Agricultural cost of production statistics: main concepts

Short Training Course on Agricultural Cost of Production Statistics
1 – Accounting approach

• **Economic accounting** is used ≠ business or tax accounting

• **All costs** are measured:
  
  o Cash costs: costs generally resulting from an economic transaction
  
  o Non-cash costs:
    ▪ inputs supplied by the farm or the farmer (including land)
    ▪ Capital or fixed inputs
  
  o Opportunity costs

• **This is necessary to appropriately measure the productivity of**
  production factors, such as land, labor or capital
2 – Boundaries

• **Cost of production or cultivation stops at the farm-gate.** Strictly speaking, it excludes:
  
  o Transport costs: from the farm to the first selling point or to the transformer
  
  o Marketing costs: publicity, packing and conditioning going beyond the basic form in which the commodities are usually sold

• These costs can be measured in an AgCoP program but should:
  
  o Be presented separately in the tables
  
  o Not be included in the computation of indicators such as net or gross returns
Def: The opportunity cost of a good or service can be defined as its value in its next best alternative use (AAEA, 2000).

Used to measure the cost of an input that:

- Has not been purchased, such as self-produced, supplied or exchanged inputs:
  - Non-paid family labor
  - Self-produced seeds
  - Own agricultural land, etc.
- Is missing or difficult to obtain

Opportunity cost of capital: the revenue implicitly foregone by the farmer by investing on the farm instead of off-farm
3 – Opportunity costs (2/2)

• Some examples:
  o Non-paid family labor: salary rates paid in the non-farming sector
  o Reused or self-produced seeds: their price if they had been sold on the market
  o Own agricultural land: the rental price that the farmer would have received had he chosen to rent his land instead of cultivating it himself

• Choosing the appropriate opportunity cost is complex, because:
  o There are multiple alternative uses, depending on the context and environment of the farm
  o Markets may be too thin: rental markets for land, etc.
• **Production quantity**: physical quantities produced by the farm and expressed in standard or specific units:
  
  o Tons of maize, liters of milk, etc.
  
  o Estimated by multiplying the yield by the appropriate dimension unit, such as area for crops, trees for perennial crops and heads for animal products

• **Production value**: product of physical quantities and the unit producer price

• **Marketable production**: production quantities *minus* auto-consumption and on-farm post harvest losses (linked to storage for example)
• **Def:** All factors (inputs) used by the farmer to produce (outputs), irrespective of their acquisition mode:
  
  o Purchased
  
  o Self-supplied by the farmer or family members
  
  o Produced on the farm

• We distinguish:
  
  o **Fixed production factors (capital),** independent on the short to medium-term from quantities produced, such as infrastructures
  
  o **Variable production factors,** function of quantities produced, such as seasonal labor, fertilizers, custom services (renting of farm equipment, outsourcing,...)
Inputs can be purchased through:

- The farm’s own savings

- Credit, contracted from a mortgage company or other (cooperatives, government, other farmer, etc.) => Mortgage costs (interests and other) have to be accounted for

- In accordance with the opportunity cost principle, inputs have to be valued at their market price at the time of use and not at the time of their purchase
• **It is important that costs and revenues** be computed for a common reference period:
  
  o The cropping season for crops
  
  o Calendar year, semester,...: for livestock and other activities which are more uniformly spread throughout the year

• Farm expenses, selling/consumption of the product and data collection occur at different points in time

• **Adjusting the data to the common reference period** is often overlooked but is necessary to:
  
  o Account for inflation throughout the year
  
  o In theory, account for the opportunity costs (discounting factor) associated with the holding of the inputs
6 – Reference period (2/3)

**Preparation of soils and seeding**

- June

**Harvest**

- December

**INPUTS**

- Fertilizers, plant protection inputs, labor, etc.
- Labor, packing material, etc.

**ADJUSTMENT:**

- Inflation
- Opportunity costs
There are in principle 3 adjustments to make:

<table>
<thead>
<tr>
<th>Period</th>
<th>Example</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input PURCHASE</strong></td>
<td>A bag of 50 kg of fertilizer at 50 Euros is purchased</td>
<td>$C_1 = 50$</td>
</tr>
<tr>
<td><strong>Input USE</strong></td>
<td>25 kg used (not all the fertilizer purchased is necessarily used in the same cropping season)</td>
<td>$C_2 = \frac{(C_1/2)}{(1 + r_1)}$</td>
</tr>
<tr>
<td>END OF THE CROPPING SEASON</td>
<td></td>
<td>$C_3 = C_2 \times (1 + r_2)$</td>
</tr>
</tbody>
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$r_1, r_2 =$ inflation (+ if possible a discounting factor)
• **To value production:**
  - Producer prices (farm-gate prices)
  - Price at the first selling point: transport expenses and margins have to be deducted

• **To estimate a missing price:** the price of a similar (or alternative) good or service on the market. Problem: if the market is too thin...

• **Accounting for subsidies,** measuring both the prices net of subsidies and inclusive, to:
  - Measure the effective profitability (inclusive of subsidies)
  - Measure the economic profitability (net of subsidy)
  - Assess the economic relevance and efficiency of farm subsidies
8 – References

