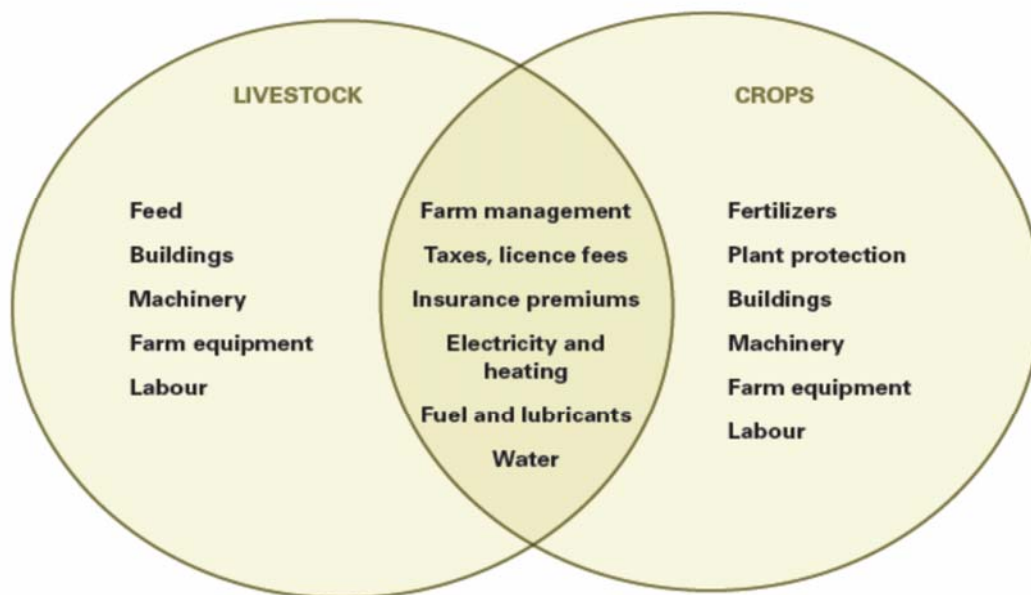


1 – Introduction and definitions (2/4)

- **These enterprises may share some inputs:**
 - Capital, such as harvesters used for different crops, warehouses used to store different commodities
 - Labor, such as the employees used to work both for the crop and livestock enterprise
 - Variable inputs, such as plant protection products used for several crops, irrigation water or fuel
- **Joint products:** when the production technology of two products cannot be separated

1 – Introduction and definitions (3/4)



1 – Introduction and definitions (4/4)

- **Record-keeping is often not detailed enough and/or done at the holding level** => need to define an allocation procedure
- **Enterprise-specific information is necessary to:**
 - Measure the profitability associated with the different commodities
 - Compare profitability across commodities
 - Inform on sectoral allocation, both at the farm and at the region/country level
- **The allocation procedure may be a significant source of bias** in the results:
 - The choice of the appropriate allocation rule is key
 - The rule as to be applied systematically and consistently

2 – General recommendations

- **Ex-ante:** well-designed questionnaires, appropriate data collection and treatment procedures facilitate allocation and improves its quality
- **The choice of the statistical unit** is key because it determines the capacity of the farmer to appropriately respond to the questionnaire
- **The conception of the questionnaire has to factor-in the allocation issue:** data on the allocation keys (crop area, production value, etc.) has to be collected with the appropriate level of detail
- **Allocation has to be based on objective criteria**, such as man-days, production quantities, production values or machine-hours
- **Transparency** in the determination and in the use of the allocation rules is key for the user (interpretability of the data) and for the statistician (reproducibility)

3 – Respondent-based cost allocation

- **The farmer himself is asked to allocate the costs :**
 - By asking him to provide directly the costs in absolute values by enterprise for the different items: labor cost by commodity, etc.
 - By asking him the farm-level cost and then asking him to provide the share of the different activities with respect to the cost item: for example, share of machine use by crop type
- The quality of this approach is largely dependant on the expertise of the interviewee =>
 - It has to be used in priority for the least complex farming systems and cost items
 - It is best adapted to farmers with sufficiently advanced record-keeping practices and literacy level

4 – Top-down allocation

- **The allocation is done by the statistician/analyst** on the basis of objective data for the different enterprises collected during the survey: plot-specific data on labor or machine use, etc.
- **The allocation should not be done by the interviewer himself:** his task is only to make sure that all the required information is collected
- **Advantages of this approach:**
 - Allocation based on survey and farm-specific data
 - Adapted to farmers lacking proper records
- **Limitations:**
 - Data and time-intensive procedure
 - Requires functioning and transparent post-survey data procedures

5 – Examples of allocations keys

Cost item to allocate	Allocation among	Allocation based on...	Comments / Assumptions made
Fertilizers and plant protection inputs	Crops	Crop-specific application rate	Loss of specificity if rates are region-specific but applied uniformly across all regions
		Planted area	Same application rate across crops
		Production quantity	Same application rate / yield across crops
Machinery and farm equipment (depreciation)	Crops, livestock or both	Specific use factors (time/days of use, etc.) combined with engineering data (for tractors, water pumps, etc.)	Loss of specificity if rates are machine-specific but applied uniformly for all machines of the same type, e.g. tractors.
Fuel and lubricants		Planted area	Same frequency/intensity of use across commodities.
Electricity and heating		Harvested area	Same than above
Buildings (depreciation)	Crops, livestock or both	Cattle heads	Same frequency/intensity of use across cattle types.
		Production quantity	Intensity of use (space occupied, etc.) function of quantities produced. Best used for commodities of the same type.
		Production value	Prices differences may not reflect differences in the use of the building by the activity.
Labor	Crops, livestock or both	Cattle heads	Intensity of use function of cattle heads
		Specific factors by task (days, weeks, etc.)	The more specific the better
		Planted or harvested area	Same labor intensity across crops
Feed	Livestock	Cattle heads	Same labor intensity across cattle types
		Feed rates by cattle type	The more specific the better
		Cattle heads	Same feeding rates for different cattle
General management expenses	Crops, livestock or both	Cattle value	In addition to the above, same unit price
		Gross margins or gross value of production	Time spent on management function of value-added

6 – Econometric techniques

- They can constitute an efficient and low-cost way to allocate costs to the different enterprises
- These techniques require a certain level of technical skills and results may sometimes be difficult to interpret

7 - 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** (2016), Handbook on Agricultural Cost of Production Statistics, Handbook and Guidelines, pp. 50-55. FAO: Rome.