# Innovative Approaches for 2024 Agricultural Census in Georgia*

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## Abstract

The 2024 Population and Agricultural Census of Georgia was conducted jointly. This approach introduced a set of innovative methods aimed at improving data quality, operational efficiency, and respondent engagement. The National Statistics Office of Georgia (Geostat) implemented a two-phase approach combining **Computer-Assisted Web Interviewing (CAWI)** and **Computer-Assisted Personal Interviewing (CAPI)**. During the first phase, conducted from 14 to 23 November 2024 and from 19 to 31 December 2024, households were encouraged to self-register and complete the census online. The second phase, from 29 November to 19 December 2024, involved field data collection by trained enumerators equipped with tablets.

For the first time, population and agricultural data were collected simultaneously, enabling a more integrated understanding of rural households, land use, livestock, and other key agricultural indicators. To support precise geographical coverage and efficient field management, GeoStat applied Geographic Information Systems (GIS) to delineate enumeration areas, produce digital maps, and monitor fieldwork in real time. The GIS infrastructure also helped to prevent duplication, ensure full territorial coverage, and facilitate spatial data dissemination.

These innovations were supported by updated statistical legislation and national funding to guarantee both confidentiality and data integrity. The 2024 Census represents a major step forward in modernizing agricultural data collection in Georgia through digitalization, spatial integration, and respondent-centered design. Final data released in June 2026.

The paper discusses methodological lessons learned, benefits of integrating digital technologies in agricultural censuses, and their implications for sustainable data systems in developing economies.

**Keywords**: Georgia, Census, Agricultural Census, GIS, CAWI, CAPI, Digital Innovation, Integrated Data Systems.

## 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 is based on the 10 basic UN principles of official statistics and European Statistics Code of Practice and on the basis of internationally recognized basic principles of statistics. Geostat is a coordinating body of Georgia's statistical system and the only producer of official agricultural statistics in the country. Geostat is the agency responsible for conducting population and housing censuses, as well as agricultural census and economic censuses.

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 6.2% in 2024, 48.6% of employees in Georgia were employed in this sector. The share of rural population is 38.0% according to the preliminary result of Population Census 2024.

Almost all households living in villages are agricultural holdings 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 are legal entities while other 640 thousand are households. Majority of agricultural holdings are small and they produce agricultural products for their own consumption.

The main source of current agricultural statistics is the Sample Survey of Agricultural Holdings which dates back to 2006 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.

Agricultural censuses represent the primary and most comprehensive source of structural data on agriculture, particularly in countries where administrative data systems are still developing. In Georgia, the agricultural census plays a crucial role in producing official statistics at both national and municipal levels, enabling detailed analysis of rural livelihoods, land use, and agricultural production systems.

The 2024 Population and Agricultural Census of Georgia introduced an integrated and fully digital approach to data collection, marking a significant advancement compared to the previous 2014 round. While the joint implementation with the population census improved operational efficiency, particular importance should be given to the agricultural component, which serves as the backbone for agricultural statistics in the country.

The agricultural census provides detailed information at the level of municipalities, making it an essential tool for regional policy planning, monitoring rural development, and supporting evidence-based decision-making. In a context where agricultural activities are largely household-based, integrating agricultural data collection within the population census framework allows for a more accurate and consistent representation of the agricultural sector.

The 2024 census was conducted using a combination of Computer-Assisted Web Interviewing (CAWI) and Computer-Assisted Personal Interviewing (CAPI), supported by Geographic Information Systems (GIS). This paper focuses specifically on the agricultural census component, its methodology, scope, innovations, and its role in strengthening official agricultural statistics in Georgia.

## 2. Conceptual Framework and Definition of Agricultural Holding

The 2024 Census was based on internationally recognized standards, including guidelines from FAO (World Programme for the Census of Agriculture 2030), UNECE recommendations, and UNFPA methodological support.

The census integrated three main questionnaires:

- Housing questionnaire – dwelling conditions, infrastructure, and living environment

- Personal questionnaire – demographic and socio-economic characteristics
- Agricultural questionnaire – land use, livestock, crops, and agricultural practices

This integrated design allowed linking agricultural activities directly to household and individual characteristics, providing a more comprehensive analytical framework.

A key methodological foundation of the 2024 Agricultural Census is the definition of an agricultural holding, aligned with international standards set by FAO under the World Programme for the Census of Agriculture 2030 (WCA 2030).

An agricultural holding is defined as an economic unit of agricultural production under single management, comprising all livestock and poultry kept and all land used wholly or partly for agricultural production purposes, regardless of title, legal form, or size.

In line with this definition, the 2024 Agricultural Census in Georgia covered all households and legal entities that met at least one of the following criteria: possession or use of agricultural land, ownership of livestock, poultry, or beehives. This inclusive approach ensured full coverage of agricultural activities, including small-scale and subsistence farming, which are particularly important in the Georgian context.

**3. Agricultural Census Scope**

The agricultural census questionnaire was designed in accordance with FAO WCA 2030 guidelines. The questionnaire covers all core indicators recommended under the programme, while also taking into account national user needs..

In particular, the questionnaire covers key structural characteristics of agriculture, including detailed information on agricultural land classified by categories, such as arable land, permanent crops, and pastures. It also captures data on perennial crops, including orchards and vineyards, which are of special importance in Georgia due to the country’s long-standing agricultural traditions.

Special attention was given to collecting detailed information on the number of perennial crops and vines in use by agricultural holdings. This allows for more precise estimation of production capacity, especially in sectors such as viticulture and fruit production.

The census also includes comprehensive data on livestock, poultry, and beekeeping activities, covering the number and types of animals, poultry species, and beehives. These components are essential for understanding the structure of the agricultural sector and for compiling key agricultural indicators.

By covering all major components defined as core variables under WCA 2030, the 2024 Agricultural Census ensures international comparability and provides a solid statistical foundation for agricultural analysis.

For agricultural holdings classified as legal entities, a CAWI questionnaire was also developed. The content of the CAWI questionnaire was the same as CAPI. In addition to the questions similar to CAPI questionnaire, there were additional questions regarding personal characteristics of the company director/holder.

**4. Data Collection Strategy**

The 2024 Agricultural Census was conducted using an innovative two-phase approach that combined CAWI and CAPI methods. This hybrid model allowed both flexibility for respondents and high-quality data collection.

Phase 1: CAWI (Self-Registration)

- Conducted from November 14–23, 2024 (extended through December)
- Web-based platform accessible 24/7
- Allowed households to complete questionnaires independently

Phase 2: CAPI (Field Enumeration)

- Conducted from November 29 to December 31, 2024
- Door-to-door interviews using tablets
- GPS-enabled data collection
- Real-time data transmission

Special early enumeration was conducted in high-mountain regions (e.g., Mestia, Kazbegi, Lentekhi, Omalo, Dusheti highlands) due to harsh winter conditions.

During the first phase, households were encouraged to self-enumerate through an online platform. This approach improved respondent convenience and reduced the workload for field staff. In the second phase, trained enumerators visited households to collect data using tablets, ensuring coverage of all units, including those unable or unwilling to participate online.

Importantly, the agricultural questionnaire was administered to all eligible households identified through screening questions, ensuring that all agricultural holdings, as defined by FAO standards, were included in the census.

This methodology allowed the collection of detailed agricultural data within a relatively short timeframe while maintaining high data quality standards.

## 5. GIS and Digital Tools

The integration of Geographic Information Systems (GIS) significantly enhanced the agricultural census operation. GIS was used to delineate enumeration areas, ensuring complete and non-overlapping territorial coverage.

A key innovation of the 2024 Census was the full integration of digital tools:

- Tablets for field data collection (CAPI)
- Web platform for self-enumeration (CAWI)
- GPS tracking for spatial accuracy
- Cloud-based data storage and transmission

The use of GIS technologies enabled:

- Accurate delineation of enumeration areas
- Real-time monitoring of field operations
- Prevention of duplication
- Full territorial coverage
- Spatial data analysis and dissemination

For the agricultural census, GIS played a particularly important role in linking agricultural data with spatial information. This enables the production of geographically disaggregated statistics, which are essential for analyzing regional differences in agricultural practices and productivity.

The use of GPS-enabled devices during fieldwork ensured accurate location data for each holding, supporting spatial analysis and improving data reliability. Moreover, GIS tools facilitated real-time monitoring of field operations, helping to identify gaps and avoid duplication.

## 6. Operational Resources and Organization

The census was a large-scale national operation involving:

- Over 12,000 staff, including more than 10,000 enumerators
- Coordination across 64 municipalities
- Multi-level supervision (central, municipal, local)
- Total budget of approximately 10.5 million USD

Strong technological infrastructure supported the operation, including secure data systems and real-time communication tools.

## 7. Results and Statistical Importance

The 2024 Agricultural Census serves as the primary source of structural agricultural statistics in Georgia. Its importance lies not only in the breadth of information collected but also in its level of geographical detail.

The census provides data at the municipal level, enabling policymakers to assess regional disparities, design targeted interventions, and monitor the effectiveness of agricultural and rural development policies. This is particularly important in Georgia, where agricultural conditions vary significantly across regions.

Furthermore, the agricultural census establishes a statistical benchmark for the sector, which is used to calibrate sample surveys, improve administrative data systems, and support the compilation of national accounts and other macroeconomic indicators.

In the absence of comprehensive administrative registers for agriculture, the census remains the only source capable of delivering a complete and reliable picture of the agricultural sector.

As a result, the census database contains comprehensive information on housing conditions, population characteristics, agricultural holdings, and geographic location. 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 made it easier to create Master Sample Frame for Agriculture.

## 8. Innovations and Advantages

The 2024 Agricultural Census introduced several important innovations. The use of digital data collection tools reduced errors, improved data consistency, and accelerated data processing. The integration with the population census reduced operational costs and minimized respondent burden by avoiding multiple visits.

- Shared infrastructure and resources
- Single household visit
- Reduced operational costs

Another major advantage is the ability to directly link agricultural data with demographic and socio-economic characteristics of households. This enables more sophisticated analyses, such as examining the relationship between farm structure, labor, and household welfare.

- Simultaneous data collection
- Faster data processing and release
- Direct linkage between demographic and agricultural data
- Enhanced rural and livelihood analysis
- Better support for policy development

## 9. Lessons Learned

The experience of Georgia highlights several key lessons:

What worked well:

- Digital data collection (CAWI + CAPI)
- GPS-based geo-referencing
- Self-registration option
- Strong international cooperation

Areas for improvement:

- Earlier public awareness campaigns
- Stronger integration of administrative data
- More flexible operational planning

Recommendations:

- Invest in technology well in advance
- Conduct extensive pilot testing
- Ensure flexibility in timelines
- Strengthen communication with respondents
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## 10. Conclusion

The 2024 Agricultural Census of Georgia represents a significant step forward in the development of agricultural statistics. By aligning with international standards, adopting digital technologies, and integrating with the population census, Geostat has strengthened the quality, relevance, and usability of agricultural data.

As the main source of agricultural statistics at both national and municipal levels, the census provides a critical foundation for evidence-based policymaking and sustainable rural development.

The experience of Georgia demonstrates that a well-designed and digitally implemented agricultural census can effectively capture the complexity of the agricultural sector while ensuring high data quality and operational efficiency.

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

The existing Master Sample Frame for Agriculture is used and can be used for various surveys, since it covers various variables regarding family holdings, agricultural enterprises, households, Housing conditions, aquaculture holdings, greenhouse holdings, GIS, etc.

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