

## 1.3 Improving ruminant nutrition during the dry season

### Background

The availability of nutrients for ruminants during the dry season of the semi-arid tropics and sub-tropics constrains growth, milk production, wool production and fertility. Both the quality of the feed and its availability are at issue.

Collective over-stocking is the problem where there is regularly an absolute shortage of feed, as on common grazing lands. Keeping animals in these systems may have as much to do with culture and security as with income generation, making intervention difficult. Elsewhere, problems may arise when a poor wet season leads to an inadequate supply of crop residues and a long dry season.

### Key strategies

Several strategies can be used singly or in combination to improve the quality and quantity of nutrients during the dry season.

- *Maximise the value of the wet season and early dry season.* There are substantial advantages to storing reserves as fat in growing animals, growing young animals to such a size that they are less at risk during the dry season, timing periods of high nutrient demand such as lactation during this period, and synchronising the mating period to coincide with the flush of nutrition often associated with crop residues. Nutrient limitations during the wet season range from shortage of micro- and macro-nutrients to protein deficiency. Sometimes labour shortages and/or high cropping

density may limit grazing time and the efficiency of energy utilisation is often limited by nutrient limitations. Thus livestock may fail to achieve compensatory growth (as a consequence of dry season weight losses) during this period.

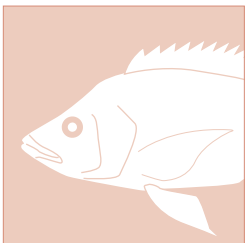
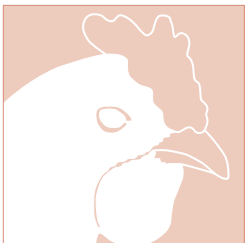
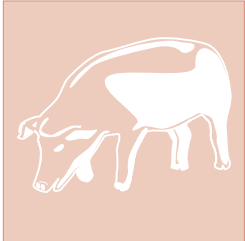
- *Reduce the nutrient demand during the dry season.* Calving and weaning dates may be synchronised to match nutrient supply and demand. Growing calves, lambs or goat kids to a size that will allow their survival is part of this strategy. Alternatively, markets may be developed for young animals to be finished away from the initial production system.
- *Conserve feeds from the wet season.* These may be specially grown grass or legume forages or natural forages in the form of hay or silage. Crop residues may be harvested and dried or treated to improve intake and digestibility. Where crop residues are left standing in the field, the quality declines during the dry season as grazing livestock eat the better components. Appropriate conservation and/or treatment of forages and crop residues depend upon the ownership of animals, the products and income being generated, the availability of labour, and the availability of other dry season resources, such as communal grazing lands.
- *Direct supplementation of livestock to overcome protein deficiency.* Cereal crop residues and natural grasses usually lack nitrogen, and their utilisation and intake can be improved with various supplements, including protein meals. Some of these products contain proteins





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Meeting Rising Demand for Animal Protein



that have been protected against breakdown in the rumen, which enhances their effectiveness. Costly and complex options are usually appropriate only to high-value livestock product. Sometimes the scarcity of resources militates against the increased intake of forages, while the higher quality of the manure can be a bonus.

- *Develop better quality crop residues.* Often, crop residues make up the bulk of the dry season feed resource. Management of residues after grain harvest can influence their quality but the major gains are likely to come from genetic improvement.
- *Cultivate forages that can maintain quality during the dry season.* The usual legume shrubs or trees can seldom provide the bulk of nutrients during this period. The availability of land and labour limits the widespread adoption of this technology.

### Implementing the strategies

Social and economic issues may determine what technical and management options are appropriate for ruminant nutrition during the dry season. Technologies involving additional resources will most likely be adopted with high-value products such as milk or when farmers receive direct or indirect subsidies to adopt the technology. Little information is available for the semi-arid regions of developing countries on the nutrient status of ruminants growing and producing during the wet season; and finding ways to better align nutrient supply and demand may be relevant in more circumstances than previously thought.