Agricultural cost of production statistics: main concepts

Agricultural Cost of Production Statistics

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1 – Accounting approach

- **Economic accounting** is used ≠ business or tax accounting
- **All costs** are measured:
  - Cash costs : costs generally resulting from an economic transaction
  - Non-cash costs:
    - inputs supplied by the farm or the farmer (including land)
    - Capital or fixed inputs
  - 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:

- Transport costs : from the farm to the first selling point or to the transformer
- 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:

- Be presented separately in the tables
- Not be included in the computation of indicators such as net or gross returns

3 – Opportunity costs (1/2)

• **<u>Def:</u> 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:**
  - Non-paid family labor: salary rates paid in the non-farming sector
  - Reused or self-produced seeds: their price if they had been sold on the market
  - 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:
  - There are multiple alternative uses, depending on the context and environment of the farm
  - Markets may be too thin: rental markets for land, etc.

4 – Agricultural production

- **Production quantity** : physical quantities produced by the farm and expressed in standard or specific units:
  - Tons of maize, liters of milk, etc.
  - 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)

4 – Production factors (1/2)

• **Def: All factors (inputs) used by the farmer to produce (outputs)**, irrespective of their acquisition mode:

- Purchased
- Self-supplied by the farmer or family members
- Produced on the farm

• We distinguish:

- **Fixed production factors (capital)**, independent on the short to medium-term from quantities produced, such as infrastructures
- **Variable production factors**, function of quantities produced, such as seasonal labor, fertilizers, custom services (renting of farm equipment, outsourcing,…)

5 – Production factors (2/2)

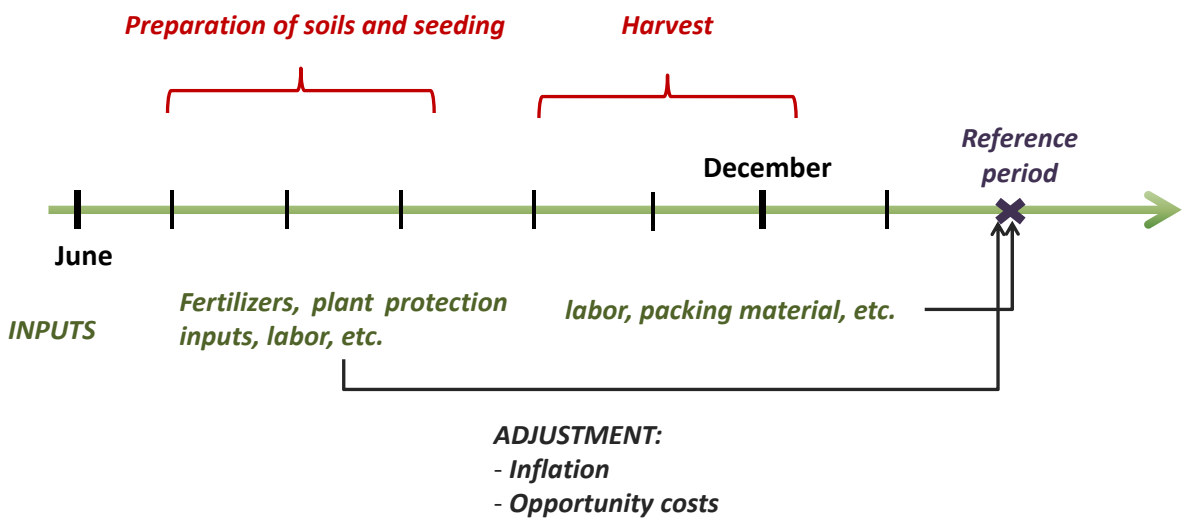
• Inputs can be purchased through:

- 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

6 – Reference period (1/3)

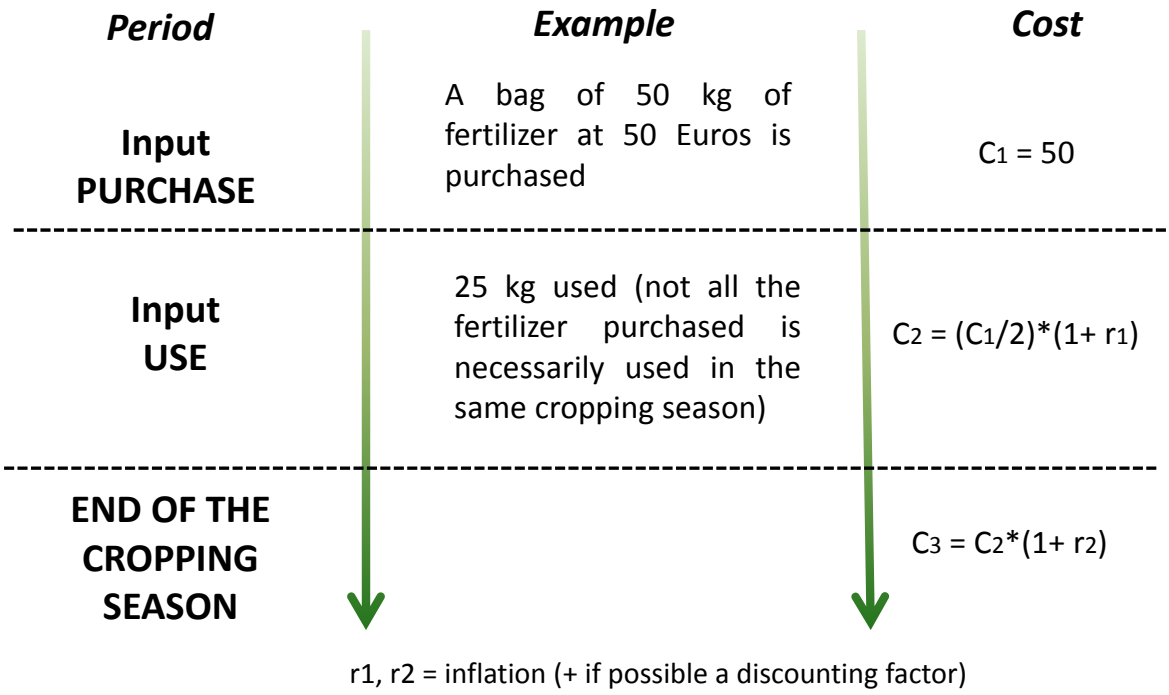
- **It is important that costs and revenues** be computed for a common reference period:
  - The cropping season for crops
  - Calendar year, semester,...: for livestock and other activities which are more uniformly spread throughout the year
- Farm expenses, selling/consumption of the product and data collection occur at different points in time
- **Adjusting the data to the common reference period** is often overlooked but is necessary to:
  - Account for inflation throughout the year
  - In theory, account for the opportunity costs (discounting factor) associated with the holding of the inputs

6 – Reference period (2/3)



6 – Reference period (3/3)

There are in principle 3 adjustments to make:



7 – Different prices for different uses

- **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

- **AAEA Task Force on Commodity Costs and Returns** (2000). *Commodity Costs and Returns Estimation Handbook*. United States Department of Agriculture: Ames, Iowa, USA.

- **Global Strategy to Improve Agricultural and Rural Statistics** (2014), Literature review on cost of production methodologies, Technical Report Series GO-04-2014. FAO: Rome.

- **Global Strategy to Improve Agricultural and Rural Statistics** (2016), Handbook on Agricultural Cost of Production Statistics, Handbook and Guidelines, pp.13-24. FAO: Rome.