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Parallel Session 3.1: Agricultural Surveys and Censuses-Experience

Paper 3: Agricultural Censuses in the Small Island Developing States (SIDS) – Recent country experiences

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PRESENTATION OUTLINE

1. History of the Census of Agriculture in Small Island Developing States (SIDS)
2. Resources challenges
3. Methodological challenges
4. Complete Enumeration versus Sampling
5. Relationship between Census of Population and Housing and Census of Agriculture
6. Concluding remarks

1. History of the Census of Agriculture in SIDS

- SIDS: 38 countries according to FAO grouping
- All SIDS have undertaken an agricultural census at some point in their history (except 3).
- The most significant census round was the 1950 round with participation of 27 countries (71%)
- Since then participation has been less than 50% with the
- Most recent round (2000) the lowest with only ten countries participating.
- No country has participated in all seven rounds
- Only three countries have participated in 6 out of the seven rounds (see table).

2. Resource challenges- *Funding*

- Resources to conduct a census of agriculture is a major challenge for many developing countries.
- For SIDS, the resource challenge is often both financial, institutional and human.
- Declining importance of the agricultural sector in many SIDS, ➔agriculture has no longer the same high priority it used to be and securing the necessary funds to conduct a census of agriculture is becoming increasingly difficult.
- One solution is to conduct a 'national census programme' and to plan the census of agriculture and the census of population and housing as a joint exercise under one funding envelope (see section 5).

2. Resource challenges- *Funding*

- External funding is also an option for some SIDS but there are increasing demands for such funds for other government activities and agriculture and statistics do not always feature as high priorities.
- As a result, many agricultural censuses are, therefore, conducted with less than the optimum level of funding.
- Insufficient funding can impact on the methodology for the census of agriculture which has to be adjusted to accommodate the level of funding available ➔ (i) reduction in the scope and coverage of the data collected and, if sampling is used, a (ii) reduction in the geographic detail available and the range of items.

2. Resource challenges-*Institutional arrangements*

- In considering the institutional arrangements, it should be noted that the census of agriculture as made up of a statistical component (census) and a thematic component (agriculture).
- In SIDS, very few line ministries have a dedicated statistical unit with capacity and skills in the methodological aspects of statistical survey and census taking.
- The bulk of the human resource skills, to the extent they do exist, will be found in the NSO
- But very few NSOs have subject matter experts such as agriculturalists.
- From this it is evident that the optimum arrangement for the census of agriculture in a SIDS is for the two government agencies concerned to work together and to share the responsibility for the census.
- The need to institutionalize this relationship between the NSO and the line ministry in developing and implementing an integrated system of food and agricultural statistics, within the broader context of the National Statistics System, is considered an essential pre-requisite for the success of the census of agriculture.

2. Resource challenges-*Human resources*

- The human resource capacity is closely linked to the institutional capacity.
- In larger countries, a separate agricultural census unit is the preferred approach but this is not always possible for SIDS because of the small numbers of staff.
- In this case, a 'census team' approach is a pragmatic solution with a full-time census coordinator and staff seconded or co-opted' on an 'as needs' basis. A range of key skills has to be planned for the team: census methodology, field coordination, data processing, analysis and dissemination.
- The full range of these skills is difficult to find in most SIDS and is rarely available in a single institution.
- Given the relatively infrequent nature of census taking (every ten years), it can be argued that SIDS cannot afford creating and maintaining a capacity in all these skill areas.
- A regional network of international experts may be one solution. But there are cost implications and, by taking an expert from one country to another, a gap may be created in the releasing country's human resource base.

3. Methodological challenges

SIDS are confronted with many of the same methodological challenges faced by larger developing countries. One example: estimation of crop areas for both permanent tree crops and also temporary garden crops.

- Permanent tree crops are often grown by households as 'scattered' crops with only a few trees on the holding.
- In this case the numbers of trees should be recorded and these numbers converted to 'a single crop equivalent area' using standard spacing data
- As these scattered tree crops often account for the majority of trees for crops such as mangoes, breadfruit and avocado, it is important that the information collected is as complete as possible, even from households not qualifying as operating a holding.
- Generally, farmers are able to provide this information quite readily but good publicity on the information required and active farmer participation in the census can improve the data quality considerably.
- A copy of the full questionnaire, or the key sections on livestock numbers, tree and garden crops, can be provided to the farmer in advance of the enumeration and s/he can be asked to complete these sections.
- Alternatively, the farmer can be given a form to complete and a follow-up visit can be arranged, or the information can be passed by telephone.

3. Methodological challenges

Temporary garden crops present a more complex situation with often farmer's lack of knowledge of area measurements, scattered plantings, continuous planting/harvesting farming systems, inter-planting, mixed cropping and repeat plantings.

- In some countries (St. Lucia, Antigua and Barbuda), no attempt is made to collect information of individual crop areas as extensive field testing has confirmed farmers are not able to provide such information based on a single visit enumeration➔. Only the total area of land under temporary crops, as part of the land use evaluation, and the presence of each crop at the time of enumeration or in the last 12 months is collected.
- In other countries, an attempt has been made to address these issues, sometimes in innovative ways with two options: (i) the enumerator measures each parcel of land ; (ii) to train the framer to measure his own land using simple pacing techniques.
- The first option is of course very time consuming (and thus expensive) but should be more reliable than the second, at least for the parcels measured. However, there is empirical evidence that this method tends to under-estimate the number of parcels per holding
- The second option, while the individual area measurements may be less reliable, has the advantage that it is a much cheaper option and farmers may be more willing to include more, if not all, of their parcels. But the farmers have to be willing to participate and the training must be conducted to a sufficient standard.
- Enumerators have to be 'on call' to assist farmers and to work with them in this exercise. Inducements, such as T-shirts, caps, seeds, etc., may be necessary to ensure active farmer cooperation.

3. Methodological challenges

- The issues of scattered plantings, inter-planting and mixed planting can be addressed by collecting both numbers of plants and areas and identifying the planting pattern for each planting.
- In some countries (Cook Islands, Niue, Samoa, Tonga) where crops are inter-planted or a particular mix is planted, farmers are asked what proportion each crop accounts for in the mix, using simple fractions.
- This enables two sets of data to be generated, the actual physical area covered by each crop (includes double counting) and the single crop equivalent area.
- This is a useful approach to presenting data on mixed and inter-planted crops.
- Scattered temporary crops are handled in the same way as scattered permanent crops.

3. Methodological challenges

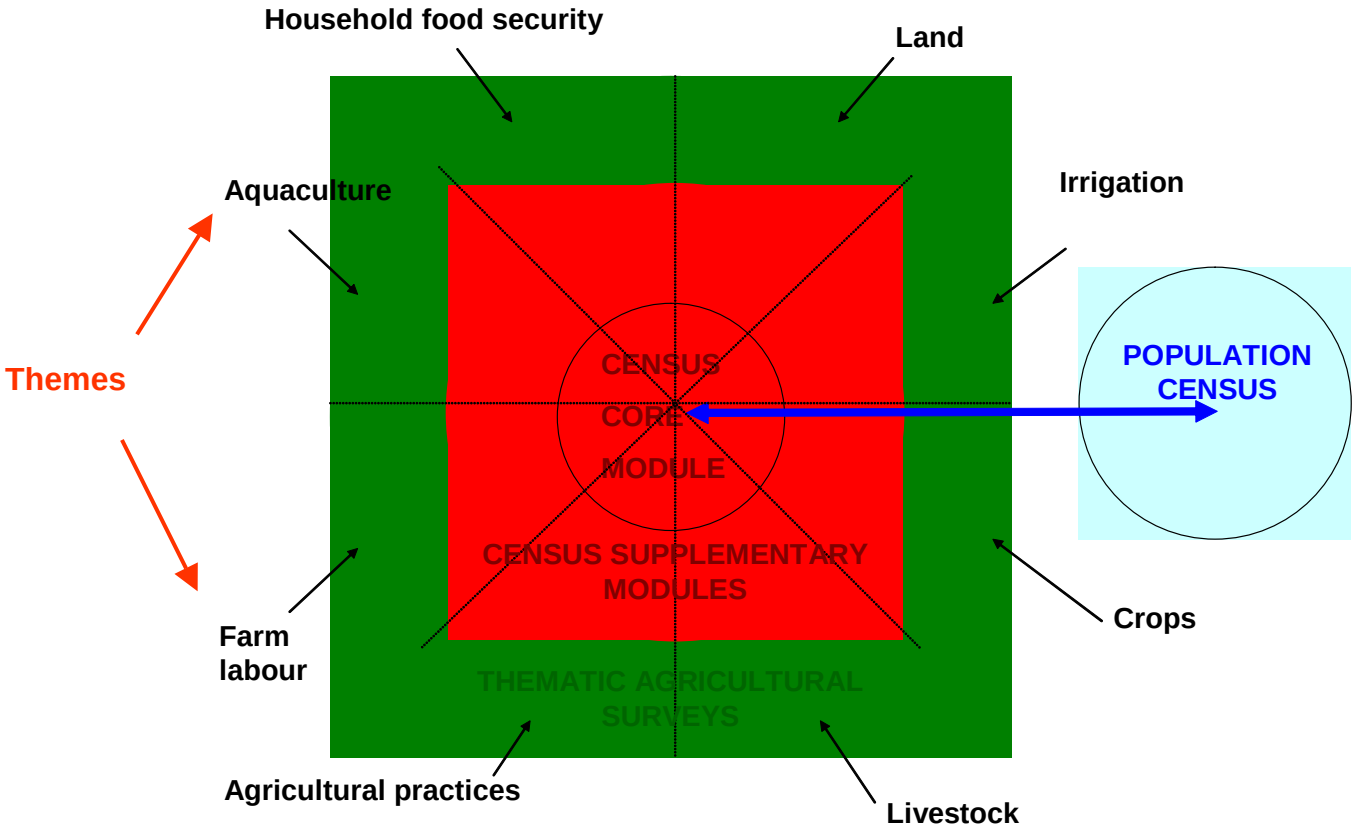
- Continuous harvesting/planting systems, commonly used in the Pacific Island Countries, are an extension of repeat plantings but with an even more serious recall problem.
- The timing of the census is one critical factor in addressing these issues since most countries have regular planting patterns.
- In countries where short-term crops are grown throughout the year, the most reliable option is to conduct the census using multiple visits (two-four visits in the year).
- As these issues can seriously affect the estimates of annual area harvested they need to be carefully addressed.
- Many SIDS also attempt to collect information on production in their census.
- Production estimates for cash crops have met with some success (where the greater part of production is sold), measuring production of own consumption has proved to be much more difficult.
- Even for cash crops, farmers tend to report in local units, which have to be converted, and often under-report because of tax implications.
- The Household Income and Expenditure Survey (HIES), could be a vehicle for measuring such production for own consumption. Limitations include small sample size for the HIES limiting any geographical breakdown and the data reliability for the less common items.

4. Complete enumeration vs sampling

- The new FAO guidelines for 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.

4. Complete enumeration vs sampling

An Integrated agricultural census and survey
World Programme for Census of Agriculture 2010 (WCA2010)



4. Complete enumeration vs sampling

While this approach will present a much higher degree of flexibility in the conduct of the census programme it has limitations for SIDS, in particular where the total number of holdings is small.

- The Census of Agriculture in Antigua (1984) provides a good example: of the 19,866 households enumerated, 4,639 holdings were identified.
- For the sample module, 421 holdings were selected based on a stratified sampling technique with 100% of all large holdings, 50% of medium size holdings, 19% of small holdings and 10% of very small holdings. These strata were shown in the resultant tables as were three geographic strata.
- Apart from the 100% strata, all other size strata generated large sampling errors to the extent that the data was not considered reliable. The geographic breakdown also suffered from large sampling errors .The result was that the data was not used.
- This an extreme case, but it highlights the weakness of sampling with small numbers.
- In most SIDS, the sample size to generate reliable data even at the national level would need to be so large, that little or no savings would be gained by the use of sampling. Also, most countries look to the census as the sole source of disaggregated data, and data on rare items, which again rules out the use of sampling.

5. Relationship between Census of Population and Housing and the Census of Agriculture

The FAO World Programme for the Census of Agriculture 2010 (WCA2010) highlights the importance of integrating the agricultural census within the National Statistical System. In particular, it stresses the importance of the relationship between the population and housing census and the agricultural census in the following areas:

- use of common concepts, definitions and classifications;
- sharing field materials;
- using the population census as a household frame for the census of agriculture;
- making use of agriculture-related data from the population census;
- collecting additional agriculture-related data in the population census;
- linking data from the two censuses;
- conducting the two censuses as a joint field operation.

This relationship is echoed in the “Principles and Recommendations for Population and Housing Censuses, Rev 2, UNSD 2007”.

5. Relationship between Census of Population and Housing and the Census of Agriculture

- Nearly all countries use common concepts, definitions and classifications for the two national censuses and share cartographic materials.
- There is also some evidence of the inclusion of specific questions on agriculture in the census of population and housing.
- In some cases, such information is collected 'in lieu' of conducting a separate census of agriculture (Kiribati and Tuvalu).
- In other countries, specific information on agriculture is collected in the population and housing census to supplement the information collected in the census of agriculture (Cook Islands).
- Such information is particularly useful for comparison with other data sources and as benchmark information where the census of agriculture is not conducted on a regular basis.

5. Relationship between Census of Population and Housing and the Census of Agriculture

- The biggest single problem faced by the census of agriculture is access to an up-to-date and reliable frame of agricultural holdings in the country.
- This frame can be sub-divided into the frame for household operated agricultural holdings and non-household operated agricultural holdings.
- The number of non-household operated agricultural holdings is usually small and the frame can be fairly readily compiled from land and business registers, lists of large farms and other sources.
- The frame of household operated agricultural holdings, is a much larger and more complex task. It effectively means visiting all private households to establish the extent of agricultural activity in each household, the number of separate holdings the household members are engaged in.
- It is further complicated by the use of 'minimum size limits' in most countries which determine whether a household's agricultural activity qualifies as a holding or not: numbers of livestock, numbers of trees (tree crops) and area of land (temporary crops), value of annual sales and purpose of production (breeding livestock).
- In countries where only a small proportion of households operate an agricultural holding, there is a strong argument to include the identification of such households in the census of population and housing to avoid the need for a separate listing exercise.
- The information can be collected either through the standard visitation record or through a separate section in the household questionnaire. The information can also be collected as part of the pre-census cartography and field work.
- One advantage of an integrated census approach is that a reduced budget will be needed compared to the two censuses being conducted as separate exercises and a single funding envelope can be sought.

5. Relationship between Census of Population and Housing and the Census of Agriculture

- Other advantages may also be realised: same infrastructure, logistics, personnel and equipment can be used for both censuses.
- Basic information on livestock numbers, numbers of fruit trees and the area of temporary crops will be available for all households.
- The minimum size criteria can then be set at a higher level than has traditionally been the case as information on the smallest holdings has already been collected and little would be added by administering a further lengthy questionnaire to such holdings.
- Efforts, and resources, can then be focused on the more productive holdings.
- Also, by collecting the two sets of data at the same time, direct linkages can be made, through the unique household identification number, to provide a much richer data set than would be possible through two separate statistical exercises.
- Lastly, by institutionalising the arrangements for the conduct of the two censuses as an integrated exercise will ensure that the census of agriculture is conducted on a regular basis in future rounds.

6. Concluding remarks

Despite their size, Small Island Developing States face many of the same challenges as much larger countries when it comes to planning and conducting an agricultural census.

- Resource constraints, particularly human resources, pose the single biggest challenge and careful planning is needed to minimize these constraints. Having the right institutional arrangements is considered to be critical to the successful conduct of the census and the NSO is seen as having a critical role in any census undertaking.

- Methodological considerations of most concern to SIDS are also faced by many other developing countries. Issues related to the estimation of land areas and crop areas, mixed cropping, etc., can be overcome to a large extent by farmer education and participation, but this again requires careful planning, good publicity and dedicated follow-up.

- On the question of complete enumeration versus sampling, the conclusion for SIDS is that sampling has limitations in terms of its efficiency when dealing with small populations.

- Establishing a much closer relationship between the census of population and housing and the census of agriculture is recommended both by the United Nations Statistical Division (UNSD) and the Food and Agriculture Organization of the United Nations (FAO) in their respective census programmes for the 2010 round of censuses. In many SIDS a joint approach to census taking under a 'national census programme' umbrella may be a practical, efficient and economical solution and should be explored.