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Methodological Modalities

Technical Session 4



Nancy Chin
Statistician
FAORNE



Contents

- **Background**
- **Overview of census modalities:** description, implementation steps, advantages and limitations:
 1. Classical approach
 2. Modular approach
 3. Integrated census/survey modality
 4. Use of registers as a source of census data
- **Country examples**





Background

The WCA 2020 **broadened the approaches** introduced in WCA 2010, acknowledging that the census of agriculture can be conducted in different ways, using four main modalities:

- **Classical approach**
- **Modular approach**
- **Integrated census and survey modality**
- **Use of registers as a source of census data**



Main aim is to **help countries to implement a census** in the most efficient way, taking into account countries' particular conditions.

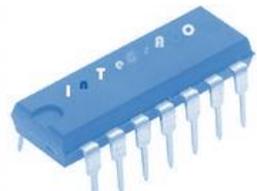


Overview of census modalities

- i) **The classical approach:** a census conducted in a single one-off operation (usually by complete enumeration) comprising the universe of agricultural holdings.
- ii) **Modular approach:** comprises: a) a core module undertaken by complete enumeration including all relevant frame items and eventually other items; and b) supplementary modules conducted using sample enumeration.
- iii) **The integrated census and survey modality:** integrates a multi-year programme of censuses and surveys. One option is AGRIS, a modular survey programme which has to be articulated with the agricultural census programme and conducted on an annual basis between two censuses.
- iv) **Use of registers as a source of census data:** registers and other administrative sources are used as a source of census data in combination with field data collection.

clásico

modular



combinado



Some common issues for any census modality

Identify data content of the census:

- The minimum requirement for a census, is to include **all essential items**, in order to enable national/international comparison and frame items for census modules or/and follow up surveys.
- The final list of census items should be established in **consultation with main stakeholders** depending on country's requirements, availability of reliable administrative and other data sources, financial and other resources.
- In countries with well-developed registers, the **use of administrative data sources** to cover census data items should be considered.





1. The classical approach

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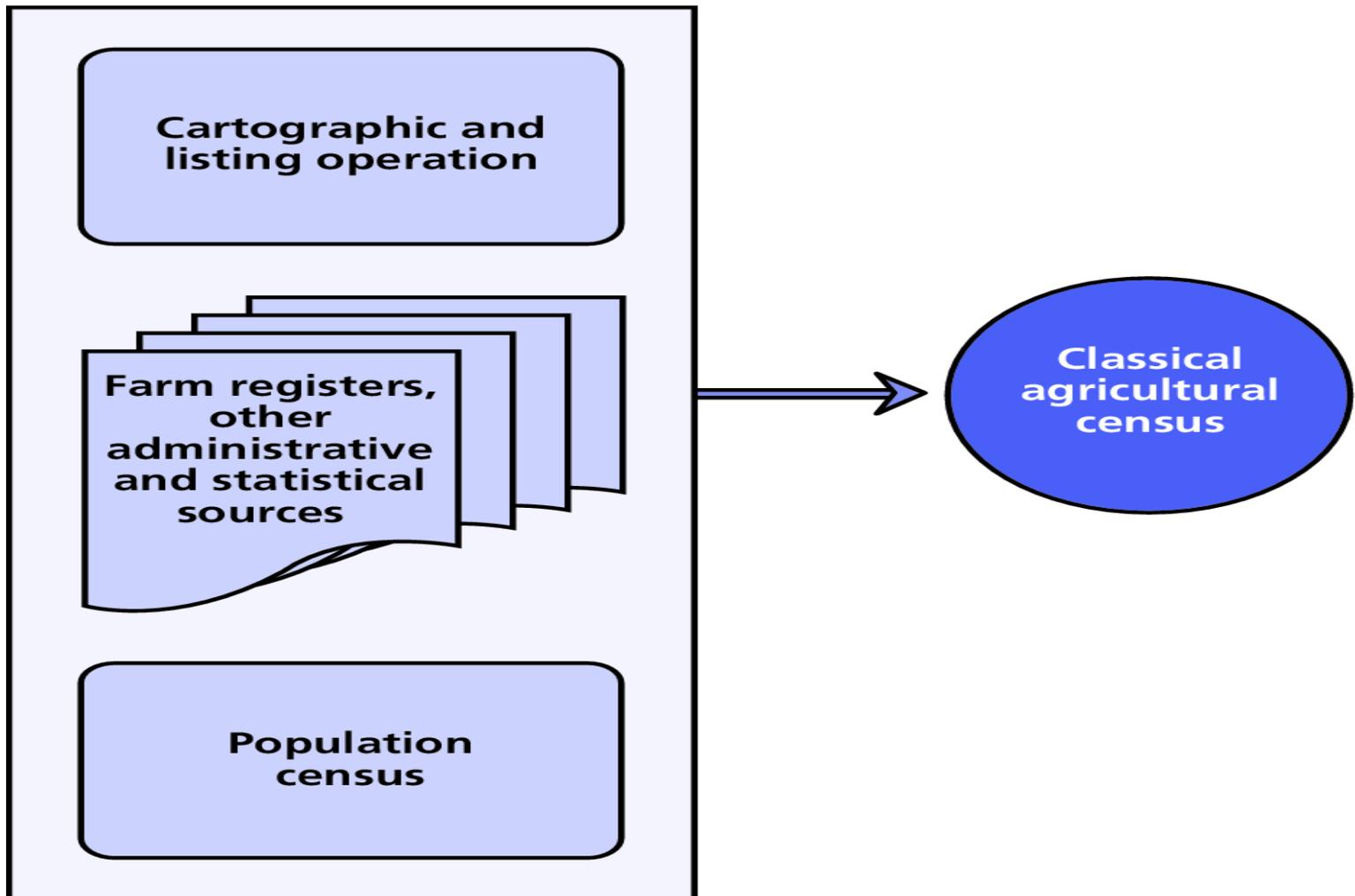
- It is conducted as a single one-off operation in which all the census information is recorded. It also includes the short-long questionnaire concept.
- All items collected at the lowest geo/admin level.
- Can be conducted by complete enumeration, sample enumeration, or by a combination of both.
- It is appropriate, for instance, when countries have an integrated census/survey programme or wishing to collect census items at the lowest geo/admin level.



1. The classical approach

clásico

Frame





1. The classical approach: types of questionnaires

- **Single questionnaire:** administered to all agricultural holdings covered by the census without regard of their type. It is easy to apply in the field.
- **Short-long questionnaire:** The short questionnaire is administered to all holdings on a complete enumeration basis (to collect basic info), while the long questionnaire is administered only to:
 - holdings identified according to certain criteria (to collect more detailed info), such as being above an established threshold or belonging to a particular segment of the population;
 - a sample of holdings.
- **Other types of questionnaires** - specific census questionnaires:
 - to fit different segments of the target population (such as household and non-household based holdings); or
 - for different provinces when these differ considerably in cropping and livestock systems, and in agricultural practices.



1. Classical approach: advantages

- Snapshot of the entire target population at a specified period. Comprehensive data sets at the lowest admin/geo level.
- Data can be produced at lowest admin/geo levels with no sampling error. Tabulations can be done in line with high user's requirements, including data for small administrative units and information on rare events, such as emerging crops, rare crops and types of livestock.*
- Complete enumeration is much less demanding in respect of the characteristics contained in the frame than the sample-based census.
- A good basis for building up a statistical farm register and an exhaustive sampling frame for subsequent regular agricultural surveys.*

* *When census is conducted by complete enumeration*





1. Classical approach: limitations*

- Cost and administrative complexity.
- It implies a high burden on respondents.
- Risk to overburden the census questionnaire because of the high pressure from some policy makers or other stakeholders to include detailed items to collect data at the lowest administrative level.
- Logistics: very large number of enumerators and supervisors required.
- The amount of data to be processed is larger.



* *Mainly when census is conducted by complete enumeration*

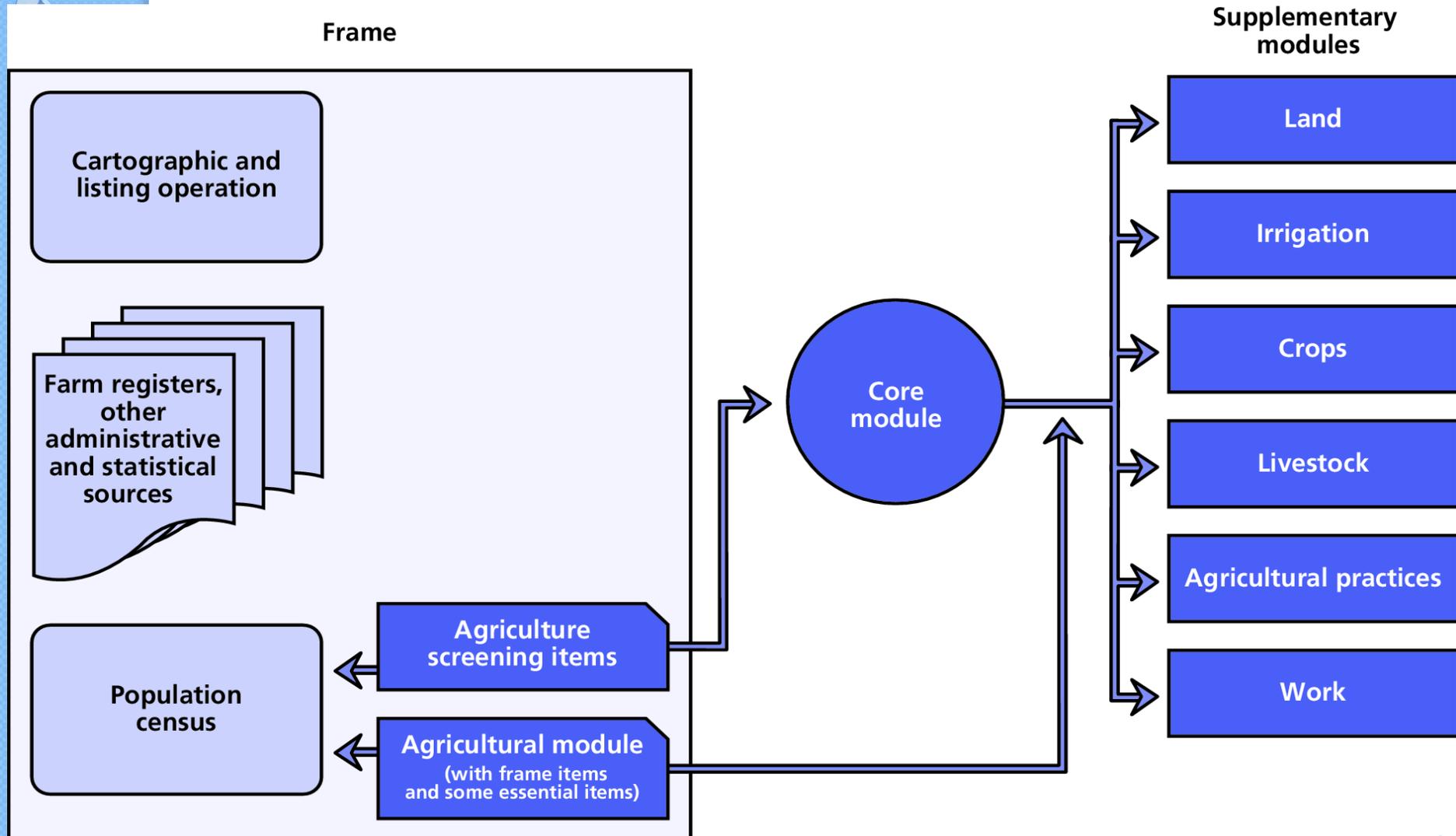


2. Modular census

- Has a clearly distinguishable core module (on a complete enumeration basis) and one or more supplementary modules (on a sample basis).
- An essential condition: data from the core module used as frame for the supplementary module(s). The census using the short-long questionnaire in one operation is not considered as modular census (no frame use).
- A ‘module’ is defined as a group of data items to be collected on a specific target population (e.g. holdings with livestock).
- All essential items should be covered by the core and supplementary module(s).



2. Modular census





2. Modular census: advantages

- The combination of core's and SM's items allows the modular census to produce a wider and country-specific range of data, for which small area estimates are not so important.
- More effective use of available budget to collect country relevant information.
- Allows a focused and more detailed training of field personnel.
- Countries with a not well established system of agricultural surveys and limited budget may find the modular approach as a logical first step towards the creation of a system of integrated agricultural censuses and surveys.





2. Modular census: **limitations**



- Risk of having a CM with too many items (due to pressure from stakeholders).
- The availability of well trained professional staff in sampling could be a challenge.
- There are limitations in terms of cross-tabulation between variables in the core and in the supplementary modules (SMs) or between variables in different SMs not conducted jointly.
- If the time lag between the implementation of the CM and SMs is too long, the benefit of having a good frame from the CM disappears. A frame update would be needed adding to the cost.
- It could be difficult to mobilize additional funds for SMs.
- In the absence of good planning, the conducting of the CM and publication of results can jeopardize a better preparation of SMs.



3. Integrated Census/survey modality

- This new modality features a *census core module* (to be conducted on a complete enumeration basis) and a number of several rotating thematic modules (to be conducted annually or periodically on sample basis over a 10-year period).
- An example of a survey programme with rotating thematic modules is the new Agricultural Integrated Survey programme (AGRIS).
- All essential items should be covered by the census core and rotating thematic modules.
- The census core module should mainly provide frame data needed to implement rotating thematic modules.

3. Integrated census/survey: illustration of an AGRIS plan

YEARS		0	1	2	3	4	5	6	7	8	9	10
Agricultural census core module and (if applicable) annual production survey ³⁷		✓										✓
AGRIS Annual Production Module ³⁸	Crop + Livestock production + other key variables (economy, labour, etc.)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotating Module 1	Economy				✓		✓		✓		✓	
Rotating Module 2	Labour			✓				✓				
Rotating Module 3	Machinery, Equipment, Asset and Decisions						✓					
Rotating Module 4	Production methods and Environment					✓				✓		



3. Integrated census/survey modality: **advantages**

- Effective use of available budget to collect country relevant information on an annual basis.
- More detailed information available on topics of interest.
- Focused training of field staff.
- Wider set of census items.
- Allows the establishment of a system of integrated agricultural censuses and surveys.





3. Integrated census/survey modality: **limitations**



- **The risk of expanding too much the census core module** resulting in high cost which will reduce the relative benefits of this modality.
- **Conducting the census core module and AGRIS annual production at the same time** (when relevant) requires good survey planning and sampling capacity.
- **The limitations in terms of cross-tabulation** between variables in the production and in the rotating thematic modules or between variables in different rotating thematic modules not conducted jointly.
- **Difference in the reference period** for different census items collected in the census core and the items in the rotating thematic modules.



4. Use of registers as a source of census data



- A meaningful part of the census items for the entire population of the CA (or for part of it) comes from existing admin sources created for non-statistical purposes.
- The data could come from one or several administrative sources. Usually these are used in combination with field data collection.
- Thus the definition of the population of interest and the data collection protocols commonly is out of the control of the census agency.
- As the objects already exist in the data source, a selection need to be made of objects (holders or holdings) and variables that are relevant to the census.



4. Use of registers as a source of census data

Farms registers and other administrative data

Agricultural census



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4. Use of registers: **Implementation**

1. Assess the usability of the source/register and quality.
2. Assess legal basis (to access and use); consultations with owners (concepts, definitions, classifications used, reference period, coverage); public support (to statistical use).
3. Design a government-wide project to outline responsibilities and the necessary work:
 - Make an inventory of sources, usability/quality.
 - Develop the content for the census.
 - Decide items to be produced from what kind of data sources.
4. Determine steps to link datasets.
5. Develop communication strategy on the use of registers.
6. Plan the budget for the particular preparatory work related to the use of registers for the AC.



4. Use of registers: Advantages

- Reduction of cost of census data production.
- Reduction of the burden on respondents.
- By combining the data collected in the field with the data from administrative sources, new derived variables can be created.
- It allows compilation and publication more frequently and faster.
- Non-response rate can be either significantly reduced or eliminated (when data on the entire target census population are included in the administrative sources).
- It could significantly improve the quality of the source and leads to a substantial harmonization of certain information between different institutions.
- As a result of more efficient and faster operation the public perception of statistics may become more favourable.





4. Use of registers: **limitations**

- Linkage of datasets are difficult/impossible if legal background is inadequate
- It could be very difficult to establish a good cooperation with register owners.
- The cost for the access to the admin data could be too high.
- When there is different population coverage, admin sources can be used for pre-filling the questionnaires only on common population while other units need to be enumerated.
- Incoherence of concepts, definitions, classification and reference periods could hamper the use of admin sources.
- Problems related to linking data from various data sources.
- Problems on quality or stability may arise due to political changes.
- Timeliness and punctuality.
- If an admin source is abolished, it is difficult to provide comparable statistical data series.
- Substantive or technical changes in the admin sources may not be detected immediately.
- Comparability over time is strongly influenced by the change in the level of coverage in the different years and can give misleading results.





Country examples

Gambia 2011-2012 Census of agriculture: sampled-based census.

- The 2011/2012 Census of Agriculture was a sample survey of approximately 15% of rural households drawn from the 2003 Census of Population.
- The sampling design was a stratified two-stage design with districts forming the strata and the first-stage units being the EAs. First stage units were selected systematically in proportion to the 2003 total number of households. The second-stage sampling units were holders within EAs from which a systematic random sample of five (5) holders was selected for enumeration.
- The enumeration period spanned for 7 months.
- Seven questionnaires were used (listing, demographic, area measurement-GPS, harvest, groundnuts, mango, community).

Country examples

Mozambique Agriculture and Livestock Census 2009/2010 (CAP) - Modular approach

- The **CAP 2009-2010** followed the modular approach.
- Section G - Agriculture and Livestock - from the 3rd Population Census in 2007 served as **Core Module** and Sample Frame for Complementary Modules.
- The 3rd Population Census included 6 of the 16 questions recommended by FAO as part of the core items of the Agricultural Census.
- **Six complementary modules** were defined: Crops, Livestock, Labour Force, Aquaculture, Food Security and Agricultural Services and Practices
- A two stage sample method was used for the complementary modules:
 - **First stage:** enumeration areas (EA) were selected systematically;
 - **Second stage:** 10 agriculture households were selected randomly in each EA.

Country examples

The Netherlands - Agricultural Census 2010

(Combined agricultural census with use of administrative registers)

- The agricultural census frame for the AC 2010 was the administrative farm register (AFR) of the Ministry of Economic Affairs, Agriculture and Innovation. Farmers have to register by law. The AFR contains names, addresses and other characteristics of holders or holdings and a unique registration number.
- The agricultural census applies a higher threshold than the AFR, thus only agricultural holdings above the threshold are taken into account.
- This threshold is applied to separate professional from hobby farmers, and to minimize processing burden.
- Information on the census items existing in the AFR is taken directly from the register for the whole census population.



MANY THANKS