Bamako, Mali, 2011; Montevideo, Uruguay, 2011; Amman, Jordan, 2011; Bangkok, Thailand, 2012)” and “Linking Population and Housing Censuses with Agricultural Censuses” (Nouméa, New Caledonia, 2012; Amman, Jordan, 2012; Port of Spain, Trinidad and Tobago, 2013) were also organized for the benefit of member states. FAO continues to provide direct technical assistance to a large number of countries in conducting their censuses through field projects.

## **II. OVERVIEW OF THE IMPLEMENTATION OF WCA 2010**

### **Overview of the progress of the WCA 2010 round in the world**

A considerable number of countries around the world have already conducted their agricultural census during the 2010 round (2006-2015). A review of the implementation of agricultural censuses for this round, based on information available to FAO, shows that so far, out of a total of 194 countries and territories, 102 countries have already conducted an agricultural census and about 46 are planning to carry out one during the next two years. This is expected to result in an unprecedented high rate of participation of countries in a WCA round. The last record related to 122 participating countries in the WCA 2000 round. The number of countries that conducted an agricultural census in previous WCA rounds since 1960 ranged between 90 and 122.

Globally, the share of implementation of the 2010 round by regions is in line with the past trends. The figure of 102 countries that already have carried out a census during the first 8 years of the 2010 round, represents a promising end of the round result. Europe is the leader with 90% of countries which have already conducted a census, followed by South America with 69% of countries, North and Central America with 56% of countries, Oceania with 53% of countries, Asia with 40% of countries and Africa with 25% of countries. Table 1 presents a comparative picture of the implementation of agricultural censuses during various rounds in all regions.

Table 1. Participation of countries and territories in the WCA rounds  
(number of countries)

Region	Round					
	1960	1970	1980	1990	2000	2010 (Census conducted until 2013)
No. of participating countries	100	111	103	90	122	<b>102</b>
Africa (55)	28	25	23	20	25	<b>14</b>
North and Central America (27)	19	23	18	16	14	<b>15</b>
South America (13)	11	10	7	7	8	<b>9</b>
Asia (48)	19	19	21	14	29	<b>19</b>
Europe (39)	17	24	22	20	29	<b>35</b>
Oceania (19)	6	10	12	13	9	<b>10</b>

\*The number in the brackets in the first column is the current number of countries in each region.

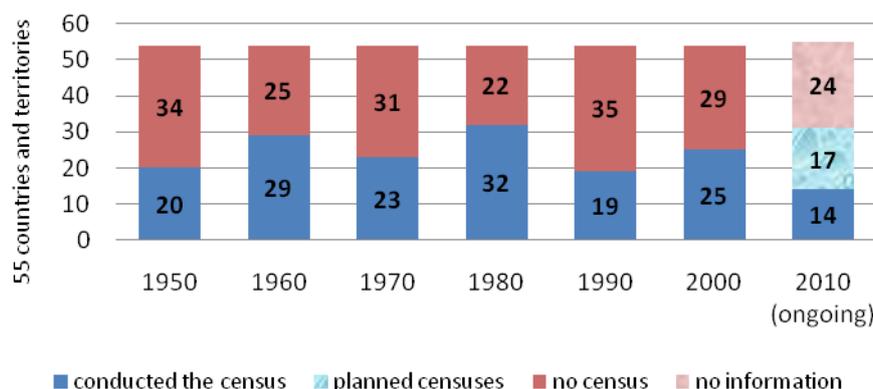
## 2.2 Overview of the WCA 2010 round in Africa

The Africa region here refers to the 55 countries. Table 2 below, prepared on the basis of information available to FAO, presents African countries which have already conducted an agricultural census and those which are planning one in the current decadal round (2006-2015). Out of 55 countries and territories, 14 have conducted an agricultural census, 17 are planning to carry out one before the end of the round, and on 24 countries no information was available to FAO at the time of writing the paper.

Table 2. Agricultural Censuses in Africa region  
in the 2010 WCA round (2006-2015)

Africa region (54) <sup>1</sup>			
Census conducted	2006-2012	Burkina Faso (2010), Egypt (2009/2010), Gambia (2011/2012), Lesotho (2010), Malawi (2006/2007), Mozambique (2009/2010), Niger (2004-2008), Reunion (2010), Rwanda (2008), Seychelles (2008), South Africa (2007), Tanzania (2007/2008), Togo (2011/2012), Uganda (2008),	14
Census planned		Angola (2015), Algeria, Cameroon (depends on availability of funds), Cape Verde (2014), Chad (2014), Cote d'Ivoire (2014), Eritrea (planned), Ghana (2013/2014), Libya (2013/2014), Mali (tentatively 2014/2015), Mauritius (2013/2014), Namibia (2014), Nigeria (2013/2014), Republic of the Congo (2013/2014), Senegal (2013/2014), Republic of Sudan (2013/2014), Tunisia (2014/2015).	17
Information not available		Benin, Botswana, Burundi, Central African Republic, Comoros, Democratic Republic of the Congo, Djibouti, Ethiopia, Equatorial Guinea, Gabon, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Mauritania, Morocco, Republic of South Sudan, Sao Tome and Principe, Sierra Leone, Somalia, Swaziland, Zambia, Zimbabwe.	24

Chart 1. Participation of African countries in WCA rounds



FAO recommends to countries to conduct a census of agriculture at least once every ten years. Only 4 African countries (Botswana, Egypt, Lesotho, and Tanzania) exercise regular periodicity<sup>2</sup> in conducting agricultural censuses. Some 17 African countries conduct agricultural censuses with some regularity<sup>3</sup> and most of them (29) conduct agricultural censuses irregularly<sup>4</sup>. Five African countries (Burundi, Equatorial Guinea, Eritrea, South Sudan and Zimbabwe) have never conducted an agricultural census. However, although Eritrea and South Sudan, as newly emerged countries, have never conducted an agricultural census, their whole territories were covered by at least one agricultural census when they formed a part of another country.

It was recommended by the 2010 WCA Programme that countries conduct their agricultural census as close to 2010 as possible. Out of 55 African countries, 9 countries have conducted their census in the middle of the period (2009-2012). Malawi, Niger, Rwanda, Tanzania and Uganda have conducted their census at the beginning of the round (2006-2008), and 17 have conducted or are planning to conduct the census towards the end of the round (2013-2015). While there may be

<sup>1</sup>Africa region includes 55 countries and territories. Only 49 countries are covered by the FAO Regional Office for Africa – FAORAF; 5 countries - Algeria, Egypt, Libya, Morocco and Tunisia are covered by FAO Regional Office for the Near East and North Africa – FAORNE; Reunion, as part of France, covered by FAO Regional Office for Europe and Central Asia – FAOREU).

<sup>2</sup> Regular periodicity – if the country participated in six or seven complete WCA rounds

<sup>3</sup> Some regularity – if country participated in four or five rounds out of seven complete WCA rounds

<sup>4</sup> Irregularly – if it participate in only one, two or three out of seven complete WCA rounds.

administrative and financial constraints which decide the timing of the census taking, a convergence in the timing of census taking by different countries increases the international comparability.

### III. IMPLEMENTATION OF THE NEW FEATURES OF 2010 WCA IN AFRICA

#### 3.1 New features of the WCA 2010

The new features recommended by FAO in 2010 WCA Programme include: (1) modular approach which recommends collection of data on key structural variable through a core module by complete enumeration and use of more detailed thematic modules including detailed variables by sampling, (2) integration of the census operation into a comprehensive programme of censuses and surveys, including linkages with population census, and (3) collection of community-level data [FAO, 2005].

The implementation of the WCA 2010 round is still ongoing. Not all countries which have conducted an agricultural census have provided their reports to FAO, perhaps because the results are not released yet, so it is too early to present a complete account of the adoption and application of the recommendations on the new features by countries. Nonetheless, a review of experiences of selected African countries in implementing some new features of WCA 2010 is presented below.

#### 3.2 Modular approach

The modular approach envisages: (i) conducting a core module on a complete enumeration basis (or on a large sample basis where complete enumeration is not feasible) to provide a limited range of key structural items for constructing sampling frames and analyzing data at detailed geographic or other levels; and (ii) conducting one or more supplementary modules on a sample basis simultaneously with, or immediately after the core module to provide more detailed structural data or data not required at lower administrative levels.

In the Africa region, as per information available up to now, the following countries have already adopted the modular approach to census planning: Burkina Faso (2010), Mozambique (2009/2010), Niger (2004/2008), Republic of Congo (2013), Seychelles (2011), Togo (2012/2013) and Uganda (2008). A review indicates that there does not exist a unique design to implement the modular approach which can be applied to all country situations. Each country has the liberty to decide its own survey architecture and the related sampling designs based upon the structure of its agriculture, administrative set-up, data demands, and availability of human and financial resources. The important aspect is that on key structural variables the data are updated at least decennially at the lowest administrative level.

Three countries (**Burkina Faso**, **Mozambique** and **Seychelles**) included their agricultural core module in the population and housing census and conducted the agricultural census (which thus may be considered as consisting only of supplementary modules) later, using the core module as the frame. The concrete ways of implementation of this approach, however, differed across these three countries.

In **Burkina Faso**, the core module was incorporated into the General Population and Housing Census (GPHC) carried out in December 2006. Three sample modules were independently implemented during the Agricultural Census in 2008 based on the frame created by the core module, specifically the module on rain-fed cultures (cultures pluviales), the module on fruit trees (arboriculture fruitière) and the module on livestock (élevage).

In **Mozambique** core module was conducted as an agricultural module (Section G) of PC 2007 (III RGPH 2007). Then the agricultural census enumeration was conducted in 2010 on sample basis by

means of a single questionnaire which may be considered as consisting of supplementary modules. Six supplementary modules were included: Crops, Livestock, Labour force; Aquaculture, Food security, and agricultural practices and services.

**Seychelles** applied the modular approach in a specific way. Population and Housing Census 2010 census collected some agricultural information including information on livestock numbers. During Agricultural Census 2011, the core module data were used for identifying 234 (out of 527) Population Census Enumeration Areas (EAs) where households growing crops mainly for sale lived. HHs not selling crops were asked only a few questions on land area and crops grown for a sample of 2 EAs per district (out of the previously identified 234 EAs).

In **Niger**, the core module was implemented on a sample basis as a separate pre-census operation. The pre-census operation was carried out during seven months from September 2004 to March 2005. Specifically, 700 Population and Housing Census EAs were sampled out of 7765 EAs identified as agricultural EAs by an agricultural module included in the Population and Housing Census 2001. (EA was identified as agricultural if it contained at least one agricultural household, that is, a household engaged in agricultural production). These 700 EAs were completely enumerated during the first phase of the agricultural census in 2006. During the second phase of the census in 2007 a sample drawn in these 700 EAs was approached by supplementary modules.

Activities of the fourth census of agriculture in **Togo** were carried out in two stages: pre-census activities and the complementary modules activities which is the main census. Pre-census data collection covered all the 4 638 rural EAs (complete enumeration). Complementary modules were at sample enumeration level. The questionnaires of complementary modules were structured into six booklets.

It should be noted that Malawi also claims to have applied a modular approach but it is not in the sense of WCA 2010, that is, combination of complete enumeration of the core and sample enumeration of the supplementary modules. The whole census was conducted on the sampling basis. Different questionnaires or different parts of the questionnaires are called modules. The census tools consisted of 9 modules. Module 1: Household Composition; Module 2: Land parcel; Module 3: Plot details; Module 4: Food security and HIV/AIDS; Module 5: Marketing; Module 6: Welfare Monitoring Survey; Module 7: Livestock Survey; Module 8: Village facility; Module 9: Estate Survey. Module 9 was applied to only estate holdings. Other modules were applied to all the sample. Modules 1, 4 (food security part) and 6 were applied three times in January, June and September 2007, in June HIV/AIDS information was additionally collected by module 4. Module 8 applied to villages.

The following conclusions can be drawn from the African experience so far:

- Countries used fairly often the modular approach (seven out of fourteen African countries that have already conducted a census, have used the modular approach).
- Including the agriculture core module into a population census quite a common way of using the modular approach. Three out of seven countries have used this approach and might be due to two reasons: a) lack of resources to conduct two separate field activities (core enumeration and supplementary modules) within one agricultural census; and b) lack of capacity to conduct core and supplementary module as a single operation (forming samples for supplementary modules during core enumeration requires advanced skills of enumerators).

- The time gap between the core module in the Population and Housing Census and supplementary modules may be quite considerable, as in the case of Mozambique where it was 3 years.
- Some countries call their approach modular even if there are no core and supplementary modules, just based on the fact that the census tools consist of several modules which are applied on different occasions.

Based on this, there are some issues to which attention should be paid in designing the next programme:

- The modular approach should be maintained in the next Programme.
- More attention should be paid to operationalizing the modular approach, i.e. providing guidelines on how to implement the modular approach in practice in cost-effective way, including using population census for the core module.
- There should be more clear definition of the modular approach, that is, which are criteria for a census to be considered as conducted under the modular approach.

### **3.3 Integrated approach to survey planning and linkage to Population and Housing Census.**

In recent years, increasing efforts have been made towards greater integration of statistical activities, i.e. to ensure that each statistical operation is carried out, not in isolation, but as part of a coherent set of data collection activities within the national statistics system (NSS). Integrated survey planning has the potential to reduce the response burden which is an important dimension of quality of survey design, and avoids existence of conflicting data. In addition, methodological and conceptual integration in data collection and storage substantially increases the scope of analysis. Integration of agriculture into National Statistics Systems is one of the pillars of the Global Strategy to Improve Agricultural and Rural Statistics (FAO, 2010).

Linkage of the Agricultural Census to Population and Housing census is one of the examples of integrated approach to survey planning and a powerful tool for integration. The guidelines in the WCA 2010 Programme and those from United Nations Statistics Division (UNSD) on Population and Housing Censuses advocate for a stronger coordination between the two censuses. The guidelines have been further elaborated in the form of joint publication of FAO and UNFPA entitled, ‘Guidelines for Linking Population and Housing Censuses with Agricultural Censuses’ [FAO/UNFPA, 2012]. The strength of linkage can vary and take several forms:

- use of common concepts, definitions and classifications;
- sharing field materials;
- using the population census as a household frame for the agricultural census;
- making use of agriculture-related data from the population census;
- collecting additional agriculture-related data in the population census;
- linking data from the two censuses;
- conducting the two censuses as a joint field operation.

Most African countries whose agricultural census reports are available have linked at some extent their agricultural census with the population and housing census.

As mentioned above, three countries (**Burkina Faso, Mozambique and Seychelles**) have used the population and housing census for conducting the core module of the agricultural census.

**Malawi** and **Uganda** used EAs of the population and housing census (of 1998 and 2002, respectively) as primary sampling units for selection with probability proportional to size with number of households as size measure. During the agricultural census field operations (in 2007 and 2009, respectively), in the selected EAs all households were listed and screened for agricultural holdings to select a sample of agricultural holdings at the second stage. In addition, in Uganda the list of households from the population and housing census with at least one livestock was used as a frame for the livestock census conducted in 2009.

**Niger**, having included an agricultural module in the Population and Housing Census 2001, identified agricultural EAs that is, EAs with at least one household engaged in agricultural production. This frame of agricultural EAs was then used for two stage sampling.

Besides of the above mentioned countries, 7 countries (**Botswana, Ghana, Kenya, Liberia, Namibia, Swaziland, Zambia**) collected some agricultural aspects in their population and housing censuses without following up by an agricultural census.

The African experience shows that the coordination of Population and Housing Census with Agricultural Census promoted in WCA 2010 Programme and also recommended by the Global Strategy to Improve Agriculture and Rural Statistics can be a very cost-effective way of conducting these two comprehensive data collection operations and integrating agriculture into the national statistics system.

### **3.4 Collection of community level data.**

The WCA 2010 Programme recommends to take advantage of the fact that the community administration is usually involved in the census operations (the listing process of households/holdings or data collection itself), so community level data can be collected at little additional cost.

Community level data are of statistical interest for three main reasons: a) they are of interest in their own right; b) they can be useful for analysis in relation to holding level data tabulated at community level; c) the data may be used for checking holding level data collected during the agricultural census; d) enable to collect data only available at community level.

According to the census reports available so far, only Malawi and Togo have included collection of the community level data in its agricultural census programme.

In Malawi, the village facility module (Module 8) was included into the census tools. This module was applied to a sample of villages, specifically, to the villages to which the sampled EAs (Primary Sampling Units) belonged.

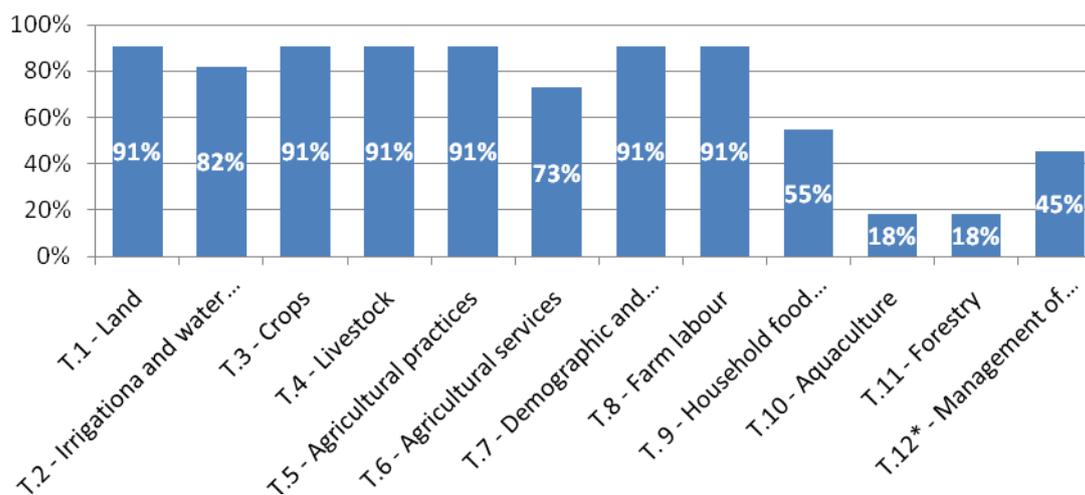
In Togo, a village questionnaire (Questionnaire Village) was developed which was applied during pre-census activities, that is, it covered all villages. The questionnaire collected information on type of village, basic infrastructure (main access road, water supply, electricity supply), education infrastructure, health care infrastructure, socio-economic infrastructure, communication infrastructure, natural resources, socio-economic organizations, livestock herds, vegetable growing sites (sites maraichers), fish ponds, main problems.

## IV. COVERAGE OF DATA ITEMS

### 4.1 Coverage of Data Themes

The modular approach of WCA 2010 Programme recommended inclusion of at least 16 core data items in all censuses, carried out by complete enumeration or by large sample. The programme provided an expanded list of 87 data items grouped under 12 themes for supplementary modules and specialized surveys. This approach was intended to provide flexibility to member countries to prepare a phased programme for agricultural census and surveys.

**Chart 2. Items covered in Africa region by themes**



\*Includes: 10% corresponding to one country, Uganda, which used the theme 12 plus 35% corresponding to countries who did not use the theme but collected sub-holder data in theme 1 at parcel /plot level

Out of 14 African countries which have already conducted an agricultural census during the current round (WCA 2010), 11 census questionnaires were available to FAO. An analysis of these questionnaire indicated that almost all countries have included in their censuses the recommended 16 core census items.

Chart 2 provides an indication of representation of various themes in the census questionnaires. While most countries included in their censuses themes relating to Land, Crops, Livestock, Agricultural Practices, Farm Labour and Demographic and Social Characteristics, the themes which seem to be under-represented in the agricultural censuses of Africa are: **Theme 10.** Aquaculture; **Theme 11.** Forestry which may be attributed to varying importance of these items for countries.

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