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(ICAS-4)**

**Advancing Statistical Integration and Analysis
(ASIA)**

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Book of Abstracts

**ICAS-4 Programme Committee
and
Organizing Committee**

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PREFACE

This *Book of Abstracts* of the Fourth International Conference on Agriculture Statistics (ICAS-4) on 22-24 October 2007 in Beijing, China, comprises about 80 abstracts under the theme of the Conference, “Advancing Statistical Integration and Analysis” (ASIA), and highlights many new directions and the latest developments in this field.

While the abstracts are arranged in this book according to the order of the sessions of the ICAS-4 Conference Programme, readers may discern that they are, in fact, interconnected by the following thematic topics (the session numbers are within the parentheses):

- Agricultural and rural statistical development: indicators (2.3), capacity building (6.3), and typology (10.3);
- Agricultural surveys and censuses: experience (3.1), methodology (7.1), and scope (11.1);
- Challenge in data needs: models (8.1) and scientific research (8.2);
- Data quality & comparability: system (3.2), dissemination (7.2), and database (11.2);
- Integration of agricultural statistics: system (2.1), accounts (6.1), and organization (10.1);
- Methodology and technology: remote sensing (2.2), enumeration unit (6.2), and forecasting (10.2);
and
- New domains & dimensions: MDGs (3.3), labour (7.3), and input (11.3).

ICAS-4 is the result of a truly international cooperation. Its success is due to the generous hospitality of the Chinese Government outstandingly represented by the National Bureau of Statistics (NBS) of China, the intellectual leadership of the members of the ICAS-4 Scientific Programme Committee, the excellent efforts of the ICAS-4 Organizing Committee and its Secretariat Team and the invaluable financial sponsorship of AfDB, Eurostat, FAO, ISI, UNSD, USDA and the World Bank in supporting the participants from developing countries.

ICAS-4 provides a unique global forum. Authors of ICAS-4 are coming from every continent. They are not only the producers but also the users of agricultural statistics; not only statisticians but also researchers, analysts and policy- and decision-makers from academia, business, development community, government agencies, international organizations and the private sector. While the plenary keynote speeches are delivered by prominent speakers, presentations and discussions at the round tables and parallel sessions are led by distinguished experts from all over the world.

The hard work of Martha Farrar (USDA), Editor, Xiaoning Gong (FAO), Bai Xianhong (NBS), Pierre Castagnoli (FAO), Compilers of this *Book of Abstracts*, is gratefully acknowledged.

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The State of Agricultural Statistics and New Challenges

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Abstract: Thanks to the advances in information technology the quantity of statistical data compiled, processed and disseminated has grown significantly over the past decade. In addition to the increased volume of statistics disseminated by the primary suppliers, we observe an even faster growing dissemination of re-packaged and re-processed data by secondary national and international suppliers.

It is difficult to say the same for the quality of these statistics when we consider the six dimensions of quality, namely relevance, reliability, comparability, consistency, accessibility and timeliness. We observe that achievements have been greater in some dimensions (such as timeliness and accessibility), modest in some (such as consistency, relevance) and less so in others (such as reliability, comparability). This picture which is valid for statistics in general is also valid for agricultural statistics.

Agricultural statistics is probably one of the most neglected and taken for granted domains both at the national and international levels. This has partly been the result of the diminishing priority given to agriculture as an engine of growth and partly due to the apparent diminishing share of agriculture as an economic entity. Furthermore, the supply of agricultural statistics has not adapted itself to the changing demands of users; hence despite its growing volume the gap between supply and demand for agricultural statistics has been widening.

As others, agricultural statistics can be improved significantly by responding better to new user demands such as vertical integration from producers to consumers, horizontal integration between agricultural and non-agricultural sectors, spatial integration from farm to sub national to national to international, and integration of real and monetary dimensions.

The key to these integrations and to harvesting the associated value added is the use of international standards, norms, definitions, and classifications. As markets for statistics have not developed and as they are still considered as free public goods, there is an important role for the international organizations to play in coordination, capacity building, and standards setting for the compilation, dissemination, and exchange of statistics without limiting their flexibility to adapt to national needs. As the economies are globalizing so are the statistics which are the reflections of such developments. The value added in reflecting the total picture can not be realized if the parts are not functioning simultaneously. Better agricultural statistics depends on better statistics overall and vice-versa.

Agricultural and Rural Statistical Development in China

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Abstract: This paper provides a review of statistical survey development in rural China. Statistical survey in agriculture and rural China can be described as in three stages:

1. The initial stage of agricultural production statistics,
2. A transition period to agro-economy statistics, and
3. A development stage in terms of rural socio-economic statistics.

The characteristics of statistical surveys in rural China which focus on socio-economic development in the Chinese rural sector are collected and monitored as something relatively independent in terms of statistical objects and system of indices. The system of indices covers the “three rural issues” of agricultural production, rural households and rural areas.

The Chinese rural statistical survey system is based primarily on the census with sample surveys playing a supplemental but important role of providing a more “comprehensive” and “specific” focus. Contents of rural survey include the following: household income and expenses survey, crop yield survey, rural socio-economic survey on employment and flow of rural labour force and community development, price of farm produce, monitoring of economic development, which covers rural poverty and determination of society well-being.

The paper discusses how information sources for government and the public have been expanded due to statistical survey in rural China which has greatly increased the availability of data and information on agriculture, rural areas and farmers. Survey provides a scientific basis for government at all levels to formulate strategic planning and policies concerning agriculture and rural areas, and for macro-level decision-making. Information service is provided to farmers and other users for purpose of production and business decision-making.

Statistical survey development in rural China has help promote international exchange, cooperation, and integration. An example of this is the development of a system of indices that is compact in structure and uniform in standards to meet the requirements of government decision-makers at all levels and national accounts.

Agricultural Statistics as an Integral Component of the National Statistical System in Poland

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Abstract: The paper presents agricultural statistics and its position in the system of official statistics in Poland. It presents the organisation of the statistical system, its legal basis, the role and tasks of the Central Statistical Office and regional offices, and also outlines the role and tasks of the government administration, as well as, research institutes and agencies in shaping agricultural statistics in Poland.

A number of issues connected with agricultural statistics are reflected upon in the paper. The paper attempts to integrate the conceptual need for information by the agriculture and rural population to ensure that all of the statistical data users' information needs are met. Since current information is extremely important not only to the stakeholders, there is a need to develop and expand the knowledge of agriculture by purposely including information needs of local societies, as well as, social and professional information users in the rural population. The information requirements need to include sustainable agriculture and to ensure coverage by the current series of production statistics in addition to addressing the statistical needs from a wider and more problematic perspective – the rural labour force, food safety, agri-environmental statistics and other aspects of rural areas and agriculture which are of major concerns of modern societies.

In the context of such a wide presentation of agricultural statistics and in relation to the increased future needs for information – this paper addresses the question whether production agricultural statistics are losing their traditional role or are becoming an integrated part of economic data required to sustain modern societies' economic growth.

Agriculture Statistics Innovation at Statistics Netherlands

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Abstract: The main source of agricultural statistics at Statistics Netherlands (SN) is the yearly Farm Structure Survey (FSS) which focuses on the physical production of agricultural activities. The FSS is supplemented with a set of 10 smaller surveys that provides data on animal production, biological production, and so forth. Although there is a link with the FSS, results of these smaller surveys are not integrated with the FSS, nor is financial data such as agriculture accounts and prices, tax data, and employment data integrated with FSS. Additionally, the use of existing registrations on cattle and crops is limited.

Due to changing circumstances, SN is being pressured to redesign the way its statistics are produced. Key developments are: the changing data needs of customers, growing competition, pressure to reduce survey burden, emerging new technologies and methodologies and, first and foremost, the need for increased efficiency due to budget cuts.

For agriculture statistics on the input-side, this means that individual questions or even whole surveys must be substituted by data from existing registrations as much as possible. For agriculture statistics on the output-side, customers want data more quickly and they want more integration between different domains such as agriculture, rural areas, environmental issues and physical and financial aspects. The strategy to meet these demands is to use existing registers as much as possible and to integrate the data from these registers with existing but adapted surveys.

This leads to the situation where there is one core of agriculture units (the agriculture register/AR). The AR is the basis for the FSS and the smaller surveys which are integrated to one overall dataset. The AR, however, is also the main integration frame to existing agriculture registrations on cattle, crops and so forth. This means coupling of datasets usually on the basis of comparable identifiers.

The units of the AR are also connected to units in the main Business Register (BR) of SN. This connection opens the door to connecting data on agricultural units to all kinds of statistics based on the BR such as tax data, data on employment, income and R&D. In this case, the coupling and integration of datasets is more complex as one has to deal with different identifiers. The difference between a functional and an institutional approach is also a key issue in this connection.

For the longer run the strategy is to connect new data sources on both sides of the core, AR and BR, step by step to one overall and integrated dataset on the agricultural domain.

Lessons Learned from the South Africa 2002 Census of Commercial Agriculture

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Abstract: The success of any census depends on the planning, monitoring and evaluation of the project. For smooth execution of these phases, support and buy-in from important stakeholders, including government, organized agriculture, academic institutions, individual farmers and agri-business is vital. Political stability and the democratic state of the country are also crucial.

The paper discusses the lessons learned from the 2002 Census of Commercial Agriculture conducted in South Africa. The content look onto the challenges encountered on setting the population frame, the instrument/tool, data collection and analysis. The conclusion notes the importance of identifying the needs and the available resources for running a smooth census.

Integration of Agricultural Statistics System in India

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Abstract: Eradication of extreme poverty and achievement of equitable and sustainable economic growth has to be the ultimate goal. This paper discusses and illustrates how agricultural statistics play a vital role in achieving this goal, especially when national economies are predominantly agrarian. Integration may be done at various levels of administrative units at which independent developmental plans are made with a minimum of two levels: national and sub-national. The national level model may be followed at sub-national levels. The objectives for integration can be to produce land use statistics, crop statistics, irrigation statistics, inputs statistics, price statistics, livestock, indices and indicators.

Agriculture related data are generated by diverse government agencies. At the national level, a “core” group consisting of members from all agricultural statistics source agencies should be formed and guided by a common vision of generating timely and reliable statistics encompassing the entire agriculture sector. This group should engage itself in dialogue with the data users and research institutes to establish the adoption of standardized information and communication tools and a fixed time schedule of data dissemination to greatly enhance the faith of data users.

To provide the basic information for the population engaged in agriculture with the intent of helping them achieve improved living standards, proper policy interventions are required. Eradicating extreme poverty and hunger, raising education levels, taking care of health needs, promoting gender equality and ensuring environmental sustainability necessitate integration of agricultural statistics with education, health, gender and environment statistics, among others. While integration within itself involves various Ministry organization plus other agencies, integration outside will also involve additional Ministries. Thus, a powerful integration model is required to include agro-based industries. Public-private partnership for funding and sharing of benefits also needs exploration.

Creating Agricultural Drought Statistics for Developing Countries Using Historic Data from Satellite Images

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Abstract: Greenness indices (e.g. NDVI) from satellite images have been used to demonstrate detection of drought in regional studies from various parts of the world. This paper discusses how a comprehensive drought database at national or continental scale can be easily created using well established formulas like the Vegetation Condition Index (Kogan 1998) and Percent Carrying Capacity Index (Gurusamy, 2005). These methods involve the use of 20 years of available satellite imagery greenness data.

The TRMM satellite data also provides excellent rainfall information based on satellite imagery for the past 10 years. The utility of these satellite data and derived indices as proxies of rainfall data has not been verified systematically.

The paper discusses a study using freely available satellite imagery that provides good spatial and temporal resolution drought statistics to a developing country (India), where rarity of spatially and temporally continuous rainfall data hinders disaster management decision processes.

Drought disaster management involves introduction of “insurance” schemes which rely on historic rainfall data at meaningful spatial resolution for fixing appropriate premiums based on probability of drought proneness of an area. Currently weather stations are located hundreds of kilometres away from each other and provide discontinuous data, whereas free satellite data are available at 1 km, 8 km, and 16 km spatial resolutions at every 10 day interval for more than 10 years. Insurance claims are also made based on the available current rainfall data which can vary significantly within the 100 square kilometre area that a weather station would normally cover. Thus, the availability of free satellite imagery would be a boon to farmers located too far from a trusted weather station data source. Creating drought statistics for developing countries using historic satellite images would help the farmer, insurance agencies and the government to make more meaningful decisions related to drought disaster management.

Stochastic Optimization Model Using Remote Sensing Technologies for Agricultural Management in Africa

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Abstract: Information communication technology is the key to agricultural development if least developed countries (LDCs) are to optimize agricultural management (Di Bella, 2004). Many systems have been developed that collect vast amount of vital electronic data, perform data analysis and disseminate information. However, due to limited accessibility to these ICTs, LDCs still lag behind in exploiting technologies for timely decision making in agricultural management (Elisabetta Carfagna, 2005).

Agricultural management in Africa is hampered by among other parameters the uncertainties that surround the following questions: when is the next rainy season? How long are the next rains expected to take? What is the likely intensity of these rains? Are they sustainable? What if we planted now? Are we likely to gain if we waited for two more months? How do we determine the disease or pest attaching our plants? How about if we used the other chemical/fertilizer?

Although remote sensing technologies are not popularly used in Africa, in this paper we explore available advanced remote sensing technology that can be exploited to the advantage of agricultural sustainability and modernization in Africa region.

We also develop and present a model that attempts to minimize the common phenomenon in LDCs of time wastage before planting of crops, hence optimization of agricultural management in Africa. The model developed here shall be an important decision making tool for any agricultural manager based at a given farm and accessing remote sensing technologies such as satellite data.

We recommend the use of remote sensing data for use in obtaining the best results from the optimization model presented in this paper.

Research and Application of Remote Sensing Technology in Chinese Agricultural Statistics

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Abstract: Agriculture is the basis of national economy of China. Agricultural statistics is one of the key points of Chinese statistic work. Nowadays, the worldwide Earth Observation System (EOS) by Remote Sensing has been increasingly improved and the multi-temporal and multi-resolution EOS has been forming as well. The rapid development of Remote Sensing technology serves as the solid technological foundation for the in-depth application of Chinese agricultural statistics.

This paper introduced the current situation of Chinese agricultural statistics and the achievement of each department on the statistic work of agricultural Remote Sensing. And the difficulties of Remote Sensing technology in agricultural statistics were also analyzed in terms of the situation of Chinese agriculture. Furthermore, the paper introduced the project of “National Statistic Remote Sensing Operational System Key Technology and Application” in particular, which is assumed by National Bureau of Statistics of China. The rural Earth sampling method and the technological course as well as the implementation scheme of the Remote Sensing survey on the planting area and yield of the main crops were elaborated. The current research development and application of the project were also involved.

Remote Sensing Monitoring Operation System for Agriculture

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Abstract: The research and application of remote sensing technology in agriculture started in late 1970s in China. Over past 30 years of development and on the basis of technical introduction, R&D, the remote sensing technology in the Chinese Ministry of Agriculture has become one of elementary means in monitoring growth of main crops, production prediction and soil moisture content etc. The general objectives of remote sensing monitoring system in the Ministry of Agriculture are to establish a dynamic monitoring system covering the whole country, with complete system, combination of remote sensing with ground and stable operation. The focus is on constructions of systems of conducting main crop remote sensing monitoring, agricultural resource monitoring, and demonstration of digital and fine agriculture in terms of monitoring.

This paper is to present existing status of remote sensing monitoring operation system of Remote Sensing Application Centre of the Ministry of Agriculture, including major contents of remote sensing monitoring, adoption of key technology and framework of operation system and outlook for further development.

Statistical Evaluation of Agricultural Development in Asian Countries

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Abstract: This paper discusses aspects of agricultural development as not being pre-determined but as a continuous process of improvement of crop and livestock production. In most Asian countries agricultural developmental programs are in place to enhance the productivity of crops and improve rural welfare which is dependent on the progress and growth of agriculture. A composite index based on an optimum combination of indicators has been developed to estimate the status of agricultural development in different Asian countries.

About 39 countries in Asia contribute to most of the agriculture produced and are included in the study. The agricultural sector plays a very important role in enhancing the level of living of people in these countries although the structural transformation that is taking place in some of the countries is reducing their dependency on the agricultural sector as new jobs are created for the rural population. In this study 26 indicators were used to estimate the level of development and a statistical procedure was developed for combining the effects into an aggregate index of development.

The following four broad conclusions emerged from the study:

1. China is the most developed country in agriculture of the 39 countries;
2. Wide disparities in agricultural development were found among different countries;
3. The level of development was categorized into four stages: high, high middle, low middle and low. Results showed that about 40 per cent of the population of the 39 countries lives in a high level developed country, 46 percent lives in a low middle level developed country; and 2 per cent lives in a low level developed country, and
4. To enhance agricultural development of less developed countries, it would be useful:
 - to examine and evaluate the level of development at the micro level by giving
 - location-wise specific recommendations for improving agricultural productivity.

Strengthening Capacity to Monitor and Evaluate Agricultural and Rural Development Programs – Measuring Results in Less-Than-Ideal Conditions

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Abstract: Building the capacity to measure results and to use that knowledge to learn what works and what doesn't, or how to make things work better is not an easy task, and requires the existence of a strong monitoring and evaluation (M&E) capacity backed up by an effective statistical system capable of generating timely and relevant development indicators.

FAO and the World Bank have joined together to support the preparation of a sourcebook for countries needing help with establishing or strengthening monitoring and evaluation capacity. A draft document, Selecting Monitorable Indicators for Agricultural and Rural Development Programs - Measuring Results in less-than-ideal Conditions, was prepared in 2006 and the methodology and the indicators were validated in five countries. A final version of the Sourcebook, incorporating the lessons learned from the country experiences, is due for dissemination by the end of this year.

The sourcebook is intended to assist countries to strengthen their capacity to monitor agricultural and rural development programs and to measure results. It should serve as a Handbook for development practitioners working in Agricultural and Rural Development (ARD) and provide them with certain basic tools to help with the selection and use of core indicators for monitoring and evaluating projects and programs. It focuses on particularly the measurement of results (outcomes and impact). At this level indicators can be quite hard to define since the underlying data are often not available. The Sourcebook suggests ways or simplifying the process for instance by using, where possible, a "service delivery" approach.

The sourcebook also addresses supply-side issues and the need for building up capacity of the national statistical systems. Various statistical instruments are reviewed, and a menu of indicators that can be used for monitoring and evaluating agricultural and rural development programs is also included.

Practical Problems in the Estimation of Performance Indicators for the Agricultural Sector in Uganda

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Abstract: Annual agricultural surveys are implemented as core module of the Uganda National Household Survey program to provide current agricultural data and filling gaps where they exist. The performance indicators on which these surveys collect data include: characteristics of the agricultural households; land ownership and utilisation; planted area; yield and production; amounts of inputs used; use of labour; agricultural prices; livestock and poultry statistics.

The problems that have been identified include:

1. the practices of mixed cropping, shifting cultivation, incompletely harvested crops, continuous planting and/or harvesting still exist to a large extent;
2. fragmented or even transitory holdings;
3. timing of the data collection exercises;
4. changing cultivation and marketing practices and cropping periods;
5. the majority of the respondents are unable to give accurate responses;
6. time taken to complete the survey;
7. comprehensive data on conversion factors missing;
8. using the GPS tool to measure very small areas;
9. under-reporting and use of different reference periods for different livestock types;
10. poor classification of agricultural households;
11. recommendations regarding use of either open or closed segments; and
12. many points of first sale of agricultural products; to mention but a few.

All the above problems have to be seen in the context of agricultural practices that are common in many developing countries including Uganda otherwise most of the published figures will be questioned. Some solutions have been suggested that can help to arrive at the best possible estimates under the circumstances. Reliable estimates are necessary in order to better the implementation of export and import policies of agricultural commodities in case of deficits or surpluses; to formulate price policies; to help in the estimation of the contribution of agriculture to GDP and measuring the level of agricultural productivity; among other things. At the end of the day planners and policy makers will be able to make informed decisions.

General Overview of the 2006 All-Russia Agricultural Census - Procedures, Design and Content

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Abstract: This paper discusses the details of conducting the first agricultural census in Russia in over eighty years. In accordance with the federal law and Russian government resolution, the All-Russia Agricultural Census was conducted in July 2006. For remote and “not easily accessible” areas, data collection activities took place within the period of September 15 through November 15, 2006. The previously most recent census of agriculture was organized and conducted in Russia in 1920.

Totally, about 30 million questionnaires were completed. To optimally collect data on the agricultural census population across Russia, four different types of questionnaires were used. The latest technology was utilized to speed questionnaire processing and approximately 225 million pages were scanned.

The general concept for the All-Russia Agricultural Census content and procedure was developed based on the recommendations of FAO and other international organizations. An in-depth study of experience gained in United States, Germany, Poland, Lithuania, and Estonia, was undertaken as part of the census planning and designing process. The census content included the following six items:

1. General characteristics of the census list units;
2. Labour force and employment in the agricultural sector;
3. Land resources;
4. Land in agricultural crops and perennial plants;
5. Livestock inventory; agricultural machinery and equipment, buildings and constructions;
6. Types of farm-related activities.

Preliminary agricultural census data have been released beginning December 2006 when the first volume “Agricultural Enterprises and Private Farms” was issued, followed by the second volume “Horticulture, Kitchen-Garden, Livestock and Dacha Non-Profit Citizens’ Associations” in March 2007. The publication of preliminary census results will be completed in November 2007. The full release of agricultural census data in nine (9) volumes is scheduled for 2008.

Experiences and Challenges of China's Agricultural Census

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Abstract: China has established agricultural census system in 1995: it was conducted decennially by the year ending at 6. In 1996, with the help of Food and Agricultural Organization (FAO), government of Italy, and other countries and international organizations, China conducted the First Agricultural Census successfully. The Second Agricultural Census has accomplished data collection, data processing and mostly works in 2006, and currently is in the processing of data evaluation. Census achievements will be published in succession in the near future.

Some successful experiences of integrating these two Censuses with Chinese characteristics have acquired mainly include: consummated legal basis and making census regulations; census covering two aspects which involves agriculture and rural development, based on the requirements of national economy development for next decade, regulating and programming census indicator; government organizing and mobilizing costs of all resources; covering extensive data resources by door-to-door interview, administrative records, spatial information and so on; OCR for census forms, and fast accomplishment on data processing; strictly PES by multi-levels; systemic development and application on census results, and etc.

We are also faced with some rigorous challenges: contents of census is too extensive, lack of systematic and integrated indicators which would influence the application of data; huge number of enumerators and supervisors, recruitment of qualified enumerators becomes more difficult along with young labours moving out of countryside, and high quality trainings have some extent of difficulties; coordination with Population Census required to be resolved urgently.

Suggestions for question settlement are: regulating census objects, establishing census indicator system of agricultural indicator as main part, rural development indicator as an assistant; cutting down numbers of enumerators and supervisors in large extent, recruiting qualified local enumerators, reducing training costs and improving local working qualities; coordinating relations with Population Census, increasing working efficiency and decreasing costs, and considering combination with Population Census in some aspects.

Agricultural Censuses in the Small Island Developing States (SIDS) – Recent Country Experiences

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Abstract: Despite their size, Small Island Developing States (SIDS) face many of the same challenges as much larger countries when it comes to planning and conducting an agricultural census. This paper looks at the extent of agricultural census taking in SIDS, the capacity constraints, methodological considerations of most concern to SIDS and the implications of the new approach to agricultural census taking as described in the “FAO World Programme for the Census of Agriculture 2010” (WCA2010).

Of the 38 countries in this grouping, all but three have undertaken an agricultural census at some point in their history but only ten undertook such a census in the last census round (1996-2005). Some countries include specific questions on agriculture in their census of population and housing and the relationship between these two national censuses is considered in the context of the SIDS experience.

SIDS are confronted with many of the methodological challenges faced by larger developing countries such as the estimation of crop area harvested from subsistence farms utilizing mixed cropping and continuous planting/harvesting systems and the associated challenges of land area estimation where farmers have no idea of standardized units of measure related to their land size and crop production. The paper considers these issues and discusses some practical ways of addressing them.

The WCA2010 adopts a new approach to agricultural census taking with emphasis on conducting a ‘core’ module through complete enumeration and ‘supplementary’ modules(s) on a sample basis. Given the small size of many SIDS, sampling may not be an efficient approach where small area data is required. The paper discusses this and other issues related to the implementation of the WCA2010 in the SIDS environment.

Recommendations for Internationally-Comparable Statistics on Rural Development and Agricultural Household Income - Issues in Constructing a Handbook on Statistics on Rural Development and Agricultural Household Income

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Abstract: A Handbook on Statistics on Rural Development and Agricultural Household Income has recently been published on behalf of a set of international organisations (Eurostat, FAO, OECD, UNECE, World Bank) its aim is to promote good practice in these areas of statistics, thereby raising quality, and achieving greater international comparability. This paper, by the Handbook's principal editors, describes the issues that had to be confronted in assembling it, including the main conceptual problems, and how they differed between the two related subject areas (rural development, and agricultural household incomes). In addition to identifying the needs of present and potential users of these statistics and the practicalities of generating them (including the choice of indicators), an outline is given of the process by which international cooperation in the project was secured. As an evolving subject, a further issue is how methodological developments can be incorporated in future editions of the Handbook. The establishment of a 'city group' (under the framework of the UN Statistical Commission) is seen as the main mechanism by which this can be achieved.

FAO Norms and Standards: A Suitable Basis for Securing the Shifting Foundations of Agricultural Policy?

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Abstract: This paper presents how FAO norms and data standards stand as core sentinels defining the indicative direction and subsumed objectives of agricultural policy. They set the basic protocols for initiating and monitoring procedures in a uniform way. FAO has recently launched what portends to be the largest and most influential global statistical dataset on food and agriculture, the core features of which are conceptual consistency, integrated data methods and intended policy relevance. FAO's traditional pivotal role in compiling and analyzing agricultural statistics has placed it in a position of considerable importance in informing current debate on global and national questions related to yields, crop output, food security, nutritional vulnerability and other conventional concerns of policy. These new demands relate to tackling various environmental concerns, rural-urban imbalances, trade and commodity market developments, droughts, global climate change, deforestation, over-fishing and biodiversity to mention just some of the more important issues to be dealt with.

To meet this challenge, FAO aims to increase global knowledge in two ways; the first by improving the flow and use of the global statistics it produces using internationally recognized standards to ensure comparability and the essential additivity of data, and the second by improving national capacity to report such data in a consistent way. The implicit synergy lies in the symbiosis of these two approaches; the outputs of agricultural data at the national level feed directly as inputs into the global database and the latter can then be used to define the overall direction of policy and underpin the content of national programs of agricultural development. By managing and compiling global statistics according to centrally defined standards, FAO is in a position to offer advice and guidance on appropriate methodologies and can help develop useful complementary data tools.

Contributing to International Classification of Agricultural Products

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Abstract: A common classification is a powerful infrastructure and tool for coordinating and integrating official statistics as well as to ensure the comparability of statistical data over time and across sections and countries. For a long time, however, there had not been a common international classification for agricultural products in the world before the Central Product Classification (CPC) version 2.0 was approved by the 37th United Nations Statistical Committee in March 2006. The old CPC was not fully applicable, and, as a result, was not really used in agricultural statistics. The FAOSTAT Commodity List, which was used by FAO and its member countries for collecting and reporting agricultural statistics, was not fully compatible with other international classifications such as CPC and the Harmonized Commodity Description and Coding System (HS). It was obsolete and needed to be updated.

The efforts of aligning agricultural classifications with the overall international classifications have been made in various fronts. The recent revision and update of several international classifications including CPC have provided a rare opportunity for such efforts to be productive and fruitful. The adoption of FAO Proposal for CPC has made the new version of CPC to reflect much better the reality and needs of agricultural statistics than even before. The FAO Proposal for CPC was built on the experience, expertise, and specialty accumulated in FAO through its involvement and contribution in the development of agricultural statistics at both global and national levels. Equipped with sound principles and structure, the new international classification of agricultural products in CPC has been applied to the World Programme for the Census of Agriculture 2010 (WCA 2010) and the new FAOSTAT data collection questionnaire.

Research on the Statistical Aspects of International Agricultural Trade

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Abstract: This paper discusses the importance of the agricultural product classification method used as the foundation for analysis of international agricultural trade statistics. Presently, there are two statistical systems widely used for international agricultural trade data: 1. United Nations Standard International Trade Classification (SITC), and 2. Harmonized Commodity Description and Coding System (HS). Different categorizations of agricultural products by the two systems create a problem with product classification comparability.

International organizations such as WTO, UNCTAD and FAO specify the statistical scope according to their needs. The six statistical methods of international agricultural trade currently used in China are complex and include: URAA agricultural definition, first 24 chapters of HS, FAO agricultural definition based on SITC, UNCTAD agricultural definition, and ITS agricultural definition of WTO.

Complicated statistical methods result in disagreement in trade data and specification of agricultural product scopes, a situation that can greatly affect trade policies and theories. International trade data in different period are gathered according to different statistical standards with the earliest data available under the HS system in 1992. Use of international agricultural trade data before 1992 requires matching product definitions under different statistical systems (HS and SITC). Currently, studies on statistical agricultural product classifications are still under discussion both at home and abroad.

The paper discusses the advantages and disadvantages of comparing and analyzing product classification based on the six statistical methods using HS and SITC as an example. The research indicates that the problem could be solved through specific discussions on the subject. Starting with the six statistical methods currently used, the author proposes a complete, exact and comparable definition of agricultural product classification system as a solution to the problem. The paper proposes and demonstrates a method of trade data harmonization that can provide a basis for establishing a standardized statistical system and basic data platform.

Statistics on Poverty-Relief and Monitoring Program of Rural Population in China

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Abstract: This paper discusses issues related to statistics on rural poverty relief in China and how solving the poverty issue, in particular the poverty and starvation in rural areas, is a constant objective of the Chinese government. According to the latest survey conducted by National Bureau of Statistics of China, the data indicates that, by the end of 2006 the population in absolute poverty in rural areas stood at 21.48 million, in comparison to the low-income population in rural areas which falls under the classification of just solving the problem of having enough to eat and cloths to wear stood at 35.5 million.

The paper emphasizes that how one tackles those issues is closely related to the building of a successful socialist harmonious society. Therefore, the paper discusses how one of the major responsibilities of the Ministry of Civil Affairs is to provide relief services to the poverty population and collect relevant statistics on poverty relief monitoring.

Reassessment of Poverty Status and Performance of Poverty Alleviation Measures

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Abstract: According to the United Nations (2006), the proportion of people living on less than a dollar a day in Eastern Asia had been reduced from 33% in 1990 to 14.1% in 2002 with China contributing significantly to the success. Yet the Chinese government is calling for greater efforts “to build a harmonious socialist society” (CCCCP, 2006). The reasons for the current campaign might be to address: (1) the widening income gaps among regions and sectors; and (2) a seemingly contradiction between the measure and true status of poverty.

This paper discusses the appropriateness of various indicators as poverty incidence, poverty depth, and poverty severity in evaluating the impact of various policy measures that were themselves based on different poverty indicators, and to discuss policy implications of measuring poverty with different indicators. Evidence shows that while the rate of poverty incidence in Chinese rural areas has declined from 13.47% in 1990 to 3.41% in 2004, the average income of the remaining poor has declined further by about 50% and the unevenness of income distribution among the poor has doubled during the same time period. These data raise questions regarding poverty measurement, but also reveals that the great achievement of poverty reduction has basically benefited from general development. While the rural per capita income from farm sources has virtually remained at the same level since the mid-1990s, that income from off-farm sources continues to increase, surpassing that from farm sources.

The authors conclude that poor farmers in remote and disadvantaged areas with inadequate human resources need more specific poverty alleviation programs and suggest that enhancing agricultural production might be one of the best solutions to improve rural standard of living in China. Changing the criteria in measuring poverty and evaluating performance of poverty alleviation programs might lead to better re-orientation of policy goals, targeting the poorest.

Towards the Measurement of Household Resilience to Food Insecurity: An Application to Palestinian Households

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Abstract: Most of the current literature on food security focuses on the assessment of household vulnerability in food insecure regions. The concept of vulnerability, by definition, is dynamic and forward looking. However, almost all statistical methodologies applied until now have been static and unable to predict future events. The main reasons for this are both conceptual – e.g. the complexity (multidimensionality) of the concept of food security and the unpredictability of the many shocks that cause food insecurity – and empirical – e.g. the absence of longitudinal data over a period of time long enough to enable the various sources of risk to express themselves, thereby allowing the analysis of trends and risks.

For this reason, the concept of resilience has been recently introduced in food security literature. It aims at measuring the capability of households to absorb the negative effects of unpredictable shocks or disasters, rather than at predicting the occurrence of a crisis (as is the case of most vulnerability literature).

We have developed an index of household resilience to food insecurity according to four building blocks: income and food access; assets; access to services; and social safety nets. Furthermore, stability and adaptive strategies are two other dimensions that cut across these building blocks and for households' capacity to respond and adapt to shocks. The empirical strategy has been implemented using the Palestinian Public Perception survey data set. The process of building the indexes involved the use of decision matrices and multivariate methods (factor analysis, cluster analysis, principal component analysis, etc.). The validation of the decision rules for building the indexes has been done through CART (Classification and Regression Tree) methodology to highlight the factors (indicators) that play a major role in qualifying the building blocks of household resilience. This information is crucial for policy makers in general and for food crisis response planning in particular.

Food Deprivation and Income Deprivation Indicators at National and Sub-National Levels: Methodological Issues

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Abstract: Indicators to measure income and food deprivations have been useful for understanding food insecurity at national and within country levels. This paper focuses on two indicators: the prevalence of food deprivation (under nourishment) and the prevalence of critical food poverty. Both indicators are based on nutritional underlying criteria and are derived from food consumption and income data collected in household surveys. The prevalence of food deprivation is the Millennium Development Goal indicator number five and is based on the distribution of energy consumption. While the prevalence of critical food poverty is a new indicator, it links food deprivation with income deprivation based on the distribution of income.

The linkage is the concept of minimum dietary energy requirement used in the FAO methodology as determined to be the cut-off value in the distribution of energy consumption for estimating under nourishment. The critical food poverty line for estimating the prevalence of critical food poverty is the cost of the minimum energy requirement based on energy-yielding nutrient prices for a macro-nutrient balanced diet accessible to low income population groups.

The macro-nutrient balanced diet is based on recommendations from a Joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases held in Geneva in 2002. Examples presented in the paper illustrate results of both indicators for a sample of countries on different continents.

Integrating Agricultural Statistics in National Strategies for Statistical Development (NSDS)

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Abstract: In recent past, many developing countries have committed themselves to results-oriented management and the achievement of development results using such results agenda as Poverty Reduction Strategies (PRSs) and Millennium Development Goals (MDGs) which are targeted towards reducing poverty, and supporting sustainable and equitable economic growth. The results agenda is data intensive and has highlighted major weaknesses in national and international statistical systems, including: • weak statistical capacity • inadequate coordination – between data users and producers, among data producers and among development partners • inadequate links of national statistical systems to policy • data gaps on some key development indicators • unreliability of some existing data • inadequate use of existing data, and • unsustainability of current statistical systems.

The Marrakech Action Plan for Statistics, agreed at the Second International Roundtable on Managing for Development Results that was held in Morocco in 2004, urges poor developing countries to design and implement National Strategies for the Development of Statistics (NSDS) to support production and use of better statistics now for evidence-based policy and decision-making at all levels, and to accelerate sustainable statistical capacity building for the future. Already, a number of developing countries have designed or are in the process of designing their NSDS. Although sectoral statistics constitute the bulk of statistics required to monitor progress in poverty reduction and national development, by and large, sectoral issues and concerns have not been given sufficient attention in national statistics or in the design of the NSDS in many countries. Consequently, statisticians from sectoral ministries have tended to be isolated, are rarely directly involved in discussions on statistical capacity building and many statistical projects and programs have tended to focus only on central needs. Moreover, sectoral components of the National Statistical System are often in need of more voice both within their sector and within the statistical system as a whole, and for more resources.

The paper sheds some light on the NSDS and its processes, making the case for the integration of agricultural statistics in particular and sectoral statistics in general into the NSDS and for better coordination of sectoral statistics with both national statistics and with other sectors. The bottom-up participatory approach the Uganda Bureau of Statistics (UBOS) used in the design of its NSDS in 2005/06 which led to the preparation of a Guide on Mainstreaming Sectoral Statistics in Africa is used to illustrate how this could be done. Using this approach, Sector Strategic Plans for Statistics (SSPSs) were developed with assistance of UBOS and used as building blocks for the design of the overall NSDS. The paper underscores the role of PARIS21, the African Development Bank and development partners in the NSDS processes in Africa.

Capacity Building for Better Agricultural Statistics

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Abstract: The past seven years have seen an unprecedented interest in statistics generally and a substantial increase in the resources available to develop and strengthen the capacity to collect, compile, process, and use statistical data. The aid agencies and the international statistical community have developed a number of approaches to capacity building in statistics and many of these are now beginning to show results. The Marrakech Action Plan for Statistics (MAPS) provides the framework for the international community to work together to strengthen both national and international statistical systems.

The starting point is that effective capacity building requires countries themselves to take the lead in identifying their own needs and in setting their own priorities. Many countries have now prepared strategic plans for the statistical systems, based on a detailed assessment of existing strengths and weaknesses, which identify realistic goals and which set out what needs to be done to enable these goals to be reached. The most effective of these plans are based on wide consultation with all stakeholders, cover the whole of the statistical system and build on what is already in place. The major challenge now is to mobilize the resources for the investments that are needed and to deliver both technical and financial assistance in a cost effective and sustained manner.

If agricultural statistics is to benefit from these new approaches, then it is essential that the staff and management involved in producing and using these data are able to develop effective plans of their own, which are integrated and coordinated with the national strategies. This means dealing with issues such as coordination and management as well as data collection, understanding the demand for data and how this is changing and being ready to employ innovative approaches to increase efficiency. It also means having a clear focus on results, producing better data for better policies and more effective rural development.

Agriculture Activity in the National Accounts - How Well Is It Measured?

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Abstract: This paper discusses the fact that 'on-farm' economic activity has undergone major change over the years. As farming households and their activities are more complexly linked with other economic activities, consideration needs to be given to inclusion of this information into databases to enhance decision-making capabilities.

The SEAFSA (A System of Economic Accounts for Food and Agriculture, FAO, 1996) was designed using a recommended 1993 SNA format to meet data requirements of planners and policy makers in dealing with the formulation of food and agriculture plans and policies. The system consists of production, generation of income, allocation of primary income, and capital accounts for institutional sectors and establishments (agricultural holdings) as well as the goods and services accounts for agricultural production in the format as recommended by the 1993 SNA. The proposed field of economic analysis would dictate which accounts are required to be included while implementing the system at the country level.

The paper, while reviewing the current status of the development of the statistical system in developing countries and the work done by the FAO in this field, calls for action in two directions: to improve the quality and coverage of the data on agricultural output, input and other related fields, and to determine a priority of action areas in developing a system of indicators in the framework of the SEAFSA/ SNA to monitor and evaluate economic policies and programs. Specific attention has been given in the paper as to how to cover informal agriculture, what changes are required in the land use classification, and how to use a time-use survey approach along with cost of cultivation/production surveys to get improved/reliable data on agricultural inputs. This will be useful for creating an information system as well as to compile an indicator system for analyzing agri-environmental and gender related aspects.

Policy Evaluation through Farm Statistics: The Case of the Italian Farm Accountancy Data Network (RICA)

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Abstract: The paper introduces the Italian Farm Accountancy Data Network (also named RICA), a yearly survey that provides a comprehensive range of farm data, including livestock and crop production and costs, and typology and amount of grants and subsidies. RICA provides more detailed and updated information with regard to the Italian General Census for Agricultural Holdings, which is conducted every 10-years for a more limited-in-scope set of variables. Nonetheless, RICA results are extended to the universe of Italian farms thanks to the sample selection methodology.

Currently, RICA fulfils both statistical needs for National Accounts and economic requirements for standardized accounting rules. The paper gives an account of how RICA microeconomic data help in two major macroeconomic applications, namely value added calculations in national accounts and EU Rural Development policy evaluation.

The Status of EAA in China and Its Reform Ideas

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Abstract: Agriculture is an important sector in China. The value-added of agriculture took a share of 11.8 percent to GDP in 2006. The EAA (Economic Accounts for Agriculture) is the basis of national economic accounts. The value-added of agriculture is a comprehensive indicator in reflecting agriculture production. Before the year 2000, the calculation of growth rate of China's agriculture output value was based on constant price in 1990. However, along with the emerging of new products, the variety and quality structure of agricultural products had changed greatly; therefore, the structure of agricultural products and their price levels, which were determined in 1990 for the calculation of agriculture growth rate, no longer reflect the current structure of agricultural products and changes in their prices. So, in 2000, NBS improved the list of agricultural products for the calculation of gross output in agriculture, and developed a survey on producer prices of agricultural products. In 2003, the price deflator method was applied. Moreover, NBS strengthened the management of the EAA at the provincial level, focusing on the areas of coverage, methods, data sources, data checking standards and data utilization, which makes the EAA more systematic and specific.

This article introduces the coverage of the EAA in China, the collection of basic data, the calculating methods for quarterly and annual gross output value of agriculture, its value-added and its growth rate, as well as the management on accounting results. The article also indicates some problems in China's EAA, and suggestions on improving China's EAA in the future.

Measurement of Agricultural Output in the Australian System of National Accounts: Methods and Issues

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Abstract: Agriculture gross value added represented 2% of Australia's total Gross Value Added (GVA) in volume terms in 2006-07 but production can vary significantly from year to year in line with variability in weather conditions. As such, measuring agricultural output is important in assessing Australia's overall annual rate of economic growth in Gross Domestic Product (GDP).

Value added for the farm sector is derived using a production approach and is measured in both current price and chain volume terms as gross value of agricultural production less the costs incurred. For most commodity groups gross value of production is used as the measure of output. The only exceptions are wheat and wool, where a production valuation adjustment is applied. The valuation adjustment is required because the gross value of production for wheat and wool are based on estimated or realised future sales prices, which may be different from average current period prices.

Australia collects data on 54 commodity groups in compiling the gross value of agricultural production. The major commodity groups are livestock, wheat, milk, wool, barley, and sugar. In 2006-07 these accounted for 58% of the total gross value of production.

The paper describes the approach used in the Australian System of National Accounts (ASNA) to measure the output and value added of the Australian Agriculture industry, annually and quarterly.

The paper also discusses some of the measurement issues associated with estimating value added for the agricultural industry including the allocation of production to the appropriate quarter and the difficulty of seasonal adjustment when production can vary significantly from season to season.

The Net Value Added Approach as a Tool for Integration at the Micro Level

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Abstract: There are major changes in the structure of farms and farm households, the levels of enumeration in agricultural statistics, and in the linkages between these levels. To record and enhance understanding of these developments this paper proposes use of a net value added (NVA) approach at the micro level to reflect the participation of a wide variety of stakeholders in the organization and output of farms. NVA is widely used and internationally standardized. NVA concepts can be applied at the micro level to show to which stakeholders the income of the farm is distributed. We show in the paper that stakeholder involvement and distribution of NVA differs among countries, based on economic opportunities and institutions. Being aware of such differences is relevant in the international policy context because many policies involve distributional impacts, particularly for income and wealth. Based on results, we present an agenda for future work to promote the international integration of micro economic statistics in agriculture.

Land Conservation in the United States and China: A Comparison of Policies, Property Rights, and Data Implications for Assessment and Evaluation

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Abstract: At first glance the United States and China appear to have entirely different economies and economic institutions. Upon closer inspection, there are many similarities. Both countries have large and diverse agricultural sectors that compete intensely with non-agricultural sectors for scarce inputs. In both countries, roughly half of farm household income comes from non-farm sources. With regards to land policies, both countries have established policies to retire farmland from production in environmentally sensitive areas. Yet, the distribution of property rights associated with land in these two countries differs significantly, which gives rise to differences in the way these policies work as well as how they can be evaluated.

This paper compares land conservation policies in the U.S. and China. The authors focus on the role of household decision making about land use and conservation practices, the differences and similarities of property rights to land, and the implications for data needed to evaluate and compare the effectiveness of the policies. The paper provides an overview of the major conservation policies in the US and China, such as the Conservation Reserve Program in the United States, and the Sloped-land Conversion Program in China. We examine the differences in the goals and the structure of these programs, mechanisms used to induce participation, monitoring efforts, and outcomes.

Finally the authors analyze how the distribution of property rights can impact the effectiveness of these programs. We discuss the implications for data required to effectively evaluate these programs, focusing primarily on the level of enumeration.

What Does Integration Imply in Choosing an Enumeration Unit: Enterprise, Holding or Individual? Does it Matter? Perspectives from Africa

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Abstract: This paper examines the issues of statistical integration from the African perspectives and discusses the challenges, opportunities and the desirability of pursuing and achieving such integrated systems. Statistical integration is advanced as a means of making new data meet particular needs and add value to the whole statistical data collection and management system.

At the data collection level integration can produce significant benefits by reducing the cost of statistical collection and the burden placed on respondents, whilst also increasing the value of outputs in terms of achieving consistency and accuracy. At the data processing level, integration enables the benefits of common technology, analytical methods, tools and processes to be fully exploited. Data from different sources and different times can be consolidated to allow for richer databases to be developed and meaningful comparative analyses and interpretation of results to be achieved.

The paper attempts to demonstrate how integration implies that common statistical frames, definitions and classification can be promoted and used in all statistical surveys to achieve harmony between enumeration units such as enterprise, holdings or individuals. The paper points out how flexibility which may be necessary at times is lost. Examples given are that agricultural data may require area based sample frame based on agricultural zones rather than administrative units, and the periods for data collection may be agricultural seasons rather than calendar months. Thus the author argues integrating general household survey data with agricultural data can be a complex process.

Agricultural and Rural Statistical Development – Capacity Building in Cameroon

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Abstract: The Cameroonian agricultural statistical system has benefited since 1979 from international assistance that has allowed the country to conduct an agricultural census, to strengthen the capacity building of the statistical system (training, survey equipments, etc.), and to put in place a medium-term agricultural program which is now implemented.

Most of sub-Saharan African countries since the drought years of the eighties have been affected by changes with the world climate and with other economic and human factors to produce chronic poverty and food insecurity. Cameroon which had been under structural adjustment of the IMF and World Bank since the early 90's and has put into place a National Council of Statistics (NCS) which is a consultative forum in-charge of managing national statistical policy with an agricultural statistic system as an important element of the NCS network.

The national core system of statistics has been established and implemented by the National Institute of Statistics (NIS) which is a permanent secretary of the NCS. This has put into place many new methods and good practices, rules and regulations for national accountability, trade, and agricultural development. At the same time data needs are expanding and become more and more complex. Thus, adjusting development policies and strategies and building integration of statistical systems have become an imperative task.

This paper discusses the national statistical network and the assistance of international agencies along with a presentation of the main system activities performed in term of data collection, processing, and dissemination. Weaknesses and strengths will be highlighted along with discussions on difficulties encountered, main constraints and new challenges. Some insight will be presented that will illuminate the way forward to improving the flow and the quality of the data produced.

Stakes and Pitfalls of the Development of Statistical Systems in Agriculture: the Web of Sustainable Development

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Abstract: On the basis of various programs of cooperation, to which the authors took part during their professional curriculum, this communication will address the critical aspects of system integration for public statistical services in the field of agriculture and rural development for the building of operational capacities, their relevance for the analysis of public policies and their potential to meet the Development Millennium goals, keeping up with their socio-economic environment. In order to illustrate stakes and pitfalls of the statistical systems integration for the building of operational capacities, this paper will study the problems arising from the assessment of the development sustainability in an enlarged European Union, as regards the agricultural statistics and the new Common Agricultural Policy reform, taking into account the environmental constraints.

This paper is based on a review of the sustainable development indicator systems, mainly in their components related to agricultural statistics, and on some conclusions drawn from the French implementation of the corresponding regulations in the light of concepts and knowledge developed during the 6th European Framework Program for research and development. Widening the analysis framework to the context of the Mediterranean Arc and sub-Saharan countries, this communication focused on the impacts of the agricultural production and would like to contribute to open the tracks of a robust adaptation of the main statistical concepts involved in measuring the sustainability of development, and to reinforce multilateral partnerships in capacity building for this purpose.

Agricultural and Rural Statistical Development – Capacity Building

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Abstract: Strengthening the capacity of national agriculture statistics systems in member countries to produce good quality food and agriculture statistics is one of the major missions of the FAO Statistics Division (ESS). This paper discusses the lessons learned from FAO assistance in capacity building in food and agriculture statistics in African countries.

For several decades, ESS has been conducting capacity building activities through various channels, including on-the job and formal training as a component of field projects at country level, study tours, training seminars and workshops at international, regional or national level, preparation and dissemination of methodological and technical guidelines and so forth. ESS has also worked in the past with selected training institutions in Africa, Asia and Europe (École Nationale de la Statistique et de l'Économie Appliquée-ENSEA in Abidjan, Statistical Institute for Asia and Pacific-SIAP in Tokyo, the former Munich Centre for advanced studies in statistics, Munich, the Institute of Social Studies, The Hague) to provide technical support to their continuing training programs.

ESS has been supporting countries in their development of an integrated food and agriculture statistics systems as a component of their national systems. The results achieved show a wide diversity of situations from one region to another and from one country to another in the same region. However, some important lessons can be learned from this long and diversified experience.

This paper will review the experience of FAO Statistics Division's assistance in capacity building and in the development of an integrated food and agriculture statistics systems with a focus on African countries. It will analyze past experience and emerging trends and highlight some of the main issues and lessons learned for a successful capacity building program.

The Development of Agricultural and Rural Information Systems in Sub-Saharan Africa and Challenges in Capacity Building to Meet Design, Monitoring and Policies Evaluation Needs

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Abstract: The National Agricultural Statistical Systems (NASS) development process has not been continuous in Africa. They worked better during the periods corresponding to the existence of a real request of decision makers who face a particular economic situation requiring objective economic policies and, to the existence of a reliable source of financing and the availability of real capacities of production. These assertions can be illustrated by examples from Côte d'Ivoire and CILSS countries. In Côte d'Ivoire, the period of good international economic situation for export crops (coffee and cocoa) was also that of the best functioning of the agricultural statistics; (ii) the experience of CILSS countries is eloquent as a food crisis period (years 1983-1984) imposed statistics needs for food crisis forecasting in view of better targeting of actions. This allowed governments and technical and financial partners to collaborate in the construction of a durable information system on food security satisfying the needs for information for operational decision-making.

Today, the context seems to be more favourable for the construction of efficient and durable NASS because there is a general consensus on the need for democratization, decentralization and the PSRP as a new form of governance, global commitments like MDG, regional integration and globalization. Aid effectiveness, result-based agenda, accountability became the great principles which must guide all actions. That implies requirements in data and new tools for designing, monitoring and evaluation of economic and social policies in general and in agriculture and rural development in particular. For better formulation of policies, the NASS must provide the decision makers with information on socio-economic situation of rural households and farmers and on the situation of the farms and agricultural products chain, in particular, conditions of production, constraints and economic performances. In the same way, to make policies implementation operational, budget-program and sector MTEF are tools for planning by objective.

For all these needs, some fields of statistical capacity building of African countries are identified and must be implemented to ensure that NASS address statistical needs in a durable way.

Use of Geo-Informational Systems for the Russian Agriculture Census

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Abstract: The paper discusses the difficulties in introducing geo-informational system technologies in agriculture in the Russian Federation. Monitoring of farmlands based on remote sensing data taken from space satellites is reviewed as a tool to estimate and forecast the impact of weather and climate conditions on crops performance. This approach has been confirmed by long-term positive practical experience of using remote sensing in the United States and other countries. These technologies were used to prepare and carry out the Agricultural Census in Russia in 2006 as well as to publish the census data. The paper describes the results of the work aimed at GIS introduction and adaptation to the farming industry carried out by the Main Computing Centre of the Russian Ministry of Agriculture in 2003-2007.

Crop Area Estimates with Area Frames in the Presence of Measurement Errors

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Abstract: The usual estimators of totals and means remain unbiased in the presence of measurement errors only if these errors are assumed to be additive, non-correlated and with a mean of zero. Often, these characteristics of errors do not hold in area frame surveys for crop area estimates and usual estimators of totals and means are biased and their variances overestimate their accuracy. In almost all important area frame survey projects for crop area estimates, a part of resources is devoted to quality control of data collected on area sample units.

These activities of quality control are important for evaluating the quality of estimates and for improving the quality of successive projects, provided that appropriate kinds of quality control are planned and executed based on sound statistical methodology.

The paper discusses focusing on the quality control of data collected by enumerators by observation of area sampling units. An appropriate ad hoc sample design for quality control will allow the estimation of measurement errors and their effects on crop area estimates and their accuracy. The author points out that, when the ground survey is conducted near the harvest, the usual procedures of quality control based on samples of lots of products (sets of enumerated sample units) are not appropriate for area frame crop estimation since crops are harvested during the time in which a lot is completed by the enumerator; thus, quality control has to be made in a very short time, during the enumeration process.

The author proposes to adopt a stratified sequential sample design for quality control where strata are determined by the different enumerators and other variables which can effect the correlation between errors. In fact, sequential sample designs generally allow reaching high precision of estimates with the smallest sample size and in the shortest time.

Brazil Agricultural Census 2006: Innovations and Impacts

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Abstract: In its first agricultural census of the new millennium, Brazil's Institute of Geography and Statistics (IBGE) is innovating data collection in 2007 by introducing electronic questionnaires into Personal Digital Assistants (PDAs) integrated with Global Position System (GPS) to achieve geo-referenced information on all of the approximately five million farms in the country, covering 8,514,877 km² in 5,564 municipalities.

Real-time edits and automatic jumps performed during enumeration will ensure a faster and more reliable interview. The PDA's Bluetooth® technology allows direct data transmission to IBGE's central mainframe by each of the seventy thousand enumerators on a weekly basis. This eliminates the cost and time of transporting, scanning or keying data from paper questionnaires and allows supervisors to immediately address problems while data are being collected.

The final results of the 10th Brazilian Agricultural Census are expected to be released at the end of 2008. The database of geo-referenced farm addresses will provide a comprehensive list for future surveys. In addition, an area frame, based on IBGE's enumeration sectors, will be constructed. Presently, IBGE does not conduct sample surveys in agriculture, so these programs are expected to result in a great improvement in Brazilian Agricultural Statistics.

This paper covers the main innovation in Brazil's agricultural census, their motivations and consequences. Data quality improvements and new horizons offered by geo-referenced agricultural data at the farm level, including sample surveys, are also discussed.

Using Administrative Registers for Agricultural Statistics - Methodologies, Techniques and Experiences

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Abstract: Swedish official statistics have long been based upon the extensive use of administrative data. However, in most cases it is not advisable to produce statistics direct from administrative registers since these registers are not adapted to the needs of the statistics. This paper reviews the methodologies and techniques applied in order to ensure sufficient statistical quality when using administrative sources for the creation of farm structural statistics i.e. the Farm Structure Survey (FSS). The results show that integrating administrative registers with censuses and sample surveys is a cost-effective way of producing statistics while reducing the burden on respondents.

Regarding the quality dimension “content” integrating registers with surveys and censuses presents some advantages when collecting data for the FSS. Regarding “timeliness”, the administrative registers used for the FSS are updated and available earlier than results from a statistical survey.

This paper shows that various aspects of the quality dimension “accuracy” are the key issues for further development in order to improve the quality when integrating registers and surveys in the FSS. The quality discussed in terms of “coherence” and “comparability” is high when registers and surveys are integrated because of the extensive work done to merge different registers.

It is shown that there is at least as much need for quality work, methodological studies and quality assurance for statistics based on administrative registers as for statistics based on sample surveys. When using administrative registers, the integration phase where data from several sources are integrated into a new statistical register is central for improving quality.

Metadata: An Integral Part of Statistics Canada's Data Quality Framework

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Abstract: Statistics Canada's product is information. The management of quality must therefore play a central role within the overall management of the Agency. The Quality Assurance Framework describes the approaches that Statistics Canada takes to the management of quality. This Framework is based on six indicators: relevance, accuracy, timeliness, accessibility, interpretability and coherence. Metadata are at the heart of the interpretability indicator by providing the information necessary to interpret and utilize the statistics appropriately.

The first part of the paper will describe the Quality Assurance Framework and will show how metadata relates to the framework.

The second part of the paper will be devoted to metadata. It will include a description of the IMDB, its governance model, the mechanisms put in place to assist managers in loading information and ensuring its coherence, the monitoring of its quality and users' access.

Another section will outline the minimum set of metadata required to comply with the Policy on Informing Users of Data Quality and Methodology. A final section will focus on the agriculture statistics program.

Toward a Metadata Framework for National Agricultural Statistics

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Abstract: To establish metadata databases for food and agricultural statistics is considered as one of the key components for improving data quality and statistical development. The concept of metadata in its broad sense describes all aspects of the national system of Agricultural Statistics on how, when, where, why, and by whom the data are collected. Thus, metadata is a primary tool in describing and managing information resources, and useful and beneficial to both users and producers of statistics. The challenge faced by the management of metadata at the international level is how to design a framework so that it can be used by countries to collect the relevant and succinct information in a manageable and comparable way on the current stage of the national Agricultural Statistics for assessing data quality, identifying areas of further development, assisting to plan, design, implement, and coordinate national and regional statistical capacity building programs and activities.

Based on its long history of experience in assisting countries to document their agricultural statistical systems and methods, in 2006 FAO Statistics Division distributed an “Annotated Outline for Preparing Country Report on Metadata for National Agricultural Statistics” to two groups of countries with 16 each in two continents, Asia and the Pacific and the Middle East. The Outline provides a framework for countries to prepare metadata focusing on three main areas: (i) the national system of agricultural statistics; (ii) major domains and selected indicators of agricultural statistics; and (iii) major data sources for agricultural statistics. The idea is to view the national system of agricultural statistics as a production function and to ask what inputs, data sources, are used to produce what outputs, domains and indicators. The framework has since been improved with the benefit of feedbacks from consultation and discussion with countries, and the application of the framework in selected pilot countries for preparing country reports on metadata for national agricultural statistics.

The Philippine Experience in Setting up the CountrySTAT

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Abstract: How does the agricultural statistical system of a country facilitate access to the data requirements by its internal and external clients? There are many ways of addressing this concern but, the establishment of the CountrySTAT system can make access to data easier and quicker for the data producer and all its clients. As the country – specific version of the FAOSTAT2, the CountrySTAT provides a framework for enhancing the quality of data that are produced and disseminated by the country’s statistical system.

This paper describes the processes, outputs, constraints and milestones recorded by the Philippine Statistical System, led by the BAS, in the development of the CountrySTAT. It traces the various stages of this development, from understanding concepts and frameworks, to mobilizing necessary resources, and finally to making CountrySTAT operational and accessible to the public. The paper gives special focus on the capacity building aspect of the CountrySTAT system, especially on the training on the use of the PC-Axis Software Suite which serves as the engine of the system. For better appreciation of the CountrySTAT system, the paper presentation will incorporate a demonstration of the CountrySTAT at work.

Agricultural Employment Trends in Latin America: Are There New Requirements for Statistics?

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Abstract: Labour statistics – especially those referred to highly seasonal or fluctuating activities, such as agriculture, or to highly heterogeneous areas with low survey coverage, such as most rural areas – have some important limitations as inputs for policy formulation. Different statistical sources (household and labour surveys, sector and population censuses) are frequently used to obtain information on agricultural and/or rural employment. Because they have different aims and they are based upon different questions, at different times and covering different periods, the inferred figures can vary widely. Limited or inadequate spatial coverage can raise additional problems: some household surveys only cover urban areas and in the case of censuses and surveys reporting rural areas, the definitions of “rural” vary from country to country and are being increasingly questioned nowadays.

The limitations of traditional statistical sources on agricultural and rural employment seem even more evident when considering the current requirements of data for the formulation of development policies. Placing emphasis on local/focalized policies implies that specific information on regions and agents are now required, while the need for monitoring and comparing policies at the national and supranational level demands standardized and replicable data. In that sense, agricultural censuses usually bring very detailed information on producers, which can also be disaggregated to a very low level, but they can not be easily standardized among countries. On the other hand, household surveys are more uniform and systematic, but small groups of agents, activities and regions, which can be of interest for policy matters, are not represented in them. Finally, most sources have problems dealing with some employment issues extensively present in the agricultural sector, such as child work and multi-activity.

What Is the Best Indicator of Work Performed in Agriculture?

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Abstract: The share of agriculture in the majority of European countries including Hungary is displaying a lessening trend; nevertheless, nearly half of the Hungarian households are involved in some kind of agricultural production. Legal agricultural enterprises are also involved in agricultural activity. The surveys used for measurement, comparison and assessment of agricultural labour activities associated with enterprises and households are not an easy task to conduct with many statistical indicators needed for compliance with international statistical standards.

Statistics measuring agricultural labour input in Hungary:

1. The residential labour force survey which is a sample survey covering households collecting information on the economic activity of people from 15 to 74 years. Including employed by agricultural enterprises and working in private farms, for which agricultural activity is the main source of earnings;
2. The enterprise labour statistics is based on the observation of businesses and budgetary organizations employing at least five people. Including employees of agricultural enterprises, game and forest management and fishery entities;
3. The population censuses obtain the agricultural activity of the members of the household in the previous year. Including the number of days worked in agriculture;
4. For the requirements of Economic Accounts for Agriculture (EAA) agricultural labour input statistics provides data on any work carried out in agriculture converted into the Annual Working Unit (1 AWU is equal to 1800 hours of agricultural work).

The methodology and definitions of statistics differ from each other; therefore, the results produced also vary. This paper looks at how to assess and use statistical results coming from different surveys, which indicator provides an appropriate representation of domestic agriculture and related work performed, and what additional information is required to satisfy the needs of data users e.g. in agrarian and rural development policy, and whether there is necessity to change the methodologies.

Using a Classification Tree to Associate Risk Factors with Farm Injury

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Abstract: Agriculture is considered a dangerous occupation, especially when more and more machines are being used. Therefore, it is important to associate risk factors with agriculture-related injuries, which can help to make policies that will help to prevent future injuries. Some previous research (Lyman, et. al.) used a multiple logistic regression model for this purpose. However, it is difficult to incorporate proper interaction in the logistic regression model.

In this paper the authors apply a classification tree to associate risk factors with farm injuries which will automatically handle any possible interactions. Based on a classification tree, it is also possible to develop different prevention programs for various subgroups given by the tree. We used a data set of 1,051 subjects from Alabama and Mississippi, USA, including African-American farm workers and Caucasian and African-American owners. Condition of farm machinery (Excellent/Good vs. Fair/Poor) first splits the tree. For fair/poor condition of farm machinery, large farms (749 or more acres) give high injury rates (0.28), while for farms with fewer than 749 acres, the estimated injury rate is 0.16 without farm safety training and it is reduced to 0.063 with farm safety training. For excellent/good condition of farm machinery, history of farm injury then splits the tree.

Factors that further split the tree include “How Often In A Hurry When Doing Farm Work”, education, primary commodity, wearing seat belt on machinery, race, alcohol consumed per week and farm safety training. Furthermore, classification trees are developed separately for Caucasian and African-American. The graphic displays of the tree are provided.

China Rural Labour Force Migration on the Impact and Effectiveness of Economy

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Abstract: China has a large number of labour force emigrations engaging in non-agricultural activities from the rural areas. In 2005, the total amount of labour force that emigrated from the rural areas and engaged in non-agricultural activities was around 130 million, taking accounting of 26% of total rural employment. The large scale of rural labour force migration plays a tremendous role of macro-economic effectiveness in driving agricultural and rural development, breaking the dual-economic structure long lasting in urban and rural China. The rural labour force migration has an in-depth effect on agricultural production, and the labour force migration results in the improvement of agricultural mechanization, the efficient application of agriculture new technology, the improvement of human capital, the promotion of evolution of land institution and agricultural production system. The most direct impact of rural labour force emigration results in the increase of farm's income. It is evident that the rural labour force emigration has a positive correlation with the household poverty alleviation, and it has been a key measure for anti-poverty activities by exporting labour force from inside the poverty areas. Due to the rural labour force migration, the factors of production have been flowed and combined between regions, and the evolution of social management system as well as production system has been conducted in a large extent. As a result, the transformation from a traditional rural economic society to a modern society oriented by urbanization and industrialization, as well as the development of macro-economy has been pushed forward.

The Comparative Analysis of Technical Efficiency of Jasmine Rice Production in Thailand Using Survey and Measurement Data

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Abstract: Thailand has been the top rice export country for over decades. Recently, high competition in trade has urged the country to raise quality and efficiency in rice production. Jasmine rice considered as the top quality rice in Thailand and the share of total rice export increase dramatically due to its favourable price. However, yield of Jasmine rice is relatively low as compared to modern varieties. The question being raised for Thai rice production is whether production efficiency of Jasmine rice yield could be increased and by what factors. Most studies in agricultural production models employ survey instead of measurement data. The measurement method of data gathering is considerably expensive and time consuming. This paper aims to compare the estimation results of stochastic production frontiers using two types of yield data, one from interviewing farmers and the other from measuring rice weight from sampled plots of each respective farm. Both types of data gathered from the same Jasmine rice producers in the three major production areas in the Upper North, Lower North and Northeast of Thailand in crop year 1999/2000. The stochastic production frontiers will be estimated using Maximum Likelihood Estimation. The findings reveal the production functions of the same set of sampled rice farmers. Except for the dependent variable (yield) other variables of respective farmers are identical in both frontier functions. The explanatory variables are production inputs and environmental conditions as well as biological risk, namely, chemical fertilizer use, labour force, chemicals use, irrigated land, severe drought problem, neck blast disease problem. The empirical result shows the estimates of model using measurement data are robust and different from those of survey data set. The latter are highly sensitive to model specification. Thus economists should be cautioned to pay special attention to survey design so as to minimize error.

Analysis of China's Agricultural Input-Output Structure from 1997 to 2002

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Abstract: Based on China I-O table of 1997 and 2002, we quantitatively analyzed Chinese Agricultural input-output structure in 1997 and 2002 and in the paper, give some advice for the development strategy of China's Agriculture. Following are main conclusions of our analysis:

1. The ratio between the intermediate input and agricultural output increased between 1997 and 2002, but remains the lowest of all the industries.
2. The value-added ratio was 57.3%. The agricultural technical service is the only sector which VAR is increasing. However, the average profit margin of agriculture had increased sharply.
3. Labour cost is the most important part of added value, indicating that agriculture still belongs to the labour-intensive industry.
4. The technology of agriculture is behind other industries which also happened in agriculture's mechanization and value-added ratio.

Judged from the input aspect, fertilizer is a most important input. The importance of fertilizer increases over the years although the marginal benefits decline. This was also true for pesticides and other factors. The cumulative input coefficient of fertilizer and pesticide in 2002 had decreased by 16.2% and 38.6% respectively. It is surprising that the coefficient for agricultural machinery was as low as 2.3%.

From the output aspect, agriculture is a basic industry and is highly correlated with Sawmills, Furniture and Food Products. The cumulative input coefficients are still very high. But the 2002 data clearly showed that the correlations are decreasing. On one hand, the benefits to agricultural decreased - it added quantity but not value. On the other hand, intensities of processing inputs have increased thus the marginal benefit at the product has increased.

Perennial Problems and Innovative Options for Improved Data to Support Agricultural Policy and Investment Modelling

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Abstract: Both policymakers and the broader community of public and private investors concerned with agricultural development are placing increasing emphasis on evidence-based approaches to decision-making. Contemporary examples from Africa include the establishment of sub-regional analytical and knowledge support systems to support the Comprehensive Africa Agricultural Development Plan (CAADP), as well as the rapidly expanding investments in improved data and analysis for investment targeting associated with the new Agricultural Development Program sponsored by the Bill and Melinda Gates and the Warren Buffett Foundations. While the expectation is that increased availability and accessibility of information and analysis will result in more informed debate and more effective policies and investments, the evidence-based strategy is compromised – often severely – by the limited scope and highly variable quality of primary statistical and survey data on agriculture and key related sectors. This is particularly troublesome in the design and performance of systems for monitoring the impact of policies and investments. Some problems are well known, such as the quality of basic data on crop areas and yields, input use, and output and input prices, and these are briefly reviewed in the context of quantitative modelling needs. But agriculture-focused modelling efforts, particularly those concerned with assessing poverty impacts of change, often demand additional types of information, such as; typologies of households and their market responses to income and price changes, the extent of adoption of improved production technologies and practices, and the share of own output consumed. Another challenge is the growing complexity of information needs that impinge on agricultural policy and investment decisions. Concerns about food safety, certification of production locales and practices, and environmental impacts (increasingly in the context of tradeoffs in the provision of food versus other ecosystem services) imply the need for more comprehensive data gathering, even at a time when funding for conventional data gathering is precariously low. We describe some innovative means of data collection, such as increased reliance on remote sensing and the design of smart agriculture/environment monitoring systems options that may also offer more integrated and cost-effective means of collecting data of value for both statistical as well as quantitative modelling purposes.

Challenges in Data Needs for Assessment of Food Product Risk and Attribution of Foodborne Illnesses to Food Products in the United States

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Abstract: This paper presents discussions on data needs for assessment of food product risk and attribution of foodborne illnesses to food products. Working with the Foodborne Diseases Active Surveillance Network (FoodNet), FSIS adapted a Bayesian statistical model to quantify attribution of meat, poultry, and eggs as sources of human salmonellas in the United States. The model was fitted to observed number of domestic and sporadic salmonellosis cases using Markov Chain Monte Carlo simulation approach to estimate the joint posterior distribution.

Our study shows that to adequately assess food product risk and attribute illnesses to food products, we need to obtain data concerning pathogen prevalence and distribution in a wide variety of potential food vehicles and other for other important sources of human exposure, such as indirect sources of contamination and non-food sources. Another challenge we encountered is the need to ensure that existing data sources continue to adequately represent the burden of foodborne illnesses in the U.S. population and the distribution of the associated pathogen in food vehicles and exposure sources of interest. Additionally, we need to refine existing data so that the comparisons between data from various sources are based on similar units of observation at the necessary levels of discrimination for defined points along the farm-to-table continuum.

Assessment of food product safety and attribution of foodborne illnesses require extensive data originating from various sources. However, currently available data sources suffer from methodological limitations and the unavailability of certain types of data often result in critical data gaps. An expert elicitation conducted by FSIS shows that when epidemiologic data are lacking, are sparse, or are highly uncertain, data from expert elicitation are useful to fill the critical gaps in food safety studies.

The Perspective of Climate Change Impacts on Agriculture and the Environment

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Abstract: Climate change will impact upon all economic sectors with agriculture and forestry being one of the sectors most intensively affected. The resources needed for ensuring sustainable agricultural production, including soils, water, genetic resources and biodiversity, will also be impacted. It is crucial to start preparing for adaptation, in order to reduce the negative effects and take advantage of the potential benefits. To this end, a better understanding of the baseline situation and the challenges ahead is needed. This paper presents a discussion on which data and information may be necessary and whether agriculture statistics could give a response to this challenge.

The paper focuses on three aspects. Firstly, the impacts of climate change on agriculture and the challenges of adaptation strategies. Secondly, the efficiency of water use by agriculture in the face of growing water scarcities and the data needs for the application of market based instruments. And finally, the data needs for assessing the environmental consequences of the growth of bio energy.

The SEEA as a Tool for Agricultural Statistics

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Abstract: The United Nations' handbook of environmental accounts, the *System of Environmental and Economic Accounts 2003* (SEEA), represents a set of internationally agreed guidelines for the development of environmental accounts. As such, it is an important document for those wishing to develop systematic statistics relating the environment and the economy, including statistics on agriculture. To ensure consistency with economic statistics, the SEEA adopts many of the standards and concepts of the *System of National Accounts*. The SEEA also extends the boundaries of the System of National Accounts in important ways; for example, by measuring assets and material inputs/outputs that are not bought and sold in markets.

As a framework for organizing statistics on agriculture, the SEEA has much to offer. It provides for accounts of agricultural land area and value. It also provides for accounts of agricultural inputs and outputs, including accounts of water use in agriculture.

An advantage of organizing agricultural statistics using the SEEA is that the system provides for consistent information across all sectors. Thus, agricultural statistics are made consistent with environmental statistics for the mining and manufacturing industries, for households and for governments.

This talk will briefly present the SEEA and discuss some of the ways it can be used to organize and present agricultural statistics.

Sustainable Timber Trade: Are Discrepancies in Trade Data Reliable Indicators of Illegal Activities?

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Abstract: Timber trade statistics published by international organizations such as ITTO and FAO often reveal discrepancies between what is reported as exported by a supplying country as compared with what is reported as imported by the receiving country. The discrepancies appear particularly large in the case of tropical wood products. Factors that might explain discrepancies in trade data can be categorized into “primary normal factors” (e.g. FOB vs. CIF prices), “secondary normal factors” (e.g. differences in product classifications) and “abnormal factors” (e.g. illegal activities). A study undertaken in 2004 involving 10 case studies examined the extent to which discrepancies might be considered abnormal.

International Price Comparisons – Purchasing Power Parities vs. Exchange Rates

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Abstract: The globalization of the World's economies accompanied by increased emphasis on policies to reduce poverty is increasing awareness for international standards for economic statistics to ensure data are comparable across countries. Through an effort led by the United Nations, the 1993 system of national accounts (SNA) provides a common framework that ensures economies are measured the same way across countries. The Gross Domestic Product (GDP) and its components provide a basis to measure the relative sizes of economies and when evaluated on a per capita basis provide the economic well being of the people. Before these measures can be compared across countries, they have to be converted to a common currency.

The report of the United Nations Secretary-General (02/04/2003) stated that “three quarters of the world's poor live in rural areas of developing countries and depend on agriculture and related activities for their livelihood. The World Bank provides poverty data based on \$1 or \$2 a day of expenditures per person. Again, national expenditures have to be converted to a common currency, in this case the United States dollar, to make these comparisons across countries.

While exchange rates can be used for these conversions, these are deficient because they do not reflect price level differences caused by non traded goods and services, capital movements, and government interventions. The purpose of the International Comparison Program is to calculate Purchasing Power Parities (PPPs) to provide comparable measures of economic levels and well being across countries that are free of price and exchange rate distortions.

An overview of the underlying theory and practice to compute PPPs will be provided with an emphasis on how it relates to economic and policy issues related to agriculture and rural development. Examples of data from the Asian region will be used to illustrate how the PPPs and related measures can be used to better understand the economic situation across countries.

Integrated Economic and Environmental Accounting and Globalization and the Impact for Agriculture

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Abstract: Currently the System of Economic and Environmental Accounts (SEEA) is revised. The United Nations Committee on Economic and Environmental Accounting (UNCEEA) oversees the revision work; the main preparatory work to be done by the London group on Environmental Accounting and the Oslo Group on Energy statistics. Many issues in the SEEA have direct relations to agriculture and land use and involve among others water accounting, material flow accounting, forest accounts etc. Like Agricultural Accounts the Environmental Accounts are satellite accounts of the System of National Accounts. They allow the balancing of the purely economic approach of society with a focus on sustainability.

In the key note speech the current work on the SEEA will be introduced, the current state of Economic and Environmental Accounting in the global economy, the advantages and disadvantages and the challenges as well as the strength of the accounting method in developing sound indicators for the global economy.

It will be argued that the system approach used in accounting is the most powerful tool for developing good indicators. The discussion between researchers using key sets of indicators, composite indicators and the approach via accounts will be used to illustrate the use of indicator sets and current discussions on indicator sets (Green GDP, ecological footprint etc). In this context also the various relations between environment and agriculture, natural resources and land use are described.

The System of Official Statistics in Sweden

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Abstract: In accordance with the Swedish Constitution, government authorities in Sweden have an independent role vis-à-vis the government. The task of a government authority is to translate political decisions reached by the Parliament and the government into practical action.

In the middle of the 1990s a reform was implemented of Sweden's official statistics, 25 government authorities were given responsibility for official statistics. On 1 July 1994 much of the responsibility for official statistics in defined sectoral areas was transferred from Statistics Sweden to 24 other government authorities. Statistics Sweden continued to be responsible for multi-sectoral statistics, while other authorities were made responsible for other parts of the statistics.

One of the main purposes of the 1994 statistical reform was to give the users more influence over the statistics. It was expected that the reform would result in the statistics having greater relevance to their users, that the statistical system would be more flexible and that the efficiency of statistics production would improve.

In 1998 an evaluation was performed, which showed that official statistics continued to function efficiently. However, coordination and the overall view of the statistical system had worsened. The evaluation report recommended that a council be established for Sweden's official statistics to improve coordination and the overall view of the statistical system. A Council for Official Statistics was duly established at Statistics Sweden in 2002.

This paper presents three facets of the system:

- The role and responsibility of the Council;
- The structure of the statistical system; and
- The cooperation within and improvement of the system.

A Study and Application of Sample Surveys on the Vegetable Industry in China

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Abstract: To study a new sampling survey method and determine new indices which coincidence with the current economy system and market environment for the Chinese vegetable industry, this paper adopted a sampling survey method and designed and applied a new vegetable crops sampling survey and reporting table system (VSS) based on scientific, practicability, usability, anti-intervention and economy principles since 2002. VSS improved or developed the following for six sectors: survey contents, sampling methods, indices establishment, coding, survey methods and estimation methods. As a result, the following were accomplished:

1. Developed new benefits indices for vegetables that can represent the general vegetable production status more scientifically and truthfully, improving the quality of survey result and enhancing its value.
2. Determined sampling site by using city data as a sample frame. This can meet the needs of the classification administration and will diminish sampling error induced by marked differences of natural resources and production levels.
3. Farmer establishes production logs for sampled units supports needs of survey indices, enhance availability, increases authenticity, and can provide correlative information.

The author has now practiced VSS for five years, made it to be perfect gradually, acquired good results in practices, received approval of specialists in statistical and agricultural fields inside and outside of Hebei Province.

Agricultural Statistics: Who Should be in Charge - the National Institute of Statistics or the Ministry of Agriculture?

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Abstract: Agricultural Statistics are indispensable in designing development policies in the agricultural sector and the national economy in general. They constitute a sub-system within the National System of Statistics (NSS). The NSS operates on the basis of consultation and coordination and mainly seeks to harmonize concepts, definitions, methods, indexes and nomenclatures. In general, the NSS is organized in two distinct forms: centralization, practiced by some developed countries where the National Institutes are responsible for producing all public statistics; and decentralization whereby public statistics are produced by more than one organization.

In France, for instance, the Institut national de la statistique et des études économiques (INSEE) is the main and most renowned statistic institute, although there are departments in ministries in charge of producing statistics at the ministerial level in their respective fields of activities. A sound coordination of activities is carried out by the National Council of Statistical Information (Conseil national de l'information statistique).

In Africa, and more especially in French-speaking African countries, the system applied is decentralization but it is poorly coordinated. The national system of agricultural statistics in Africa as a whole suffers from a sheer lack of identity and appropriation. Whereas National Institutes of Statistics are generally responsible for all official statistics, agricultural statistics are usually under the responsibility of the Ministry of Agriculture and Livestock which has local services in all administrative constituencies across the country. Moreover, there is little collaboration between services in charge of agricultural statistics and the National Institute of Statistics (NIS).

This paper discusses who should be in charge and makes the case for a clear-cut description of responsibilities in the production of statistics, as well as the promotion of partnership between NIS and agricultural statistics services. If adopted these measures will certainly help break this isolation and improve the production of agricultural statistics.

Should Agricultural Statistics Be Responsibility of National Statistics Services or Ministries of Agriculture?

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Abstract: Today in Russia, data collection responsibilities are distributed between the Russian State Statistics Service (Rosstat), the Russian Ministry of Agriculture, and other institutions that have the authority to gather statistics. Rosstat collects data on the key sectors of agricultural development. The Russian Ministry of Agriculture collects data from the Russian Federation territorial administrative offices of the Agri-Industrial Complex and from the organizations subordinate to the Ministry. By law, the Russian Ministry of Agriculture is a customer and coordinator of the federal informational resources in agriculture.

A recent joint effort between the Russian Ministry of Agriculture, Rosstat and the Russian Real Estate Agency aimed at processing and analyzing data from the 2006 Russian Agricultural Census was a positive experience. At the moment, our current practice is such that agricultural statistics is a responsibility shared by both the Russian State Statistics Service and the Ministry of Agriculture according to their respective authorities.

A Spatial Method for the Forecast of Agricultural Data

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Abstract: The methods for spatial data analysis are often based on the assumption of stationarity of the estimated parameters (Besag, 1974; Cressie, 1991). This hypothesis is patently violated when the data are characterized by information relative to predefined but unknown sub-groups of the reference population. It is clear that for spatial data which follow this hypothesis, the main analytic issue is, not to estimate the model parameters or to introduce a structural dependence among observations, but to identify the geographical units where the parameters model is stationary. We refer to such situation as local stationarity.

The main purpose of this paper is to present a spatial model for the forecast of agricultural data. In particular, we propose an approach based on the Simulated Annealing algorithm (Geman and Geman, 1984). Furthermore, we describe an application of the proposed algorithm for the forecasts of the yield of durum wheat in 2004. Our aim is to produce a map of potential yield for durum wheat through a regression using three purely geographical covariates, the x and y coordinates and the elevation, and on an agro-meteorological model estimated yield (SAM model). The assumption of non-stationarity for agricultural data largely improves the obtained results in terms of R-square index.

A Forecast Analysis on Global Production of Staple Crops

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Abstract: This study aims to make a long-term forecast analysis on global crops production and thus provide the publics, researchers, and decision-makers with basal data on global crops production in the future. Historical data on production and yield of cereals, paddy rice, wheat, vegetables & melons, and fruits for the world, developed countries, developing countries, Africa, Asia, Caribbean, Oceania, South America, North & Central America, and Europe are used to fit trajectories and make forecasts. The results demonstrate that GLM can generally fit trajectories of crops production. Forecasts of crops production and yield, per capita production, and crops composition for the world and various regions until 2030 are given and discussed in detail.

Evaluation of Some Concomitant Yield Variable in Some Improved Soybean

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Abstract: In this study, ten newly developed early maturing soybean varieties were considered. Among all the agronomic parameters of a leguminous crop, eight were considered and they are the following: days to flowering, days to maturity, height at harvest, height at lowest pod, number of plant harvested, dry fodder weight, 300 seed weight and nodulation count. Their effect on plant yield were evaluated and the result showed that among all the tested parameters, number of plant harvested and dry fodder weight are the parameters that are significantly and linearly related to the plant yield with correlation coefficient (r), $r = 0.902$ and 0.834 and are significant at 0.1% and 1% levels of significant respectively. To critically examine the effect of these agronomic parameters on the yield variable, analysis of variance and analysis of covariance were carried out separately on them and it was found out that the varietal effect on the adjusted yield (the yield adjusted with related covariates) was not significantly different, unlike the unadjusted yield or the yield adjusted with non-related covariates.

How to Best Classify Rural and Urban?

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Abstract: While “agricultural and rural development” is one of the key policy areas, there is no universally accepted way on how to classify urban and rural. On one hand, dissatisfied with the OECD approach in which a “rural area” is defined merely based on the population density, there has been a rich literature in the statistical discourse and policy debate on what other variables should be considered and included for the urban-rural typology. On the other hand, according to the rural areas observed in OECD countries, where the population has migrated to the urban and agricultural production has become less important, some people argue that the traditional way of thinking “rural” as the same of “agricultural” is not true anymore for the developed countries and the same transformation is going on in the developing countries. The salient feature of this paper is to apply an econometric logistic regression model to two datasets for Italy, an OECD country, and for China, a non-OECD country. The results of the model unambiguously demonstrate that, first, to classify the rural and urban, a multidimensional approach by taking into account both economic activities and geographic dimension along with population density is more appropriate; and second, agriculture is still highly relevant to the rural and thus an important determinant factor in defining the rural area.

Entrepreneurial Parameters and Classification – Typology for Rural Areas

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Abstract: Up to the mid 1980's, the European Union (EU) based its rural development policy approaches on uni-dimensional models. The need for a more comprehensive, multidimensional tool for policy formulation and evaluation became evident when the negative repercussions of the EU Common Agricultural Policy (CAP) in the mid '80's had to be faced by policy makers, especially in response to rural areas depopulation problems, increasing income inequalities, and environmental degradation problems.

Over the past thirty years, rural regions in Greece have undergone dramatic structural changes, which in turn have altered their identity. The change in employment composition in the newly formulated rural areas is a typical indication of the transformations taking place in the agricultural sector, and leads to a pressing need for a set of new definitions for typology of those areas.

More specifically, the emerging need for applying new methodologies for Greece, and other EU regions with similar characteristics, as well as defining the appropriate classification data sets, is pertinent to rural policies. Such policies, for example territorial policies, aim explicitly at the economic development of rural areas and in many instances focus on regionalized interventions for particular places.

This paper introduces a set of classification – typology criteria which originate from entrepreneurial behaviours in the rural areas. Further, aiming at the requirements set by the new EU Rural Development Regulation EC 1698/2005, the existing typology methodologies are reviewed, their strengths and weaknesses are presented, and the emerging need for an enhanced methodological tool for rural classification is elaborated.

In conclusion, the primary contribution of this paper is the proposition that for a flexible response to policy needs (policy targeting and monitoring of rural development), the classification-typology is best derived when accounting for entrepreneurial activity parameters.

The New Criteria for Dividing Urban-Rural Area on the Integrated Urban and Rural Development in Wuhan City, China

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Abstract: The new dividing criteria for the urban- rural area promulgated by NBS in 2006 clearly stipulate that the resident committee and the village committee which are administrative bodies are the minimum dividing units. The new criteria will greatly influence statistics. Firstly, the urban and rural statistical system reform must be proposed in order to stop the chaos between the government statistics and the department statistics. Secondly, information must be kept to account for information before and after the re-dividing of the urban-rural area. Thirdly, the statistical methods have to be changed accordingly.

Wuhan City is located in the heartland of China with the largest total economy scale and is the most populous city in central China. Wuhan City was used to evaluate the impact of the new criteria for dividing Urban –Rural areas:

1. Expansion of the urban region. According to the preliminary estimates, currently there are 378 village-level administrative units with a total of 20 thousands hectare of farmland that would be classified into urban area – a big contrast to the rural statistical data of Wuhan in 2005.
2. Increased level of urbanization. According to the new classification, there are currently 205.4 thousand households and 613.9 thousand people classified in the urban area in Wuhan, an increase of 2.3% from the level of urbanization in 2005, which was at 57.3%.
3. Better planning and development. Transforming the thinking/cultural habits of considering "the villages in urban area" as still in the rural area to appropriately categorizing these villages as in the urban area will impact policies and planning.
4. Enlarge the urban-rural economic gap.
5. New demands for city development.

World Programme for the Census of Agriculture 2010

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Abstract: The World Programme for the Census of Agriculture 2010 (WCA 2010), released by FAO at the end of 2005, introduces many changes as compared to previous decennial Programmes. These were adopted following many consultations, including discussions at regional meetings around the world, intensive meetings with specialists within FAO who represent data users' views in their respective disciplines, and a large Technical Consultation with the participation of statisticians and data users from different parts of the world.

The new Programme is more explicit in the recommendation regarding the selection of items to be included in the census, by proposing a modular approach. While the modules present suggestions for holding level collection of structural data, in response to increasing demand for community level data, items of information at the lowest administrative unit or even for smaller geographic area are recommended for collection as part of the agricultural census; the statistics unit here is the community or village which is a completely new aspect in an agricultural census.

Linkage between population census and agricultural census is stressed in WCA 2010; a matching text is included in the United Nations Recommendations regarding population census for the 2010 round. Structural data on aquaculture which were the subject of a supplement in the previous World Programme are integrated in the WCA 2010, in a section of the publication. Based on experiences gained regarding gender statistics in the 2000 round of agricultural censuses, a concept of sub-holding is introduced in WCA 2010 to address this issue for application in specific conditions of a large number of countries.

This paper makes a general presentation of the World Programme for the Census of Agriculture 2010, with emphasis on its new aspects and other salient features of the publication, linkages between censuses, and a review of other WCA210 changes.

The EU Farm Structure Surveys from 2010 Onwards

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Abstract: Over the past three years there has been intensive discussion within the EU on the content of the next series of farm structure surveys, which starts in 2010 with the census of agricultural holdings. Changes in consumer demand, coupled with the introduction of new policies on agricultural and environmental issues, food safety and rural development have broadened the scope of agriculture-related statistics considerably. The challenge within the EU has been how to address these new needs without significantly increasing the burden on respondents.

This paper describes the key changes which have been proposed for the EU and which have stimulated most debate. These include:

- new structural variables (e.g. organic farming, renewable energy production);
- redefinition of the coverage of the census;
- introduction of georeferencing;
- use of sample surveys for certain census characteristics;
- exploitation of administrative data sources; and
- development of a new survey on agricultural production methods.

Potential Changes to Scope of Agricultural Surveys and Censuses in the Australian Context

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Abstract: This paper describes the traditional scope of Agricultural Censuses and Surveys in Australia and the origins of that scope definition. Increasing demands for information related to agriculture are examined, including the need for data on natural resource management, sustainability, farm families, farm finances and organic and GM production. Implications for the scope of agricultural collections are then discussed, including the population of interest and the type and size of farms to be included within scope. Options for meeting these needs, including choice of appropriate collection vehicles and population frames are then discussed. Finally, the paper discusses strategies being adopted in Australia to satisfy some of these data needs.

The 2005 U.S. Census of Aquaculture: Broadening the Scope to Meet Data Needs

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Abstract: Data users continue to want more information on specialized and growing industries within agriculture. Producers continue to request information to quantify expanding production, measure trends, introduce policy and legislation, or seek funding for promotion and research. To meet the needs of a small but rapidly expanding aquaculture industry, the National Agricultural Statistics Service has broadened the scope of the quinquennial census of agriculture by using a follow-on technique to collect more detailed information. This paper summarizes the data needs of the aquaculture industry, the methodology used to broaden the scope of the census to meet those needs, and the resulting benefit to the aquaculture industry. In addition, the results of the 2005 United States Census of Aquaculture are presented which provide a current and comprehensive picture of the aquaculture sector at the State and national level.

How to Build an Integrated Database in Agriculture and Food: The Farm Income and Prices Section Database – A Case Study

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Abstract: The Farm Income and Prices Section in the Agriculture Division of Statistics Canada is responsible for a regular program of collecting, compiling, analysing and disseminating aggregate agriculture economic statistics. Data from these series flow to several divisions in the Canadian System of National Accounts Branch to form the agriculture sector's contribution to GDP, as well as too many key users outside Statistics Canada both in government and in the private sector, and together are considered vital indicators of the health of the farm sector. In producing these data sets, the Section integrates a tremendous volume of data on a monthly, quarterly, semi-annual and annual basis from a wide range of sources within the Agriculture Division, other divisions in Statistics Canada, other federal and provincial government departments and agencies, producer marketing boards and industry associations.

The rapidly changing structure of the industry, with its escalating complexity and diversity, as well as a loss of critical administrative data sources, has increased the difficulties of data collection and estimation. In an environment of resource constraint, ensuring an efficient production process that leverages advances in technology to permit sufficient time for analysis to ensure the high level of data quality essential in meeting users' requirements is a challenge.

This paper provides an overview of the issues, the strategy and the considerations surrounding the development of a new database to be used in the Agriculture Division to facilitate the process.

Integrating Economic Surveys in Agriculture: Lessons Learned from the ARMS-CEAP Survey

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Abstract: There is a growing need for information that is integrated across the food chain, from farm production forward to processors, wholesalers, and retailers and backward to resources and input providers. This need stems in part from policy issues that cut across links in the chain, such as tracing products, food safety monitoring or linking policy initiatives to farm practices and environmental outcomes. But the need also stems from the increasingly integrated nature of food production; the expanding use of formal contracts, vertical integration, and multi-unit farms means that one reporting unit may not contain all the relevant information needed to assess policy impacts on production practices, productivity, and financial performance, even at that unit.

Although policy analysis frequently requires development of more integrated, and less fragmented, databases, integrated databases are rarely available. Survey designers and analysts face formidable practical challenges to build integrated databases for policy-oriented research. Specifically, an integrated survey will almost certainly entail a re-examination of sample design, unit definition, questionnaire content, training, and data handling. USDA has worked on a number of survey integration projects, including ARMS-Census, ARMS-AELOS, and ARMS-CEAP.

This paper highlights lessons learned from one such effort to integrate two surveys – ARMS and CEAP—an effort that was prompted by the changed focus of USDA’s conservation programs away from traditional land retirement programs and towards conservation on “working farmlands.” To measure the success of USDA’s working-lands conservation programs, a database was needed to isolate the influence of program incentives from other factors governing farmers’ conservation decisions. The ARMS-CEAP pilot survey integration program was conducted for wheat (2004) and corn (2005). The integrated ARMS-CEAP database linked farm production practices, farm economic and producer characteristics, and site-specific environmental characteristics, enabling a comparative assessment of how USDA conservation program incentives affect economic behaviour and environmental outcomes.

Agricultural Statistics: The Sri Lankan Experiences of Developing Agricultural Market Information Service for Small Farmers (Commodity Price Reporting System)

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Abstract: Economic liberalization and globalization have seen increased interest in the need for market information which has direct benefits for farmers, traders and policy makers. Market Information Services (MIS) in Sri Lanka were initially started in the 1980's and "Market Intelligence and Food Information System" project was established in 1996 with USAID, UNDP and FAO funding. The "*Food Commodities Bulletin*" (weekly) and "*Food Information Bulletin*" (monthly) are the two major agricultural statistics documents prepared by the project and provide price statistics and information to government, farmers, traders, consumers and so forth. These publications play a vital role for both farmers and traders by improving their bargaining position and reducing transaction cost while supporting consumers purchasing position and providing valuable statistics for policy makers toward safeguarding food security.

Despite these considerable benefits, there are numerous problems and constraints, some of which are administrative and management. This paper will only examine, review and highlight the strengths, weakness, and challenges of the "method" of agricultural prices data collections, processing, transmission, dissemination and utilizations, in association to the agricultural statistics. Qualitative and descriptive analysis is given priority as the presentations technique.

The paper describes problems areas related to duplication of activities, political and other interferences, accuracy and reliability of the data, and timeliness of the publication disseminations. It also attempts to prove insight as to the large percentage of work related to MIS and its primary data gathering exercises which is also problematic. It points out that data and information are not arriving at the farmers' level and communications and presentation techniques have many difficulties.

With donor funding completed, MIS now faces financial crisis because government officials managing MIS have failed to obtain commercial support resulting in questionable sustainability of the system which the author argues researchers, statisticians, analysts and policy makers have the responsibility to correct.

Agri-Food Chain Information System – SISPRO

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Abstract: This paper will describe the features and benefits of SISPRO with emphasis on the system's flexibility. This flexibility feature enables and allows the system users to more effectively take part in their agri food chain activities and better supports the system users' communication and permanent conciliation with their economic and institutional counterparts in the business productivity channel.

Discussed is the integration of infrastructure calculations, development tools, development of the information, database and equipment management, systems and methods to guarantee availability and accessibility to the system, and how the Secretariat of Agriculture, Cattle, Rural Development, Fishing and Nourishment (SAGARPA) facilitates integration of the system's technology infrastructure.

The Strategic Planning office has completed development of sixteen of the system product modules. The sixteen products include: Avocat, Blue Agaves variety from Tequila, Beans, Cotton, Rice, Cocoa, Coffee, Corn, Grapes, Guava apple, Mexican Lemon, Mangoes, Orange, Pork, Wheat and Watermelon.

Major features of the system are discussed including topics on: Inputs, Production, Trade, Industrialization, Final Consumption, Current Situation and Perspectives, Support Programs, Research and Development, and specific aspects of each system product. To achieve overall results the system compiles, integrates and analyzes information that is not available within its database of information.

The system can also compile and present specific information on Trade, Standardization (quality & innocuousness), Global Panorama, Value of the systems – product, Agri food information, Employment, Household Consumption and Expenditure, Producer (wholesale and consumer prices to the producer), Support Programs, as well as current situation and perspectives analysis among others.

Also, SISPRO contains a dynamic system for consultation of Geographical Information in three different levels: National, State and Municipal. Additionally, it is possible to obtain maps of the Mexican Republic, which show the origin for each Agri Food chain.

Recent Developments in EU Statistics on Pesticides, Fertilizers and Water

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Abstract: One of the tasks assigned to the European Community in its founding Treaty is to promote a high level of protection and improvement of the quality of the environment. The Cardiff Process launched by The European Council in June 1998, required the Commission to integrate environmental considerations into all Community activities, including agriculture. The importance of this integration is reaffirmed in the Sixth Environment Action Program (2002-2012) and its seven thematic strategies towards sustainable development.

The 2006 Commission Communication on the development of indicators for monitoring the integration of environmental concerns into the common agricultural policy resulted in the presentation of a set of 28 agri-environmental indicators and identified important gaps in the data required for the indicator calculations, especially concerning agricultural inputs such as fertilisers, pesticides and water.

In the framework of the Community thematic strategy on the sustainable use of pesticides, the Commission proposed a Regulation concerning statistics on plant protection products covering both sales and use. These statistics will be essential to calculate risk indicators and measure the progress of the strategy, especially in terms of risk mitigation and reduction in the use of PPP. As it is preparing the future Community surveys on the structure of agricultural holdings, Eurostat is also looking at the possibility to develop new surveys on production methods that would include specific questions on irrigation.

Eurostat also plans to collect fertiliser statistics and will therefore support pilot surveys in the Member States with a focus on two complementary approaches: Data collected on the total amount of fertilizers used at the farm level with a direct link to the farm structure and detailed data on N-P-K inputs by crops with the aim to calculate detailed balances. This paper describes the practical approaches adopted to address these three specific domains mentioned above.

Fertilizer Data Collection, Processing and Dissemination: Experiences from the New Fertilizer Domain in FAOSTAT

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Abstract: During the modernization of FAOSTAT (the major FAO statistical database) the opportunity arose to review the underlying methodologies, streamline data collection devices/processes, and improve user access to statistical data related to fertilizer. This paper outlines the new data collection, processing and dissemination of fertilizer data in FAOSTAT and outlines the current developments. These datasets will provide users with comprehensive fertilizer data for agricultural fertilizer analysis and policy making.

For over five decades, FAO has assembled data on fertilizer production, trade, consumption and disseminated up-dated time series annually in the FAO Fertilizer Yearbook and more recently in FAOSTAT. Since the 1950's, FAO has devoted substantial resources to the development, maintenance and improvement of its fertilizer database. In recent years it became apparent that further improvements in data quality could be achieved by: adopting new methodologies; statistical frameworks; aligning fertilizer statistics definitions and classifications with international classifications; working closer with industry partners and including information from additional international sources. This paper describes these experiences and highlights the major changes that have occurred.

The fertilizer dataset is part of a new Agricultural Resources domain in FAOSTAT that provides not only fertilizers data but also data for such topics as land use, irrigation, labour, agricultural machinery and plant protection products. These topics are integrated with the other domains in FAOSTAT to enable users the opportunity for input/output analysis for agriculture and food, in physical and monetary terms. This paper also provides an overview of how the fertilizer domain is integrated into the overall FAOSTAT framework and the next steps that will be undertaken in the Fertilizer domain in FAOSTAT.

The Importance of Developing Demand-Side Agricultural Statistics for Sustainable Resource Planning and Management: A Reflection from the Perspective of the National Water Resources Plan (PNRH) of Brazil

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Abstract: The current expansion of the agricultural frontier puts additional pressures on available water resources beyond the carrying capacity of regional ecosystems. Much of the answer to water scarcity can be found in farming-related techniques harvesting more rainfall, reducing waste in irrigation, increasing crop productivity, and in changing crop and dietary choices (FAO, 2007). With the advent of bio-fuels, the challenge to balance inputs to carry out agriculture will become a more difficult task, and the need for developing agricultural demand-side statistics becomes an utmost priority to achieve sound resource management and country strategies.

Current agricultural statistics have concentrated on the producer and supply side while neglecting the demand side, including the environment as a major user, offering additional challenges for sound natural resources planning, management, and policy making. Also, agricultural statistics in developing countries frequently leave aside major use indicators at the watershed and local scales, driving agricultural and rural development policies towards resource depletion or inefficiencies, and confusion of targets between agriculture, natural resources management, and socio-economic development.

To address these disparities, Brazil established its “Water Law” (9433/97) calling for water management plans and strategies, including a National Water Resources Plan (PNRH) that defines the guidelines for public policies oriented towards the improvement of water supply in qualitative and quantitative terms, by promoting demand-side management measures while considering the water resource as the cornerstone resource for the implementation of sectoral policies under an ethos of sustainable development and social inclusion for a planning horizon until 2020 (PNRH, 2005).

Unless demand-side agriculture statistics are developed further, markets will continue to be very unpredictable as far as setting appropriate price structures for crops as a function of guaranteeing food, energy security, environmental quality, and social equity. Consequently, the planning for the most essential natural input, water, for agriculture and all form of life, will also continue to be largely uncertain.

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