Workshop on
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Theme 6: Agricultural practices
Technical Session 10

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Background

- In the WCA 2020 Programme this theme has been extended to better cover some critical elements of **sustainability in production systems**.

- **Five new items** appear in comparison with the last WCA Programme.
Importance of the theme

- Countries are more and more aware of the role of agricultural practices in assuring sustainability of agricultural production systems.

- **Data** collected through the agricultural census:
  - **help to measure** the adoption of and transition to improved agricultural practices and structural changes that increase and improve the provision of goods and services in agriculture in a sustainable manner.
  - **contribute** to defining and measuring key indicators of resource use efficiency and resilience.
Theme 6 comprises 17 items:

- 12 are included specifically in the theme.
- 5 although related to agricultural practices, correspond to other themes:
  - Whether agroforestry is practised (1304 - Theme 13)
  - Type of animal grazing practices (1501-Theme 15);
  - Use of each type of fertilizer (0411-Theme 4);
  - Area fertilized (0412-Theme 4)
  - Irrigation (Theme 3)
The 12 items specific to Theme 6 are:

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<td>0612</td>
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**Item 0601: Use of agricultural pesticides**
(for the holding)

**Type:** Essential item

**Reference period:** census reference year

**Concept:** Pesticides are materials intended to mitigate, control or eliminate pests in plants or animals, or to control the behaviour of physiology of pests or crops during production or storage.

**Pesticides may be:**

- **Insecticides** (substances used to kill/repel insects)
- **Herbicides** (substances used to destroy or inhibit the growth of plants such as weeds)
- **Fungicides** (substances that destroy or inhibit the growth of fungi)
- **Rodenticides** (substances used to kill/repel/control rodents)
- **Other**
Item 0602: Use of genetically modified (GM) seeds (for the holding)

Type: Frame item

Reference period: census reference year

Concept: This item relates to whether any GM seeds were used on the holding. GM crops are grown from GM seeds which are developed and proprietary by the private sector and which poses a novel combination of genetic material obtained through the use of modern biotechnology
Item 0603: Use of genetically modified (GM) seeds according to crop type (for the holding)

**Type:** Additional item

**Reference period:** census reference year

**Concept:** This item relates to what types of GM seeds were used on the holding. It identifies the specific types of GM crops that are grown using GM seeds.
Item 0604: Selected machinery and equipment used on the holding by source (for the holding)

**Type:** Additional item

**Reference period:** census reference year

**Concept:** This item identifies machinery and equipment used on the holding, wholly or partly for agricultural production. **It should exclude:**

- Machinery and equipment used exclusively for purposes other than agricultural production
- Machinery and equipment owned by the holder but not used

**It includes** all machinery, equipment and implements.

**Note:** In Vol I, Annex 7 a classification of machinery and equipment is provided in order to help identify the type of machinery and equipment to take in the census.
Item 0604: Selected machinery and equipment used on the holding by source (for the holding) contd.

**Concept:** Source refers to the means by which the holder obtained the right to use the specific item. The following **categories** are suggested:

- Owned solely by the holder or members of his (her) household;
- Owned by the holding jointly with other holdings;
- Provided by the landlord;
- Provided by other private holders (excluding cooperatives);
- Provided by a cooperative;
- Provided by a private agricultural service establishment;
- Provided by a government agency.
Item 0605: Non-residential buildings (for the holding)

Type: Additional item

Reference period: census reference year

Concept: This item identifies non-residential buildings used by the holding, wholly or partly for agricultural purposes.

Notes:

- The item covers all non-residential buildings regardless of their physical location
- Buildings such as “community storage facilities” should be included as “other tenure” form;
- Non-residential buildings used exclusively for purposes other than agricultural purposes should be excluded.

Data to collect: Number, tenure and size of each building.
Item 0605: Non-residential buildings (for the holding) (contd.)

**Type of non-residential building:**

- For keeping livestock other than poultry (area)
- For keeping poultry (area)
- For storing agricultural products (area and volume)
- For mixed or other purposes (area)

**Type of tenure:**

- Owned
- Rented
- Other
Item 0606: Percentage of each major agricultural product sold (for the holding)

**Type:** Additional item

**Reference period:** any suitable reference period, such as the main harvest or the census reference year.

**Ranges:** Usually, this item is collected in ranges, such as
- 0-19 percent;
- 20-49 percent;
- 50 percent or more.

**Where is this item important?** In countries with significant home consumption of agricultural produce.

**Which products should include?** Only the most important staple food crops (such as rice, wheat, maize or cassava).
Item 0607: Use of organic agricultural practices (for the holding)

**Type:** Additional item

**Reference period:** census reference day

**Concept:** Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity*. It includes working toward the achievement of socially, ecologically and economically sustainable agro-ecosystems such as by not using chemical fertilizers, pesticides or GM crops.
Item 0607: Use of organic agricultural practices (for the holding) contd.

Data collection should include:

- **Certified organic** by a third party accredited certification body or authority or through Participatory Guarantee System (PGS).

- **In-conversion to certified organic**: covering producers undergoing a conversion process to organic agricultural systems certified by third party certification bodies.

- **It is also possible to recognize non-certified (de facto) organic agriculture or products**, which involve agricultural production systems that follow the principles of organic production but are not certified by a certification body or PGS. It excludes systems that do no use synthetic inputs by default (e.g. systems that lack soil building practices and degrade land).
Item 0608: Type of seed for each major crop type (for the holding)

**Type:** Additional item

**Reference period:** census reference year

**Concept:** This item refers to whether certified seeds are being used and whether it belongs to a modern or farmer’s variety. Certified seeds are those that have been certified according to the national certification system.

**Types of seeds:**

- **Certified** seed of modern variety;
- **Uncertified seed of modern variety** (high yielding or high-response varieties);
- **Uncertified seed of farmer’s variety** (landraces or traditional);
- **Other.**
Item 0609: Source of seed inputs for each major crop type (for the holding)

**Type:** Additional item

**Reference period:** census reference year

**Concept:** This item refers how seeds were acquired. The term “seed” in this context refers to any planting material: seed, seedlings, cuttings, small plants or trees

**Types of sources:**

- **Self-production:** obtained by setting aside a portion of the previous year crop for use as seed for the current crop;

- **Exchanges with community:** seeds obtained through loans, gifts or other forms of reciprocal assistance;

- **Local market:** seeds purchased from markets, itinerant traders or localized trade networks;

- **Seed company:** seeds purchased from a seed producer or supplier through a commercial arrangement;

- **Donation:** from national or international institutions.
Item 1304: Whether agroforestry is practiced (for the holding)

This item corresponds to Theme # 13 (Forestry)

Type: Additional item

Reference period: census reference year

Concept: Agroforestry is a sustainable land management system in which forest species of trees and other wooded plants are purposely grown on the same land as agricultural crops or livestock, either concurrently or in rotation.

Agroforestry has impact on soil, water, plants, animals and atmospheric relations, constituting a sustainable agricultural practice.
Item 0610: Types of tillage practices (for the holding)

**Type:** Additional item. New item.

**Reference period:** census reference year

**Concept:** Tillage refers to arable land of the holding sown/cultivated in the census reference year. It is the physical loosening of the soil carried out in a range of cultivation operations, either by hand or mechanized.

**Which is the reason to include this new item?**

Tillage practices are controversial: it was traditionally seen as useful and necessary but when inappropriately practiced, it is one of the major reasons for soil erosion and land degradation. It is a common understanding that tillage practices should be reduced to a minimum in order to achieve sustainable intensification of agriculture.
Item 0610: Types of tillage practices (for the holding) contd.

Types of tillage practices:

• **Conventional tillage** (turning over of the soil over the whole area using tillage tools or equipment such as: mouldboard, disc plough, rotovator, etc. or traditional ploughs of either wood or iron, drawn by animal power;

• **Conservation (low) tillage** which is a tillage practice or practices that leave plant residues (at least 30-35 %) of the soil surface for erosion control and moisture conservation. It can include:
  
  Reduced/minimum tillage: there is no soil inversion and causes little compaction but it leaves some ripping lines (the soil normally remains with a good cover of residues on the surface). A ripper is usually used;

  **Strip tillage:** strips are tilled to receive the seed and the soil along the bands is not disturbed;

  **Ridge tillage:** system of ridges and furrows. The ridges can be permanent or be constructed each year.

• **Zero tillage or no tillage:** does not involve any tillage operations on arable land. After the seeding operation, not more than 25% of the soil surface is allowed to be disturbed.
Item 0611: Presence of conservation agriculture (for the holding)

**Type:** Additional item. New item

**Reference period:** census reference year

**Concept:** In addition to sustainable tillage practices, it is also important to keep soils covered for protecting them from the impacts of climatic conditions in order to achieve sustainable intensification of agriculture.

**The three Conservation Agricultural Principles:**

- Zero/no tillage (Item 0610) in combination with
- Crop rotations (Item 0612)
- Permanent soil cover.
Item 0612: Presence of soil conservation practices (for the holding)

**Type:** Additional item. New item

**Reference period:** census reference year

**Concept:** Soil conservation is a sustainable practice to prevent and reverse soil degradation through appropriate land use and management practices. It includes prevention and reduction of soil erosion, compaction and salinity, conservation or drainage of soil water.

**Types of soil conservation practices:**

- **Crop rotation:** growing of alternating species or families of crops in a specific in a planned pattern or sequence.
- **Terracing:** terraces on sloping lands mainly used for erosion control and for growing crops.
**Item 1501: Type of animal grazing practices (for the holding)**

This item correspond to Theme # 15 (Environment, GHG emissions).

**Type:** Additional item. New item

**Reference period:** census reference year

**Concept:** Animal grazing is practically the only source of feed for livestock raised under the grazing system (Item 0501).

**Which is the reason to include this new item?** Animal grazing has a significant impact in the quality of pastures which can be non-degraded, moderately degraded or severely degraded. Combining this information with Theme 5 (Livestock) improves estimation on the status of pastures.
Items 0411 & 0412: Use of each type of fertilizer and area fertilized for each type of fertilizer and major crop type (for the holding)

These items correspond to Theme # 4 (Crops).

**Type:**
- Use of fertilizers: Essential item.
- Area fertilized: Additional item.

**Reference period:** census reference year

**Reason to include these items in Theme #6.** Use of fertilizers and whether organic or inorganic practices are followed is important for understanding of sustainable agriculture practices.
Irrigation

It corresponds to Theme # 3 (Irrigation).

Irrigation practices are important for understanding of sustainable agriculture practices. Relevant items are covered in Theme 3.
Country experiences

Mexico, Census of agriculture and forestry 2007.
In each section of the questionnaire, information on agricultural practices is collected according with the following detail:

<table>
<thead>
<tr>
<th>Agriculture</th>
<th>Forestry</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Area with organic cultivation for each reported crop;</td>
<td>• Whether agro-forestry is practiced;</td>
</tr>
<tr>
<td>• Irrigation;</td>
<td>• Use and type of agricultural pesticides;</td>
</tr>
<tr>
<td>• Machinery and equipment;</td>
<td>• Whether biological pest control was practiced;</td>
</tr>
<tr>
<td>• Use of each type of fertilizers;</td>
<td></td>
</tr>
<tr>
<td>• Seeds: use of improved seeds and/or GM seeds;</td>
<td></td>
</tr>
<tr>
<td>• Use and type of agricultural pesticides;</td>
<td></td>
</tr>
<tr>
<td>• Whether biological pest control was practiced;</td>
<td></td>
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<tr>
<td>• Whether crop rotation is practiced;</td>
<td></td>
</tr>
<tr>
<td>• Type of agricultural facilities used.</td>
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</tbody>
</table>
Bangladesh, Census of agriculture 2008
The questionnaire of the supplementary module used with the modular approach included the following questions referred to agricultural practices:

- Source and variety of seeds/plants;
  - Use of fertilizers by type and quantity used;
  - Use of pesticides by type and quantity used;
  - Irrigation
MANY THANKS