

Quick ways to assess animal productivity

Interviewing cows

Livestock extensionists often have no data to indicate major technical problems. Conventional productivity studies may not be feasible, as they take too long. Much information can be gained through rapid surveys. Those described here are based on the authors' experience in assessing productivity of cattle and small ruminants.

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Rapid methods, based on interviews with livestock-owners and herders, cannot reach the depth of long-term studies, but may be enough for practical purposes. Making a "snapshot" of herd structure, or recording animals' life histories, or 12-month recall of herd events can be done in 6-8 weeks, including analysis, whereas conventional productivity surveys take several years and also bother farmers much more.

Snapshot of herd structure

Animal-keepers can usually give a rough idea of the age of each animal in the herd. The animals are then classified according to sex and age. The result is "herd structure". This can already challenge some frequent assumptions about traditional livestock-keeping, like that of "surplus males". Information on 200-300 animals are needed to get a good idea of herd structure. This may mean interviewing 10 or more cattle herders or 40-60 "sheep"-keepers, depending on herd size.

Recall

This is an attempt to record entries into and exits from a herd over a year. After recording the present herd structure, the herder is asked about births, purchases, animals received as gifts or for caretaking, sales, deaths etc. It is important to ask why animals are slaughtered or sold, as these

often include sick or weak animals which otherwise may have died.

It is best to refer to local seasons and local events to help make the time period clear. Otherwise, herders may mention sales and deaths of animals which happened for as long back as they can remember.

A disadvantage of this method is that it covers only one year. If it was an unusually good or bad year, the results may not be representative for a longer period.

Life histories

A longer time can be covered by recording life histories of reproductive females and the fate of their offspring. The life history of a cow might be:

- 8 years old, had 3 calves
- 1st calf male, born 3 years ago in early wet season (April), died 2 months later
- 2nd calf female, born 2 years ago in mid wet season (July), still in herd
- 3rd calf male, born 2 months ago, still in herd.

With this information on many cows, one can calculate fertility, calving interval, calf mortality, sales and other offtake. A list of important local events can be used to get a better idea of exactly when births, deaths etc occurred. For small ruminants the list needs to cover only 5 years, for cattle 10-15 years and for camels even longer (Grandin 1983).

Analysing and checking results

Data can be analysed by hand or with a pocket calculator, but more complete analysis can be done with a microcomputer using a spreadsheet programme. Definitions and formulae for the different parameters are given in ILCA (1990) and Mack et al (1985).

Data should be checked for plausibility. If intervals between births are shorter than length of pregnancy, then something went wrong. Likewise, if results show that the average cow is 15 years old, the data should be rechecked. Maybe some herders counted seasons instead of years. Age estimates can be checked by count-

ing the animal's teeth (see ILCA 1990). As a guide, Table 1 gives the likely range for some productivity parameters.

These methods should be applied by a person with a good knowledge of likely livestock data, so that misunderstandings can be corrected quickly during interviews and the results can be well interpreted.

Some tips and warnings

Such rapid methods can give a fair idea of animal productivity in a given area. However, reliability depends greatly on the memory and cooperation of the interviewees.

Someone who has been managing his or her herd for 20 years will know more than a hired herder who started work 6 months ago. It is important to ask the right people, eg. in parts of Kenya where the men have little to do with daily herd management, older women had the most detailed knowledge about the animals (Grandin 1983).

Since productivity surveys basically yield planning data for outsiders, and direct benefits for the herders are not apparent, their willingness to cooperate varies. In remote areas, people may be pleased to discuss animals with somebody. In other cases, owners may be suspicious, thinking that the survey results could be used, eg. for tax collection.

Like all interviews, they should interfere as little as possible with daily routine. This usually means that interviews can be made only when herds and herders are at home (early morning, late evening).

Productivity surveys should not be seen in isolation. It is also important to understand husbandry aims and management practices, including costs for keeping animals. For example, herd structure may indicate that some cows are fairly old. But if costs are low, fodder is sufficient and animals serve as a savings account, it may be quite rational to keep a cow which has not calved for 4 or 5 years, especially if manure is used as fertiliser.

References

- Grandin BE, 1983. Livestock transaction data collection. In: *Pastoral Systems Research*, pp 277-88.
 - ILCA, 1990. *Livestock Systems Research Manual*, Vol 1, Module 5 "Animal Production".
 - Mack S, Sumburg JE & Okali C, 1985. Small ruminant production under pressure: the example of goats in southeast Nigeria. In: Sumburg JE & Cassaday K (eds), *Sheep and goats in humid West Africa*, pp 47-52.
- All are published by ILCA (International Livestock Centre for Africa), PO Box 5689, Addis Ababa, Ethiopia.

Editors' note: These techniques are also explained in the proceedings of the ITDG workshop in Kenya (see article by John Young in this issue).

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Table 1: Expected range of productivity results

Parameter	Cattle		Sheep arid		Goats arid	
	0.4	-0.65	0.8	-1.8	0.9	-2.1
Offspring/dam/year						
Losses:						
0-12 months (%)	15	-35	25	-50	25	-50
adult mortality	3	-6	13	-20	13	-20
Age at 1st birth (months)	36	-54	22	-15	20	-15

Note: the lower values for sheep and goats are generally in the more arid areas, the higher values in the more humid areas.