Agricultural Censuses in Latin America and the Caribbean: Some Lessons From Experience.

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Abstract.

Latin America and Caribbean countries have made a strong effort to accomplish the taking of Agricultural Censuses following the World Programme promoted by FAO. In comparison with previous decades the present one (1996-2005) shows exceptional improvements in agricultural censuses in the area. In this paper, a brief update of the situation is done. At the same time, some problems in international comparisons are analised and practical solutions to particular problems are presented. Finally, the 2001 Agricultural Census in Nicaragua is presented as a study-case. This census was chosen because of some particularities in its planning and execution and the completeness of the excercise which included the practical implementation of Zarkovich's methodollogy for a post enumeration survey on census coverage, its use in building a multiple frame for periodical agricultural surveys and four special in-deep studies derived from it.

I. Introduction.

During the 2000 round of Agricultural Censuses, which comprises the period 1996-2005, several countries in Latin America and the Caribbean took their Agricultural Censuses. The following table shows the situation and allows the comparison between the actual round and the previous ones:

REGION	# TOTAL OF COUNTRIES	# OF COUNTRIES THAT TOOK AGRICULTURAL CENSUSES		
		1976-85	1986-95	1996-05
Latin America	16	7	9	10
Caribbean	15	8	8	4
TOTAL	31	15	17	14

Notes: 1. French Territories, Dutch Territories and USA Territories excluded. Belize and Suriname were included in the Caribbean region. 2. The round 1996-2005 corresponding to the World Programme 2000 comprises up-dated data from the FAO website at 1 August 2004.
Source: FAO.

In all cases, the FAO Programmes for the World Census of Agriculture were adopted. To take in consideration the particularities of agriculture in different countries as well as the conditions of the census taking regarding to budget, personnel and infrastructure, different adjustments to the programme were necessary. New developments in technollogy and more computational facilities in the countries allow faster and more accurate processes.

Several circumstances contributed to a better performance of censal activities in the region in the last 20 years. The term “censal activities” refers to the broad concept of the Programme and comprises “censuses” and “large sample surveys”. This is the result of several interrelated factors which can be grouped in: 1. Factors related to a better “statistical instruction”; 2. Factors related to more “professional” decision taking processes; 3. Factors related to technological developments; 4. Factors related to international cooperation.

1. Factors related to a better “statistical instruction”. This point refers to better knowledge of statistics (both theoretical and applied statitics) of professionals and technicians of the offices responsible for taking, processing, analising and disemminating of statistical information. In our particular case our counterparts are professional and technicians from the Ministries of Agriculture or from the National Statistical Institutes. Fifteen or twenty years ago we usually found bureaucratic teams without formal statistical studies whose knowledge came from practice in information taking or in filling administrative forms. Nowadays, on the contrary, it is not unusual to find young technicians and professionals with a degree in Statistics or in Economy, many of them with postdegrees studies too. It has had two main results: to raise the technical level of the statistical offices and to promote that decision makers become aware of the importance of scientific validated information. This last point relates to the following group of factors.

2. Factors related to more “professional” decision taking processes. Reform of state processes, requirements and demands from international organizations, the increase of social control on information and a deeper international standardization of data at country level and the awareness of the need for scientific validated information as mentioned, have lead decision makers to demand for increasing quality in information provided. This concept includes better methodological quality in collection of data.

3. Factors related to technological developments. The impressive development of new technologies in information and communication allows methods of data collection, data control, processing, presentation and dissemination of information unthinkable 10 or 15 years ago. In this point is important to emphasize its role in the change of the relationship between producers and users of information. As a direct result of this new relationship greater demands on quality of data appear. Just think about the consequences that today any user from a remote terminal is able to re-process censal information and to build his (her) own tables, graphics, maps, and check for quality of data.

4. Factors related to international cooperation. Several international cooperation projects require updated agricultural information as a key input. It has lead to international organizations to recognize the importance of including items for taking agricultural censuses in project budgets. As a result, several agricultural censuses in the region were took under the umbrella of one or several of those

organizations. It is not uncommon to see associations like EU-FAO; IICA-USDA; FAO-USDA, etc. Where one organization offers technical assistance and the other one lends or grants the money for census taking. Because of the high cost of census taking these forms have meant an important factor in the increase of censal activities in Latin America and the Caribbean.

Despite those positive aspects, several points are still in the "debit side". In brief I would point up the following:

1. Lack of a real awareness of the role of agricultural censuses as frame for agricultural surveys. Despite some advances in that sense, the agricultural census is still seen as the main procedure to collect agricultural information. This is a great error. This error leads to long questionnaries, slow processing, over- expensive censuses, low quality in some items and, which perhaps is more important, to the lack of a long run strategy making budgetary provisions to take periodical agricultural surveys based in the frame provided by the census. It is necessary to stress (as the next FAO Programme does) that agricultural censuses should be seen mainly as good agricultural register of holdings and holders containing basic structural information to build good sampling frames.

2. Budgets for statistical activities are still small. Public budgets in the countries of the region, generally do not include provisions for continuous statistical activities and in particular for periodical agricultural surveys. Several times the statiscal programme is interrupted once external aid finish. Other times, statistical activities are planned but not properly budgeted and it is not uncommon to see unfinished projects after assigning important resources in their initial steps.

3. Lack of awareness in the insertion of important items. In deep sample surveys, periodical surveys, agricultural censuses and other procedures for information taking still have a strong "economicist" and short run content. It is crucial to insist in the generation of information about sustainable development, living conditions in rural areas, rural employment, gender conditions in agriculture, environmental aspects of agricultural production and so on. It is needed to be aware of the importance that decision makers include in long run statistical programmes those items. FAO may consider these needs and insist on those points in the next World Programme.

After this brief inventory of strengths and weaknesses of agricultural statistics in the region I would like to point out a couple of aspects which affects the comparison of censal data and need a deeper treatment.

II. Some lessons from experience.

Both points I would like to raise, affect comparisons between the number of enumerated holdings and, as a result, all the rates based on that number: area by

holding; number of workers by holding; number of parcels by holding and so on. The first one refers to the minimum size of holding to be included in the agricultural census and the second one, to the minimum administrative division to be considered in order to include in the same holding different parcels of the holding. A third aspect that affects international comparison of censal data refers to the fact that some countries exclude some cathegories of land use from the census. Nevertheless this latter point it is not important in Latin America and the Caribbean and we shall not treat it here.

a) Minimum size of holdings.

The World Programme in the definition of agricultural holding does not refer to a minimum size: “An agricultural holding is an economic unit of agricultural production under single management... without regard to title, legal form, or size”, and, in the methodological notes when it refers to coverage establishes: “in many countries, a minimum size limit is adopted for holdings included in the census”. This limitation, set because of practical reasons, leads to distortions in international comparisons. For example: the National Agricultural Census of Uruguay in 2000 reported 57,131 agricultural holdings and the National Agricultural Census in St. Lucia in 1996 listed 13,368 agricultural holdings. Is it right to conclude that Uruguay has 4.27 times the number of holdings of St. Lucia? No, because the minimum size adopted in Uruguay (country with extensive agriculture) is one hectare and in St. Lucia, country of small farms (15% without land), a holding is taken in the census when it accomplishes lesser requirements as the following table shows:

Minimum qualifications adopted in different countries to include an agricultural holding in the census.

Country	**Minimum qualifications**
Uruguay	1 hectare
St. Lucia	1/8 of an acre of temporary crops or 10 bearing trees of any tree crop or 100 bananas and/or plantain or 1 head of cattle or 2 heads of pigs, sheep or goats, or one head of any two or 12 fowls (chicken) or rabbits or 12 fowls and rabbits together.
Jamaica	0.04 hectares of any crop or 1 head of cattle or 2 heads of pigs or goats or one head of any two or 12 chicken or 12 bearing trees of any tree crop.
Dominican Republic	1/6 of an acre or 3 heads of cattle or 6 heads of equines, goats or sheep or 60 chickens
Haiti	0.03 acres
Panamá	Without minimum
Brasil	Only backyard gardens and home orchards are excluded.
Nicaragua	Without minimum

This problem in international comparison because of the different minima sizes is difficult to solve. Even though “all” holdings were considered, from an

economic point of view is quite different a holding of half an hectare in a smallholding country than in a country of extensive agriculture.
FAO recommendation in order to “set the minimum size limit as low as possible and to take steps to collect data through special sample surveys from excluded holdings""is very important but not always taken. It would be desirable, that final censal reports at least put in clear: 1) the minimum size if any; 2) an estimate of the total number of agricultural holdings below that limit (this estimate can be obtained through a question in the population census)

b) <u>When parcels of the same agricultural holding are taken in that way?</u>
This problem, that also afects comparison of censal results on the number of holdings, refers to the following consideration: theoretically, according to the definition of agricultural holding “the holding’s land may consist of one or more parcels, located in one or more separate areas or in one or more territorial or administrative divisions, providing the parcels share the same production means utilized by the holding” [FAO, 1995]. Nevertheless practical reasons, mainly of control of the field work, lead countries to add another condition: different parcels of the same holding must be located inside some territorial or administrative division. This arbitrary limitation depends on the characteristics of the country and the resources to control the field work. So different countries have adopted different limits: sometimes the censal sector, sometimes the province or the municipality, or village or department.
Taking too small divisions leads to overestimate the number of agricultural holdings, if great divisions are adopted duplication problems can arise because two surveyers (with different supervisors) could take information on the same holding in different parcels.
Anyway, this problem has a lesser impact on coverage than the latter because it affects the total number of holdings and data on division of holdings but it does not affect census coverage.
The following table depicts the situation in some countries of the region:

Country	**Minimum administrative division for different parcels of the same holding be taken in only one holding**
Uruguay	Every other Department
St. Lucia	Whole country
Nicaragua	Municipality
Perú	Valley in the Costa Region and District in the rest of the country.

III. A study-case: The National Agricultural Census in Nicaragua 2001.

At last I like to present in brief a paradigmatic case of Agricultural Census in the sense that from my point of view, it reached all the objectives of a census.
The field work of the III Agricultural Census in Nicaragua was done in April 2001. The census was taken with the assistance of FAO, the EU and the Goverment of Nicaragua. The III CENAGRO, as it was named, had four groups of distinct

activities: a) the census taking itself; b) a post enumeration sampling survey for checking coverage; c) the use of the census for the new sampling design for the agricultural surveys of the National Programme of Continuos Surveys; d) the edition of four special studies about different structural aspects of the agricultural sector.

The characteristics of the four groups of tasks were defined by means of two technical cooperation projects signed with FAO: one looking for assistance in the preparation of the census and the second one for assistance in post-censal activities.

Despite FAO recommendations about the importance of conducting post-enumeration surveys (PES) as “serious attempt to obtain evidence of census methodology deficiencies, type of errors occurring and magnitude of such errors” [FAO 1995] and that “a comprehensive check on sample of raw data is recommended by FAO, and consists of a separate Post-Enumeration Survey” [FAO 1996] it is not usual the taking of PES in agricultural censuses. In Nicaragua, inmediately after the end of the field work a PES for checking on coverage was conducted. By means of stratified random sampling, censal sectors were sampled and “swept” to verify coverage following the methodology proposed by Zarkovich [Zarkovich, 1966]. Results can be read at: www.inec.gob.ni/cenagro/encobertura.htm

The III CENAGRO also accomplish the objective of serving as frame for the design of the sample surveys. The new frame is a multiple frame built in accordance with FAO recommendations [FAO 1996-2].

The construction of the new frame started once the processing of the III CENAGRO finished at the end of 2002. The information from the agricultural census was crucial to ellaborate the list component of the multiple frame, to verify and correct the preliminary stratification and to define the Primary Sampling Units. The new frame is ready and the first survey with the new design was taken in past April 2004.

Finally, from the censal data, not only the first Agricultural Atlas of the country was edited (see www.inec.gob.ni/cenagro/atlas.htm) but four special studies derived from the re-processing of the census and external sources were done. These studies are important research works for deeping in the knowledge of the sector in Nicaragua as well as for the decision making process. The four studies were: one on agricultural credit; one special study on the agriculture in Nicaragua from a gender oriented point of view; one study on land tenure and his evolution and one study on a tipology of agricultural holders in the country. The four studies ended between April and June 2004 and they were performed by the National Statiscal Institute (INEC) and by two private consultancy firms.

Those four groups of activities show in what a manner an efficient use of the rich censal information allows to spread the results usually narrowly limited, in the countries of the region, to a final presentation of censal data.

We must keep in mind that country citizens are whose, finally, finance the statistical activities and a basic ethical principle is to do an efficient use of the resources that the whole society assign to them. To ensure the quality of the data, to strenghten their use in the knowledge of the national reality and supporting the decision making process are aspects which increase that indispensable efficiency.

IV. Conclusions.

In this paper I tried to share some experiences of my participation as consultant in agricutural statistics in Latin America and the Caribbean during the last twenty years.

Those lessons from experience should serve to future programmes of agricultural statistics and, in particular, to the Programme of the World Census of Agriculture 2010 under ellaboration. In brief:

- ✓ the need to increase the comparability of data coming from different countries through a careful presentation of the results of the statistical activities;

- ✓ to emphasize the need that governments be aware of the importance of statistical activities including them properly in the national budgets;

- ✓ to include in the national programmes of statistical activities new items or items improperly treated (in this sense the new WCA Programme has advance but, from my point of view, it would be necessary to include new items in sustainable development and, in particular in environmental aspects);

- ✓ to emphasize the need of including in the early stage of censal budgeting, provisions for conducting post enumeration surveys;

- ✓ to strengthen efforts to take advantage of the rich information about agricultural structure given by agricultural censuses;

- ✓ to insist in the need of a proper budget for the updating of sampling designs from the censal information.

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