



INTEGRATED AGRICULTURE SURVEYS: STANDARDS AND COUNTRY CUSTOMIZATION

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Abstract: International initiatives have been made to improve agricultural statistics in recent years, with a focus on the aim to meet the emerging data needs with quality and in a cost-effective way in developing countries. Integrated agricultural survey methodology has been promoted in the context of those initiatives and generic standards instruments and survey systems were developed. The paper discusses the rationality and aspects of the methodology proposed, in particular the integrated approach, and the need for country customizing in the process of implementation.

keywords: agricultural statistics, integrated survey, survey customization

INTRODUCTION

Food security became one of the major global challenges for the next years. It has been a priority and a challenge for most countries for decades. Adequate affordable agricultural production is one of the aspects addressed by policymakers, in particular considering the context of sharp demand growth. On the other hand, attention to the environment is paramount to conserve the capacity of production over time.

Different detailed information regarding the multiple aspects involved in agricultural activities such as production systems, farmer behaviour, conditions of natural resources, production externalities, and marketing is needed for informed decision making. According to FAO estimates, 277 USD billions were invested in agriculture in low and middle-low income countries in 2017, not including the farmer's investment with their resources (FAOSTAT). Despite the considerable amount of money invested in agriculture every year, decisions by governments, agribusiness companies and farmers are made with great uncertainty.

Since the '80s, there is a serious decline in the quantity and quality of agricultural statistics (World Bank, 2011). An evaluation pointed out that the vast majority of the 75 lower-income countries eligible for International Development Association (IDA) aid have not conducted any agricultural annual survey in the previous 5 years (GSARS 2018, p. 4).

It is not rare that national agricultural statistical systems are based on decennial-like censuses, whose data become obsolete quickly; and non-probabilistic sample surveys, which do not provide error estimates or precision measurement. Besides, an increasing national and international demand for statistics and indicators is observed consistently.

Since then, several activities to assess agricultural statistical systems and technical assistance, at country level, were performed by International Organizations, including the World Bank and Food and Agriculture Organization. (World Bank, 2011; FAO, 2019)

It is remarkable the extension of challenges found. The major problems are related to the lack of human and financial resources devoted to the maintenance of agricultural surveys what impacts directly the quality of both fieldwork and sampling frame and consequently reliability of results. It is commonly verified that frame limitations and other coverage issues are present in most agricultural survey systems performed in developing countries, according to the series of the in-depth country assessment of the statistical capacity conducted in the context of Strategic Plans for Agricultural and Rural Statistics, in many developing countries in Africa and Asia, the last years. (GSARS, 2014a, 2014b).

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Important initiatives have been made to improve agricultural statistics in recent years due to mentioned evidence of a serious decline in the quantity and quality of agricultural statistics for informed decision making at the country level. Efforts to improve agricultural statistics include the development of the Global Strategy to Improve the Rural and Agricultural Statistics that count on input from stakeholders, including national statistical offices and ministries of agriculture, and several regional and international organizations. The paper has a focus on the FAO AGRISurvey program and the 50x2030 Initiative to Close the Agricultural Data Gap.

To ensure the coverage of the contemporary emergent data needs, both initiatives have been promoted integrated agricultural survey methodologies. The paper discusses the rationality and aspects of the methodologies proposed, in particular the integrated approach, and the need for country customizing in the process of implementation.

INTEGRATED AGRICULTURAL SURVEY STANDARD

The Global Strategy to improve Agricultural and Rural Statistics pointed out the need to go beyond the traditional agricultural statistics and proposed Minimum Set of Core Data (MSCD), including core variables related to crop and livestock productions and associated socio-economic data and the territorial land cover environment.

AGRIS system meant to inform policy design and implementation, improve market efficiency and support research and was conceived as an invaluable data source and provides the framework for designing, monitoring and evaluating any agricultural or rural policy or investment. The proposed generic AGRIS questionnaires cover most of the farm-level MSCD data requirements and provide basic data for monitoring the relevant indicators for the Sustainable Development Goals (SDG), based on farm surveys. The 50x20310 Initiative incorporate the same objectives and address as well the measurement of household income and living conditions and rural development indicators such as the Comprehensive Africa Agricultural Development Programme (CAADP) indicators.

The general result framework proposed determines several aspects of the survey system. First of all, the objective of producing good quality data that requires regularly organized quality farm-level surveys with certain characteristics to ensure relevance (data needs), "objectivity (absence of bias), reliability (known precision), cleanness (absence of outliers), completeness (minimum of missing data), timeliness (availability of preceding period) and coherence (integrated survey)" (GSARS, 2018, p. 3).

The survey system proposed follows an integrated approach to meet the data needs with quality and in a cost-effective way. For this purpose, a set of coordinated survey instruments was developed that address several themes of interest in agriculture and rural development. The methodology foresees a core module and several rotating modules, comprising a survey program cycle of several years. The core module comprises basic items and is applied every year. The rotating modules are thematic and are administered periodically, covering economic, social, technical and environmental aspects related to agriculture (GSARS, 2018; 50x50x30 Initiative, 2021)

Most of the concepts and definitions of the variables included in the modules, as well as derived variables and indicators can be found in the AGRIS Handbook (GSARS, 2018) and/or in the World Programme for the Census of Agriculture 2020 (FAO, 2015). Additional methodological aspects related to data collection, indicators computation and data analysis of the agricultural aspects covered by the system can be found in a series of documents and guidelines developed by the Global Strategy to Improve Agricultural and Rural Statistics (See <https://gsars.org/en/resource-center/>).

The Integrated Agricultural Survey approach combines in the same survey system a comprehensive coverage of agricultural activities and the most relevant themes related to the agricultural and rural sectors. It was conceived as a way to ensure not only comprehensiveness in terms of coverage and thematic enlargement but also to ensure concept standardization, result coherence, resources sharing, field and desk work optimization and particularly, cost-effectiveness.

ADVANTAGES OF THE INTEGRATED APPROACH

A system with different standalone surveys dedicated to specific activities could go more deeply into the investigation of their characteristics. However, differences in concepts and reference periods are likely to happen. This could jeopardize the compilation of data referred to the national agricultural as a whole. Besides, some countries adopt limited survey programs which cover only crops, only main season crops, only the household sector, etc. In these situations, it is not possible to properly measure the overall farm income, labour productivity or the sustainability of the agricultural activities and face the production of the farm survey-based SDG 2 indicators. Even in the case of a system with sound coverage of the target population and activities, separate surveys could bring challenges in terms of concepts and definitions and could result in a costly solution. Most farms combine different crops, and livestock activities and a general sample and unified data collection instrument tend to be more efficient.

In many countries, a sampling frame is built based on lists from population census, census of agriculture or a combination of both. In other cases, either an area frame approach, or a list frame from administrative records or based double stage sampling approach having enumeration areas or villages and agricultural households as primary and secondary sampling unities are used, as well as a multiple frame approach. Regardless of the alternative, it is usually observed that the units related to the non-household sector are neglected and a list frame including large and specialized farms are not used or poorly developed in developing countries. As a result, under coverage can lead to relevant sub estimation and jeopardise the general picture of the country's agriculture.

In the integrated approach, the survey system is based on a comprehensive Master Sampling Frame avoiding coverage deficiencies and bringing efficiency. Besides, the MSF and the integrated approach helps to ensure coherent results. The sample and thereby, all information collected are referred by the same frameset, providing more consistency among results (GSARS, 2015).

The integrated survey is also a way to cover different themes minimizing the respondent burden. There is a broad consensus that agricultural statistics should go beyond the traditional basic data. The use by different users and, particularly, the policymaking and monitoring require nowadays data on social, economic and environmental aspects related to farming.

Questions for the data required every year are included in a CORE module, and others are included periodically along a survey cycle, through rotating modules. Beside farm-related themes, the 50x2030 Initiative proposal envisages the possibility to carry out the collection of household characteristics, including concerning the rural non-agricultural household in rural areas, in an integrated operation.

Integrated operations could contribute to greater efficiency regarding the fieldwork and survey cycle as a whole. The adoption of the Master Sampling Frame facilitates the sample allocation and management over time as well as the field-work organization. Combining different modules applied to the same sample and operation is possible to get a higher amount of information with lower cost, in an efficient manner. It also expands the analytical possibilities through the crosschecking of the data collected.

Typically, an integrated survey system combines multiple objectives and consequently richer but lengthier questionnaires. However, careful consideration should be taken regarding the trade-off among thematic coverage respondent burden and data quantity and quality. Different possible schemas of questionnaire composition and distribution along the survey cycles are discussed further as well as the convenience of the application of each one.

COUNTRY CUSTOMIZATION

The AGRISurvey program and the 50x2030 Initiative either supports countries to build and implement an Agricultural Survey Program or to improve the existing program depending on the country's needs, wishes, capacity, and potential for technical and financial take-over by the respective governments. The direction chosen builds on the countries' existing data systems and survey programs

and is supported through an assessment to gauge countries' capacities and data needs. The experience already acquired in the technical assistance in several countries demonstrated that the practical implementation of the integrated agriculture survey implies extensive customization for different reasons.

The customization involves the adaptation of the standard instruments and recommendations according to the country's specificities, the country agriculture characteristics, country policy priorities, the respondents' profile, and technical and resource capacities of the country. A specific survey system business case should be tailored to the individual country's data and capacity development needs, data user demands, and existing survey program and statistical system. The identification of data needs is the initial crucial step and determine the subsequence process of questionnaire customization, survey and sampling design, and data collection operation definition and final data curation for dissemination, and data analysis procedures.

Punctual adaptation related to the main country agricultural activities, aspects related to national legislation, and local terminologies and relevance of the different aspects present in the standard survey proposals is obviously necessary. But customization normally goes beyond these aspects.

Although a common general agricultural survey system objective is shared by all countries, it is normally unfolded in specific sub-objectives with great impact on the survey design and organization. Emphasis could be done to National Accounts requirements', eventually including quarterly data production estimates, or to annual or seasonal data, linked to agriculture policy, aiming or not contribute early production estimates. These different perspectives determine different solutions regarding the number of visits during the agricultural year cycle and the structure and content of the survey instruments used.

Country agricultural holding profiles, literacy also determine other customization aspects. For example, the self-declaration approach is considered reasonable in some countries while objective measurements are recommended in other countries. Infrastructure available and statistical practices have also an influence. In some countries, the data collection is concentrated in a relatively short period of times with the temporary engagement of a large number of enumerators in a concentrated operation. In other countries, the data collection is spread across the year and conducted by a permanent staff, and the survey instruments should be adapted accordingly.

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