Workshop on
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Theme 03 - Irrigation

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Contents

• Background
• Importance of the theme
• Concept of irrigation
• Items: type, reference periods, importance of the item, concepts and special characteristics
• Country experiences
In Theme 3, **new items** (it is also essential item) are included:

- **Item 0302**: Area of land actually irrigated: fully controlled and partially controlled irrigation
- **Item 0309**: Area equipped for irrigation in working order: fully and partially controlled irrigation

Theme 3 has only **one frame item**: use of irrigation on the holding: fully controlled and partially controlled irrigation.

The theme comprises **10 items** all of them at holding level.
Importance of the Theme

- Data about irrigation cross tabulated with land use are important for analysis of farm management and agricultural practices.
- It is important to better understand cropping practices and the constraints in improving agricultural productivity;
- Irrigation has important consequences in environmental aspects of the agricultural production referred to for example: source, type and quality of water; drainage and use of wastewater.
- Irrigation has also important financial aspects: payment for irrigation, investments needs, etc.
Concept of irrigation

- Irrigation refers to purposely providing land with water, other than rain, for improving pastures or crop production.
- Irrigation usually implies the existence of infrastructure and equipment such as: irrigation canals, pumps, sprinklers or localized watering systems.
- However, it also includes manual watering of plants.
- Uncontrolled land flooding by overflowing of rivers or streams is NOT considered irrigation.
### Theme 3: Irrigation comprises the following items:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>0301</td>
<td>Use of irrigation on the holding: fully and partially controlled irrigation;</td>
</tr>
<tr>
<td>0302</td>
<td>Area of land actually irrigated: fully and partially controlled irrigation;</td>
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<tr>
<td>0303</td>
<td>Area of land actually irrigated according to land use types: fully and partially controlled irrigation (for the holding);</td>
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<tr>
<td>0304</td>
<td>Area of land actually irrigated according to method of irrigation: fully and partially controlled irrigation (for the holding);</td>
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<tr>
<td>0305</td>
<td>Area of crops actually irrigated for each crop type: fully and partially controlled irrigation (for the holding);</td>
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<tr>
<td>0306</td>
<td>Sources of irrigation water: fully controlled irrigation (for the holding);</td>
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<tr>
<td>0307</td>
<td>Payment terms for irrigation water: fully and partially controlled irrigation (for the holding);</td>
</tr>
<tr>
<td>0308</td>
<td>Use of other types of irrigation: partially controlled irrigation (for the holding);</td>
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<tr>
<td>0309</td>
<td>Area equipped for irrigation in working order: fully and partially controlled irrigation;</td>
</tr>
<tr>
<td>0310</td>
<td>Presence of drainage equipment (for the holding)</td>
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</tbody>
</table>

- **1506**: *Rice cultivation: irrigation and water regimes (explained in Theme 15)*
Item 0301: Use of irrigation on the holding: fully and partially controlled irrigation

**Type:** frame item.

**Reference period:** census reference year.

**Precision:** this item is recommended for inclusion in the core module when a modular approach is used, to provide a sampling frame for related surveys.
Item 0302: Area of land actually irrigated: fully and partially controlled irrigation

**Type:** essential item.

**Reference period:** census reference year.

**Concept:** this item refers to the *physical area* of land irrigated, not the total area of crops irrigated. Therefore, if the same area is cropped, irrigated and harvested twice a year, it should be counted once.
Item 0303: Area of land actually irrigated according to land use type: fully and partially controlled irrigation (for the holding)

**Type:** additional item.

**Reference period:** census reference year.

**Concept:** as in the previous case, this item refers to the *physical area* of land irrigated, not the total area of crops irrigated. Thus, the land irrigated for successive crops in different seasons within the reference year is only counted once.

**Land use categories:**

- *Land under permanent crops*
- *Land under temporary crops:*
  - Single-irrigated crop;
  - Multiple-irrigated crops.
- *Land under temporary meadows and pastures*
- *Land under permanent meadows and pastures*
Item 0304: Area of land actually irrigated according to method of irrigation: fully controlled irrigation (for the holding)

**Type:** additional item.

**Reference period:** census reference year.

**Concept:** this item includes only areas of land irrigated by methods of fully controlled irrigation.

**Methods:**

- *Surface irrigation*
- *Sprinklers*
- *Localized irrigation*

*The definition and images of each method are given in the following slides.*
Methods of irrigation

**Surface irrigation:**
System for partially or completely covering land with water for the purpose of irrigation. They include several types including furrow, border strip and basin irrigation.

Basin irrigation

Furrow Irrigation
Methods of irrigation (contd.)

**Sprinklers:** Sprinkler irrigation refers to pipes networks through which water moves under pressure before being delivered to the crop via sprinkler nozzles.
Localized irrigation: It is a system whereby water is distributed under low pressure through a piped network, in a pre-determined pattern and applied as a small discharge to each plant.
Item 0305: Area of crops actually irrigated for each crop type: fully controlled irrigation (for the holding)

**Type:** additional item.

**Reference period:** census reference year.

**Concept:** This item includes only areas of land irrigated by methods of fully controlled irrigation. It refers to the *area of crops* irrigated, as opposed to the area of land irrigated of previous items.

**Precision:** For temporary crops, this item refers to that portion of the harvested area irrigated at some time during the reference year. For permanent crops, it refers to that portion of the area with permanent crops present of the day of enumeration that was irrigated at some time during the reference year.
**Item 0306: Sources of irrigation water: fully controlled irrigation (for the holding)**

**Type:** additional item.

**Reference period:** census reference year.

**Concept:** This item includes only areas of land irrigated by methods of fully controlled irrigation. It refers to whether irrigation water used on the holding was obtained from one or several of the following sources:

<table>
<thead>
<tr>
<th>Surface water (e.g. streams, rivers, ponds, lakes, etc.)</th>
<th>Municipal water supply: source of water accessible to at least two holdings withdrawn from the public piped distribution network</th>
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</thead>
<tbody>
<tr>
<td><strong>Groundwater:</strong> water stored underground in aquifers, usually pumped from wells</td>
<td><strong>Treated wastewater:</strong> water without further immediate value for the purpose to which it was used or produced because of its quality</td>
</tr>
<tr>
<td><strong>Mixed surface water and groundwater</strong></td>
<td><strong>Other</strong></td>
</tr>
</tbody>
</table>
Item 0307: Payment terms of irrigation water: fully and partially controlled irrigation (for the holding)

**Type:** additional item.

**Reference period:** census reference year.

**Concept:** This item refers to whether payment was made for the irrigation water used in the holding. It encompasses the following categories:

- *Did not pay for water*
- *Paid for water:*
  - *Fee based on area of land irrigated*
  - *Fee based on volume of water*
  - *Other (e.g. both, based on area an volume)*
Item 0308: Use of other types of irrigation: partially controlled irrigation (for the holding)

**Type**: additional item.

**Reference period**: Data on partially controlled irrigation are normally collected for the census reference year, but data may be distorted by unusual weather conditions.

**Concept**: Partially controlled irrigation activity covers the following specific methods:

- **Equipped wetland and inland valley bottoms**: lowland areas subject to seasonal flooding that are used when covered with water. When control structures such as canals are constructed it falls in the partially controlled category.

- **Equipped flood recession**: it refers to areas along the edges of rivers or other water bodies where cultivation occurs making use of water from receding floods. Structures may be built to retain receding water in which case it falls in the partially controlled category.

- **Spate irrigation**: it is a method of random irrigation using the floodwaters of a normally dry watercourse or riverbed (wadi). There are two types of spate irrigation: a) floodwater is harvested in streambeds and spread through the wadi in which the crops are planted; b) floodwater is diverted from seasonal rivers into adjacent embanked fields for direct application.
Item 0309: Area equipped for irrigation in working order: fully and partially controlled irrigation

**Type:** additional item.

**Reference period:** census reference day.

**Concept:** This item refers to the existence of infrastructure and equipment for applying water to crops, which is in working order.

**Precision 1:** Manual watering of plants using buckets, watering cans, etc. is not covered by this item.

**Precision 2:** The equipment does not have to be used during the reference year. The item only refers to the existence in using conditions.
Item 0310: Presence of drainage equipment (for the holding)

**Type:** additional item.

**Reference period:** census reference day.

**Concept:** Drainage means the *artificial removal* of the excess of water (both surface or groundwater) from the land surface by means of surface or subsurface conduits, to enhance agricultural production. Presence of drainage equipment means that the equipment is present on holding on the census reference day.

**Precision:** Management of water for flood recession cropping (item 0308) is considered *partially controlled irrigation, not drainage.*
Country experiences

Saudi Arabia: Agricultural Census 2010

Section III “Sources and systems of irrigation and drainage included:

- Source of irrigation water
- Irrigated area by irrigation systems
- Number of wells (used and not used)
- Number of devices by modern irrigation systems
- Use of joint well
- Drainage available

In Sections XIV “Harvested temporary crops” and XV “Permanent crops” the area of crops irrigated for each crop type was included, with the specification:

- Modern irrigation
- Conventional irrigation

In addition the item on ”rainfed” area was included.
Country experiences (contd.)

Bangladesh: Agricultural Census 2008

Bangladesh conducted the 2008 agricultural census following the modular approach. Section 4 of the questionnaire applied to sampled holdings is devoted to irrigation, use of fertilizers and pesticides.

As far as irrigation is concerned it took information on:

- Irrigated temporary crops
- Irrigated permanent crops.

In both cases the following information was reported:

**Type of irrigation equipment:**

- Deep tube well by electricity;
- Deep tube well by diesel;
- Shallow tube well by electricity;
- Shallow tube well by diesel;
- Hand tube well;
- Other (non-mechanical).
Many thanks