



Master Sample Frame for Agricultural Surveys in Georgia

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ABSTRACT

This paper reviews experience of Georgia in building the master sample frame for agricultural and rural statistics. In November 2014 the National Statistics Office of Georgia (Geostat) conducted Agricultural Census together with General Population Census. In particular, census contained the following questionnaires: Questionnaire on Dwelling, Personal Questionnaire, Questionnaire on Emigrants and Questionnaire on Agriculture. Additionally, census identified the holdings that operate aquaculture and greenhouses. The data derived from the census is used for constructing master sample frame.

Census was conducted using the GIS maps, thus, all the data derived from the census will be linked to the GIS data. Geostat also conducted Agricultural Census for legal entities in order to fulfill the agricultural census data (including common land data). This paper describes design process of the questionnaires used in census as a tool for identifying the frame units of different surveys and the main variables subject to be obtained.

As a result, the Master Sample Frame attained from the census is very comprehensive and can be used for many different surveys as it was derived from the integration of population and agricultural censuses. The paper presents benefits of conducting agricultural and population censuses together in building the master sample frame.

The paper will also describe the core set of variables which will be derived from the census and it will provide examples of new surveys which can be conducted using the master sample frame.

Keywords: Master sample frame, census, agricultural statistics, sample survey

1. Introduction

Statistical system in Georgia is centralized. The Law of Georgia on Official Statistics creates a general framework for statistical system in the country and sets coordination principles for all institutions responsible for producing official statistics in Georgia. According to the law, production and dissemination of statistics shall be based on the 10 basic UN principles of official statistics. Geostat is a coordinating body of Georgia's statistical system and the only producer of official agricultural statistics in the country¹. Geostat is the agency responsible for conducting censuses on population, housing and agriculture.

Georgia has substantial agricultural potential, The government places great emphasis on the need for investment in increasing output and productivity of Agricultural Sector. Demand for agricultural data is increasing daily and Geostat has to respond to user needs.

Agriculture has always been one of the important sectors of Georgian economy. Despite the fact that share of agriculture, hunting, forestry and fishing in GDP was only 9.2% in 2015, 48.6% of employees in Georgia were employed in this sector. The share of rural population is 42.8% according to the Population Census 2014.

Almost every household living in villages is an agricultural holding and even in small towns 2/3 of households are engaged in agriculture. Overall, 3 out of 5 household are engaged in agriculture and they are scattered through every region of the country. According to the Census of Agriculture 2014, total number of agricultural holdings is around 642 thousand, out of them only 2 thousand is legal entity while other 640 thousand is household. Majority of agricultural holdings are small and they produce agricultural products for their own consumption.

Due to favorable geographical location and climate, Georgia produces more than 25 kinds of permanent and more than 20 kinds of annual crops. Also animal husbandry is quite common in the agriculture of Georgia. One of the specificities of the country is that the agricultural sector is not well-specialized and majority of holdings produce many different kinds of agricultural products.

The main source of current agricultural statistics is the Sample Survey of Agricultural Holdings which dates back to 2007 and its methodology was elaborated with the support of Food and Agriculture Organization (FAO) and the United States Department of Agriculture (USDA). Sample frame of the survey was based on the Agricultural Census 2004 which was the first in the history of independent Georgia. In 2014 Geostat conducted the second Agricultural Census of the country together with the Population Census. Based on the census database, in 2015-2016 Geostat prepared Master Sample Frame for agricultural surveys.

¹ The Georgian statistical system covers the whole area of the country, except the occupied territories.

2. Building Master Sample Frame in Georgia

In November 2014 the National Statistics Office of Georgia conducted Census of Agriculture together with the Population Census. In fact, there were 4 different censuses conducted together: Housing Census, Population Census, Census of Emigrants and Agricultural Census. Additionally, census identified holdings operating aquaculture and greenhouses. The census was conducted using GIS maps.

Geostat started preparatory works for the General Population Census in 2006. One of the principal parts of these works was implementing GIS in order to create digital cartographic material and use them in census data collection and dissemination process. At the first stage, GIS group, which was created at Geostat, developed GIS maps using cartographic material available in the country. A supplementary work was done to cover the territories where cartographic material was missing. In addition to this, a numbering script was prepared in order to give its own code to each parcel and buildings located on it through the country territory. After this, a supplementary work was done for updating existing software and for switching to fully automatized system.

In 2013 Geostat conducted preliminary field works to elaborate list of dwellings and households existing in Georgia. In order to digitalize collected information and integrate with cartographic data, there was developed software which was using coding system created by GIS group. Information received from the preliminary field works was used for correcting and finalizing existing data on buildings and for distributing work among census enumerators effectively. In addition to these, household duplication and missing risks were minimized.

By implementing GIS, Geostat managed to significantly decrease time needed for preparing cartographic materials, use financial means in more effective way and prepare high-quality maps.

Register of legal entities engaged in agriculture was prepared separately, due to the fact that General Population Census has only covered household sector. For completing the list of agricultural enterprises, all existing reliable sources were used: existing sample frame of the regular quarterly survey on agriculture, Statistical Business Register, Public register, Information available at the Ministry of Agriculture, at local governments, at the Ministry of Education and at the Patriarchate of Georgia. After the General Population Census Agricultural Census for Legal Entities was conducted separately.

Preparation process of the census questionnaires was held under the international guidelines and recommendations, taking into the consideration the needs of local users. The census questionnaire consisted of four separate parts, respectively to four different censuses: Questionnaire on Dwelling (Q1), Personal Questionnaire (Q2), Questionnaire on Emigrants (Q3) and Questionnaire on Agriculture (Q4). Each questionnaire had unique ID number that was linking them to each other. In total, census questionnaire had 9 pages: 2 for Q1, 2 for Q2, 1 for Q3 and 4 for Q4.

Q1 contained questions on dwelling conditions, as well as the full list of households and persons living in the dwelling with status of the persons - usual resident, temporary absent, temporary present, emigrant. According to the status of the person, appropriate questionnaire was filled (Q2 or Q3).

Since the population and agricultural censuses were conducted together, it was agreed to use the same reporting unit, thus a household was considered as one agricultural holding. In case of two or more holders in the household one of them was selected as a holder and their operated lands and livestock were summed up and assigned to the holder. In case of one or more households in a holding, each household was considered as a separate holding and land and livestock were assigned proportionally according to the share of households in the holding.

There were main identification questions in the Q1 for agricultural holdings. According to them, if household was identified as a holding, Q4 was filled by the enumerators. Besides, Q1 was identifying the holder. Additionally, Q1 contained identification question on holdings operating aquaculture.

Questionnaire on Agriculture (Q4) did not contain any question about the holder rather than holder's unique number indicated in Q1 and Q2, since all relevant information was covered by Q1 and

Q2. Q4 covered all core indicators recommended by the Food and Agriculture Organization and local user's needs were taking into account.²

For the Agricultural Census for Legal Entities an electronic questionnaire was prepared, which was also used for the census of municipalities (common land data). The content of the electronic questionnaire was the same as of Q4. In addition to the questions similar to Q4, there were additional questions regarding personal characteristics of the company director/holder.

As a result the census database contains information on dwelling conditions, personal information of the population, personal information of emigrants, agricultural data on holdings, personal information of holders, data on households operating aquaculture and greenhouses and geographic data. The database is a comprehensive source for analysts and researchers to cross-analyze social-economic and agricultural data.

The coding system included in the census database easily links all obtained data and creates Master Sample Frame for Agriculture. The existed MSF is used and can be used for various surveys: integrated agricultural surveys, specific agricultural surveys, aquaculture surveys, greenhouse surveys, social-economic surveys, etc.

In 2015 Geostat prepared Strategic Plan for Agricultural, Environmental and Rural Statistics in Georgia 2016-2020 (SPAERS). It determines the planned activities for improving agricultural, environmental and rural statistics, including new surveys to be conducted in coming years. MSF will be main tool for the agricultural surveys and it will be used as a frame for making samples.

MSF facilitates identification and monitoring process in the field works, since it contains detailed personal data of the holder and her/his household members, as well as GPS coordinates of the household location. It also gives great possibility to prepare maps indicating sampled units for enumerators to be used during the field works.

Georgian MSF covers various variables regarding Family holdings, Agricultural enterprises, Households, Emigrants, Housing conditions, Aquaculture holdings, Greenhouse holdings, municipal (common) land, etc.

3. Conclusions

By conducting population and housing censuses and agricultural census together, the National Statistics office of Georgia has created the first Master Sample Frame for Agriculture. The identification codes system embedded in the questionnaires easily linked the population and agricultural censuses and hence linked the agricultural holdings data to the households data. Use of GIS maps during the census fulfilled MSF with the detailed geographic data.

The Master Sample Frame is used for regular agricultural surveys and will be used for new regular surveys as well as for one-time surveys which are planned to be conducted in the coming years. Merging different surveys using MSF decreases survey costs and respondent burden which is crucial for statistical system. MSF facilitates to meet planned activities determined by SPAERS in more efficient way. It is also good tool for the surveys studying agricultural activities for specific social groups. MSF can be widely used for identification and monitoring process during the field works that will decrease the time needed for data collection and improve data quality.

It is important that MSF will be updated regularly by the data obtained from all agricultural and social-economic surveys based on Master Sample Frame as well as by the reliable administrative sources available in the country in order to keep MSF up-to-date.

² <http://census.ge/en/methodology/kitkhvarebi>