
MOZAMBIQUE - Censo Agro-Pecuário CAPII 2009-2010 – Explanatory notes

1. Historical Outline

The Census of Agriculture and Livestock or CAPII (2009-2010) is part of the National Strategic of Development Statistics 2008-2012. The 2009/2010 Census of Agriculture and Livestock was the second since Mozambique became independent. The previous Census of Agriculture and Livestock took place in 1999/2000.

2. Legal Basis and Organization

In accordance with the law 7/96 of June 5, Presidential Decree 9/96 of 28 August and Decree 34/96, 1 July, the Census (CAPII 2009-2010) was conducted by the National Statistics Institute (Instituto Nacional de Estatística INE) in partnership with the Ministry of Agriculture (MOA) and received technical assistance from the FAO.

The National Statistics Institute is the Government agency responsible for the Census of Agriculture and for the publication and dissemination of all statistics collected and compiled by other Government Ministries and offices.

The Chair of the CAPII 2009-2010 was the Vice-President of INE and the Vice-Chair was the National Director of Economics from Ministry of Agriculture. The Director of the Census of Agriculture directed daily operations. The Deputy Director was seconded from MOA. Two members of staff from MOA were also working full-time on the Census. They were joined by a number of staff seconded from the Ministry of Agriculture's annual TIA survey. The Informatics staff of INE also seconded staff and provided extensive support.

The enabling legislation for statistics is Mozambique's Statistics Law (2005), and the National Statistical Institute's Statistical Master Plan (2012-2017). The two documents provide the foundation and framework for the development of an integrated agriculture statistics system.

3. Reference Period or Date

The reference period for crops was the 2009/2010 crop year, while the last 12 months, compared to the day of the interview, served as the reference period for livestock and poultry, farm inputs, agricultural production practices, and agricultural services.

4. Enumeration Period

The CAPII 2009-2010 data collection was carried out from December 2009 to November 2010 in all the provinces of the country. The enumeration period was extended to August 2011. Indeed, the extreme wet weather resulted in a need for a lengthy postponement in the collection of production data in the North of the country.

5. Definition of the Statistical Unit

The definitions are essentially those recommended by the FAO.

Agricultural Holding: Economic unit of agricultural production under single management based on the use of land for agricultural production, without taking into account the legal aspects of ownership (title) or size. Management may be exercised by an individual or household, jointly by two or more individuals or households, or by a juridical person such as a corporation, cooperative or government agency.

Household: A group of persons residing in the same household, whether or not family relationships, can occupy all or part of the dwelling, where the payment for essential needs are covered partially or totally together. Also considers household independent or isolated persons occupying all or part of the dwelling.

Agro-livestock Farm: Economic unit of Agro-livestock production under a single management based on the use of land for agriculture, livestock or both, without taking into account the legal aspects of ownership (title) or size. Management may be exercised by a person or persons, or one or more households, or by a juridical person such as a corporation, cooperative or government agency.

Agro-livestock Family Holding: Holding in which at least 75% of the labor force is provided by the agricultural household producer, and receive no salary.

Livestock Holding: Economic unit of livestock production under single management based on the use of land for livestock production, without taking into account the legal aspects of ownership (title) or size. Management may be exercised by an individual or household, jointly by two or more individuals or households, or by a juridical person such as a corporation, cooperative or government agency.

6. Geographic Coverage

The Census (CAPII 2009-2010) covered all 11 provinces of Mozambique including the urban Province of Maputo City, and the 10 predominantly rural Provinces. The Census included rural and urban areas.

7. Exclusions and Cut-Off Thresholds

There are no apparent exclusions or cut-off thresholds to the definition of an agricultural household or agricultural activity.

8. Methodology

FAO Modular Approach

The FAO recommendation for a modular approach was used. Mozambique also included all but six of the sixteen "FAO Core Module Census Questions" asked on the 2007/2008 Census of Population and Housing, a complete enumeration of the Mozambique population.

The FAO recommendation for a modular approach was used. The Census (CAPII 2009-2010) was covered several modules : (i) A comprehensive Common Module from the Third General Census of Population and Housing 2007, including the enumeration of all villages of the country; (ii) Six Complementary Modules: Crops, Farming, Farm Labour, Aquaculture, Food Security, Agricultural Practices and Services. The first two Complementary Modules being the most extensive and exhaustive and the other modules were be drawn one and two-stage representative sample at district level.

Frame

The frame was all agricultural households identified by the 2007/2008 Census of Population and Housing. In according with data from the 2007 Census of Population and Housing, 45279 Enumeration Areas (EA) were delineated for the Census of Agriculture and Livestock frame.

Complete or sample enumeration methods

Given the budget and resources that would be required to completely enumerate all the agricultural holdings in Mozambique, it was not feasible to use 100% enumeration. Using the Census of Population and Housing as the "frame", a cost-effective and statistically efficient sample was designed for CAP II to provide as much reliable information as possible for the 148 districts of Mozambique. This still required a relatively large sample size of more than 45279 farm holdings.

Sample Design

The INE conducted the 2007 Census of Population and Housing in August 2007. The 2007 Census involved a complete enumeration of all the households in Mozambique. The country is divided administratively into provinces, districts, and villages (bairros or aldeias). Before the Census Population was made a cartographic survey and will be the basis of this that the areas of selected list are

identified in the maps, which then allow infographic presentation of data, linking the CAP data and places on maps.

The sampling frame for large holdings will be based on information obtained from the Population Census 2007.

Selection of Enumeration Areas (EA): The EA were selected systematically with probability proportional to size (PPS) within each stratum (district, urban and rural). The measures of size were based on the number of agricultural households in the EA from the 2007 Population Census frame. Prior to the first sampling stage, the EAs in the sampling frame for each stratum were ordered geographically (for example, in a serpentine manner) in order to provide implicit stratification and obtain a sample that is geographically representative within each stratum.

The second stage, the selection of agricultural households was based on a listing of all the households and farm holdings in each sample EA. The listing sheet includes information on the name of the head of household; the address; the area planted in crops and area irrigated; the number of cashew, coconut and fruit trees; and the number of animals by type. This information was used to classify the farm holdings by size category, according to cut-off thresholds.

Selection of Large Farms: The Ministry of Agriculture's list frame of 833 large farm holdings were all specifically included in the sample. These farms were excluded from the area frame. However, if additional large farms were found in the sample EAs that were not in the list frame, they were then included at the second sampling stage, and received the same weights as the medium size farm holdings.

Using the Census of Population and Housing cartography, interviewers went to the selected EA's, listed the households in the EA and then using random number tables, selected the sample of medium and small agricultural households for Computer Assisted Personal Interviews (CAPI).

Collection Method

The collection of data was done by direct interviews to farmers, using laptop computers (mini-computer) with the CAPI system (Computer Assisted Personnel Interview).

Questionnaire(s)

The questionnaires were written in Portuguese and interviewers were expected to conduct interviews in the local language of the respondent by translating the questions during the interview. There were two questionnaires: one for small and medium-sized agricultural households and one for large farms.

The Census of Agriculture and Livestock appears to include all the variables defined as a minimum set of Core Data by the Global Strategy to Improve Agriculture and Rural Statistics.

Controls to Minimize Non-Sampling Errors

Specific efforts to assure the quality of the Mozambique Census of Agriculture and Livestock data and control non-sampling errors included: Efforts to clearly define the concepts used in the Census (household, head of household, holding, and agricultural activity); Careful recruitment of interviewers and supervisors; Intensive training and supervision of field operations staff training; Unambiguous instructions and manuals for field staff; Use of CAPI for data entry and interview management; Implementation of strict operational control procedures to ensure that all data was backed up and accounted for at each stage of storage and processing thus eliminating the need to store and transfer large volumes of printed questionnaires; Data processing procedures were tested extensively (Pre-test and Pilot Survey) in before the Census operation went into the field.

Innovative Methodologies

Methodological innovations were introduced in the CAPII CAP 2009-2010: (i) The modular approach was used in data collection: The Census of Population and Housing included an agricultural module that provided the frame and cartography for the Census of Agriculture – Sampling Data collection for

the Complementary Modules; (ii) Interviewers entered the data using Computer Assisted Personal Interview (CAPI) software programs, installed on small notebook computers with ten-inch screens and long life batteries; (iii) Using GPS for the measurement of the crops areas instead of metric tape and compass.

9. Data Entry, Edits, Imputations and Tabulation

Data entry including preliminary data edits were done in the field on notebook computers by the enumerators at the time of the interview with the data then being transferred electronically in email attachments to the data processing centre where they were subject to a second editing process. Security of the questionnaire data was a critical requirement of the computer assisted personal interviews so each questionnaire was backed up on a memory stick and then backed up a second time (back up to the backup). That data was only erased once the central processing system operation had reported that the data had actually been successfully transferred via email on "G3" files, and the files were reported as received and the files recorded as complete and secure.

The data were subjected to quality controls and processing edits to at the time of the interview and then again during the first stage of the Headquarters data processing operation to identify and resolve problems related to inaccurate, missing or inconsistent data. The effectiveness of the Census of Agriculture interviewers, computers and in general the entire data collection operation, resulted in very few requirements for data imputations and the very few that were necessary were largely resolved using the CSPro software imputation module and the hot-deck or "nearest neighbour method" of imputation to assign values at the micro record level (questionnaire).

The proposed software packages are CPro, SPSS, STATA, Adobe Reader, Word, Excel, ArcGIS 9.3, among others. The availability of preliminary data corresponding to additional modules will begin in December 2010.

10. Data Dissemination and Use

A set of pre-planned summary tables were prepared and published. The tabulations represent the basic information set on the Census at various levels of aggregation such as, the National, Provincial, and District level for some variables. Upon request, it is possible to obtain estimates at the Enumeration Area level of aggregation but they would be associated with very high standard errors and would not likely be accurate enough for most data users.

The Census of Agriculture data were published in the format of printed publications, in electronic format as a CD, on the INE (Instituto Nacional de Estadística) and CountrySTAT Websites.

Three workshops will be held for the dissemination of data, one for disclosure of preliminary data, one for disclosure of definitive data and the last for dissemination of thematic studies.

11. Post-Census Techniques to Check and Validate Census Data Quality

To ensure that data from the Census were accurate, control procedures were set up throughout collection and processing to control sampling and non-sampling errors. Data processing has many steps, including several kinds of edits, matching and un-duplicating individual farms, identifying and adjusting for missing data and data entry errors, validating data by comparing them to several other data sources, applying the sample weights and preparing the tabulations.

In addition, there were some comparative evaluations undertaken to compare estimates of a few variables that were common and comparable to those collected by the Census of Population and Housing and the annual agriculture survey, the Ministry of Agriculture's Trabalho do Inquérito Agrícola (TIA).

12. Data Sources

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

Unpublished Mozambique Census of Agriculture and Livestock 2009/2010, Methodology Report dated December 2012

13. Contact

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