



Global Strategy
IMPROVING AG-STATISTICS



Narrative progress report January-June 2013

Research Plan



Programme of Activities 2013

The programme of activities for 2013 was discussed at the high level meeting held in FAO Headquarters in December 2012 and was approved by the Global Steering Committee in February 2013.

The plan of action for each research topic and main achievements will be discussed at the Scientific Advisory Committee meeting that will be held at FAO Headquarters on 18 and 19 July.

The provisional timetable of the meeting of the Scientific Advisory Committee is attached to this progress narrative report.

Main points

- The progress of the implementation has been assessed, for each research topic, against the work plan for 2013.
- For all research topics, the plan of action has been defined and relevant information concerning ongoing or already completed research activities has been collected.
- For 10 research topics, significant progress has been made: the partnerships have been established, the relevant literature has been identified and reviewed and the report will be delivered by the end of June 2013, as foreseen in the plan of action. The next steps till the end of 2013 are: identify and analyse gaps and remaining methodological issues and propose possible solutions; organize a workshop on the results of these activities; test the proposed methodological improvements (where appropriate, field tests will be designed and conducted).
- For 8 research topics, the activities have started, but still require efforts for reaching the objectives; and for the research topic “Improving methods for estimating livestock and livestock products” the activities are behind of expectations in terms of delivery.
- Identifying the most qualified partners, possibly from developing countries, which can contribute to the implementation of the research topics foreseen in the work plan for 2013 has presented some difficulties, since some of them are not available at the moment.
- The administrative work for establishing the partnerships has been long and complex. Contractual arrangements are very time consuming, particularly at the initial stages of the partnership. This has delayed the implementation for several research topics.

In order to facilitate the reading of the document, a system of traffic lights is proposed. A black circle indicates:

-    Activities which have not yet started or are behind of expectations in terms of delivery
-    Activities which have started but still require efforts for reaching the objectives
-    Significant progress has been made

Some research topics are grouped in thematic domains; e.g., the research topics 3.1.1 Conceptual framework (SEEA – Agri) and 3.1.2 Integrated survey framework are grouped under the thematic domain 3.1 Framework for agricultural statistics.

Output 3 - New cost effective methods for data collection, analysis and dissemination developed and disseminated

3.1

Framework for agricultural statistics

The activities for this thematic domain were foreseen to initiate in 2012 and to be completed in 2013. In fact, the implementation is initiated in 2013 and will be finalized in 2014.

3.1.1 The Conceptual framework (SEEA – Agri)

The conceptual framework (SEEA-AGRI) can be defined as a comprehensive and standard satellite account for the integration of agricultural and environmental data based upon internationally agreed concepts, definitions, classifications and inter-related tables and

accounts universally valid, regardless of the stage of economic development reached by the country.

Achievements



The collaboration has been agreed with Carl Obst, Australia and other FAO Divisions on the following topics: forestry, fishery, land, water, energy and agriculture.

3.1.2 The Integrated survey framework

This research topic focuses on the strategic objective of producing integrated and consistent agricultural statistics on phenomena related to three different target populations, the units of which are: agricultural plots (for what concerns the environmental aspects); households (for the social aspect) and farms (for the economic dimension).

The stress on integration allows achieving a better coverage of specific statistics for which a suitable solution cannot be found by surveying only a specific units. The research focuses mainly on:

- sampling design methods (how to collect the data of interest);
- estimation methods (how to produce estimators of the target parameters using existing data)
- quality framework.

Achievements



The research topic is being implemented with the support of researchers from the Mozambique National Institute of Statistics, the Italian National Institute of Statistics and the University la Sapienza of Rome. A first conceptual note for integrated survey framework has been released and discussed in a internal seminar at FAO.

Improved methodologies for master sampling frames

The master sample frame is the sampling frame to be used for selecting probability based samples which allow collecting data concerning the land, the farms and, in case the households, for producing some social statistics. According to the characteristics of the country (kind of agriculture, statistical system, landscape, size of farms and fields etc.) different approaches are the most reliable for producing agricultural and rural statistics. The kind of area frame, the way of linking the list and the area frame, the way of using the geographic information varies according to the specific situations and the aim of the research is improving these methods.

3.2

3.2.1 Identifying the most appropriate area frame for specific landscape types

The research identifies the most appropriate geographic sampling frames, called area frame, for the different categories of countries, according to the characteristics of the agriculture of the country.

Achievements



A collaboration has been set up with Javier Gallego, Joint Research Centre and Luis Ambrosio, University of Madrid, Spain. The report on the review of related projects and literature is being completed and will be delivered by the end of June 2013. The implementation of the research topic is on time.

3.2.2 Improving methods for linking area frames with list frames

The research identifies the most appropriate list frames for the different categories of countries and improves the methods available in the literature for combining area frames with list frames at the frame level, as well as at the estimator level; taking into consideration the different kinds

	<p>of area and list frame which can be the most appropriate for the different kinds of countries.</p> <p>Achievements </p> <p>A collaboration has been set up with Cristiano Ferraz, University of Pernambuco, Brazil. The report on the review of related projects and literature is being completed and will be delivered by the end of June 2013. The implementation of the research topic is on time.</p> <p>3.2.3 Improving the use of GPS, GIS and RS for setting up a master sampling frame</p> <p>The traditional approach to set up an area sampling frame was based on collection of printed maps and aerial photographs and involved a large amount of manual work. Current technologies, in particular the ability of GIS to efficiently handle different layers of geographic information, in particular RS-based thematic maps, have made this task much lighter. Research is being conducted for improving the use of GPS, GIS and remote sensing for setting up a master sampling frame for integrated survey for the various categories of countries, according to the landscape, the economic structure, the size of farms, the spatial distribution of important crops and livestock species, and the kind of data sources available in the country.</p> <p>Achievements </p> <p>A collaboration has been set up with Luis Iglesias, University of Madrid, Spain. The report on the review of related projects and literature is being completed and will be delivered by the end of June 2013. The implementation of the research topic is on time.</p>
<p>3.3</p>	<p>Improving methods for estimating cost of production in developing countries</p> <p>The importance of rural economy is very high in several developing countries and the economical sustainability of the farms, particularly in a period of price volatility, is strictly linked to their cost structure. In order to allow evidence based policies for food security and poverty reduction, accurate and comparable estimates are needed.</p> <p>Achievements </p> <p>The activities for this research topic initiated in 2012. A draft of the handbook on best practices has been produced and a meeting of several countries has been held in Vietnam in order to facilitate the collection of best practices applicable in developing countries. The literature review is being carried out. The implementation is on time.</p>
<p>3.4</p>	<p>Improving methods for estimating livestock and livestock products</p> <p>The aim is improving the methods for collecting data on livestock, including cattle, sheep, pigs, goats, and poultry, because livestock production is a major contributor to food supply and income.</p> <p>Achievements </p> <p>Till now an appropriate and available partner from a developing country has not been identified; thus, likely, most of the activities foreseen for 2013 will be postponed to 2014.</p>
<p>3.5</p>	<p>Improving methods for estimating post harvest losses</p> <p>Quantitative food losses refer to the decrease in edible food mass available for human consumption throughout the different segments of the supply chain. In addition to</p>

quantitative losses, food products can also face a deterioration of quality, leading to a loss of economic and nutritional value. Post harvest losses can have a strong impact on food security in several developing countries.

The research will analyze the main factors which influence post harvest losses in order to identify the most appropriate methodology/methodologies for estimating them.

Achievements

A collaboration has been established with Robert VanOtterdijk, FAO – AGS, ERS - USDA and Joint Research Centre. Due to the delay in the selection of the partners, **likely the field tests will be designed and conducted in 2014.**

Improving methods for crops estimates

The problem of estimating the area, the yield and thus the production of crops still has not a satisfactory solution. The problem becomes even more difficult to solve in case of mixed crops, repeated and continuous cropping and when the yield of root crops has to be estimated, like for the very important crop cassava. The result of this research will be improved methodologies for estimating area, yield and production of important crops in developing countries, at different stages of the growing season, taking into consideration the different kinds of crops and typologies of countries.

3.6.1 improvement of estimation of crop area, yield and production

The aim of this research topic is improving the methods for:

1. Estimating the area of crops at the different stages of the growing season.
2. Estimating the yield of crops at the different stages of the growing season.
3. Yield forecasting (mainly agro-meteorological models) and early warning systems.

Achievements

3.6

For the sub-topic 1, a collaboration with Mike Craig, USDA, USA has been established, for the sub-topic 2, with George Hanuschak, USDA, USA and for sub-topic 3 with Bruno Basso, Michigan State University, USA. The report on the review of related projects and literature is being completed and will be delivered by the end of June 2013. The implementation of the research topic **is on time.**

3.6.2 Improving methods for estimating crop area, yield, production of mixed crops, repeated and continuous cropping

In many countries, the practice of sowing mixed crops in the same field is very common. Mixed cropping provide protection to farmers against weather uncertainties. A standard statistical methodology for estimating the area and the yield under mixed crops, repeated and continuous crops needs to be developed.

Achievements

After a careful analysis, the partner institution which seems to be particularly appropriate for improving the methods for estimating crop area, yield and production of mixed crops, repeated and continuous cropping is the Indian Agricultural Statistics Research Institute (IASRI), given its experience in this field. The content of the plan of action was agreed in April; however the IASRI can cooperate only in case the Indian Ministry of Agriculture (ICAR) approves the plan of action and the cooperation. Unfortunately, the authorization is still

pending; thus, likely, the design and conducting of the field tests **will be postponed to 2014**.

3.6.3 Developing methods for estimating yields of root crops

The difficulties in properly estimating the yield of crops is more challenging for root crops, particularly when the crop is harvested in small quantities, over extended periods of time because of better in-ground storability, often even spanning across agricultural seasons. While different methods have been proposed and applied in the field, the lack of best practices remains a constraining factor in providing opportune technical advice to countries on the correct method.

Achievements

In order to create synergies, an agreement has been reached with the World Bank for collaborating in this field. After a quick literature review, the field tests have been designed. The data collection will start for cassava in fall 2013.

Improving the methodology for using Remote Sensing

A document on best practices for crop area estimation with remote sensing has been prepared by GEOSS (GEOSS, 2009), focusing on the use of remote sensing data as an auxiliary variable for improving the precision of estimates for specific crops. However, several methodological aspects of the use of remote sensing data for producing agricultural and rural statistics still have to be improved.

3.7.1 Developing more efficient and accurate methods for using remote sensing

More efficient and robust statistical methods for using remote sensing data at the design level as well as at the estimator level are being developed under this research topic, taking into consideration also the application of very high resolution remote sensing data and the quality of data available free of charge (such as Google Earth).

Achievements

3.7

A collaboration with Roberto Benedetti, University of Chieti-Pescara, Italy and Javier Gallego, Joint Research Centre has been established. The report on the review of related projects and literature is being completed and will be delivered by the end of June 2013. The implementation of the research topic **is on time**.

3.7.2 Evaluating the cost-efficiency of remote sensing in developing countries

This research topic aims at assessing the cost efficiency of the use of remote sensing in developing countries, and improving the methods for assessing the cost-efficiency of remote sensing, in order to take into consideration the specificities of developing countries (labor cost, field size, kind of crops, etc.) and the different approaches which can be followed for using remote sensing data for producing agricultural statistics.

Achievements

After a careful analysis, the partner which seemed to be particularly appropriate for evaluating the cost-efficiency of remote sensing in developing countries and for improving available methodology is Redouane Arrach, Director of the Division of Statistics and Information of the

	<p>Ministry of Agriculture and Fisheries, Morocco and his group. Due to the delay in the selection of the partner the implementation of this research topic is late and likely the design of the field tests will be postponed to 2014.</p> <p>3.7.3 Improving methods for using existing land cover – land use data bases</p> <p>Land cover or land use databases are produced for several purposes. The aim of this research topic is developing standard methodologies for using these database for producing agricultural statistics.</p> <p>Achievements </p> <p>A collaboration with John Latham and Ilaria Rosati, FAO-NRL geospatial unit, within the Land and Water Division, FAO, has been established. The report on the review of related projects and literature is being completed and will be delivered by the end of June 2013. The implementation of the research topic is on time.</p>
<p>3.8</p>	<p>Adoption of new technology for field data capture, compilation, transfer and dissemination</p> <p>New technologies such as GPS, PDA, remotely sensed data from satellite and aircraft as well as geographic information systems (GIS) will play an important role in the development of cost effective data collection methods and the improvement of data quality.</p> <p>Research activities for this topic initiate in 2013 and will be completed in 2014.</p> <p>Achievements </p> <p>In 2013, a prototype for Computer Assisted Personal Interview (CAPI) is being developed in partnership with the World Bank. The implementation of the research topic is on time.</p>
<p>3.9</p>	<p>Improving quality and use of administrative data to produce agricultural statistics</p> <p>Methods for assessing and improving the quality of administrative are needed. Moreover, there is the need to identify where, how and under which conditions, administrative data can be used for producing cost-efficient agricultural, rural and agri-environmental statistics.</p> <p>Achievements </p> <p>The research of the partner from a developing country took much time; thus the literature review still has to be initiated. The implementation of the research project is late and thus the next activities in 2013 will not go beyond the identification and analysis of gaps and remaining methodological issues and the proposal of possible solutions.</p>
<p>3.10</p>	<p>Improving methodology of food balance sheets</p> <p>The accuracy of FBS, typically compiled at the national level, is dependent on the reliability of the underlying basic statistics of supply and utilization of foods, their nutritive value and conversion factors that govern the transformation of primary commodities into processed products and vice versa. Through obtaining empirical evidence supported by model-based estimates, this research topic seeks to establish and verify appropriate technical conversion factors.</p>

	<p>Achievements ● ● ●</p> <p>The literature review still has to be initiated.</p>
<p>3.11</p>	<p>Improving methodology for small scale fishery</p> <p>Accurate estimations of small scale fisheries and aquaculture are a challenge in many countries. A module to be included in the questionnaires for agricultural censuses which will collect information, particularly on the socio-economic characteristics of small scale fishery and aquaculture is being developed.</p> <p>Achievements ● ● ●</p> <p>A partnership with Sachiko Tsuji, Senior Fishery Statistician FIPS – FAO and Jennifer Gee has been established. The report on the review of related projects and literature is being completed and will be delivered by 10 July.</p>
<p>3.12</p>	<p>Better integration of geographic information and statistics</p> <p>Better methods are needed for taking advantage of geographic information for producing agricultural statistics in the field of data collection, analysis and dissemination and for connecting statistical data collected through sample surveys (which can be represented by points in the space) and other kinds of geo-referenced data (polygons and lines).</p> <p>3.12.1 Developing robust and statistically based methods for spatial disaggregation and for integration of various kinds of geographical information and geo-referenced survey data</p> <p>The result of the research activities will be new, more effective and robust methods for the use of geographic information to produce more accurate agricultural and rural statistics. In addition, more efficient methods will be developed for small area estimation using geographic information as auxiliary variables and for integrating various kinds of geographical information and geo-referenced survey data, which is essential for crop forecasting and early warning.</p> <p>Achievements ● ● ●</p> <p>A collaboration with Monica Pratesi, University of Pisa, (data disaggregation and interpolation), Alessandra Petrucci, University of Firenze, (data aggregation and integration) and Simone Maffei, Italy (assessment of the impact of these operations on the models) has been established. The report on the review of related projects and literature is being completed and will be delivered by the end of June 2013. The implementation of the research topic is on time.</p>

