

CHAPTER 1 SELECTION AND CARE

1.3 CARE OF DRAUGHT CATTLE

1.3.2 STRATEGIES FOR FEEDING WORK CATTLE

GENERAL

Proper feeding, watering and sound management are required to keep animals in good working condition. All animals have basic daily needs to keep them healthy and at constant weight (these are called maintenance requirements). In general, the larger the animal, the greater their daily requirements for maintenance. Animals in good body condition tend to have a rounded appearance, while poor condition can be recognised in an animal which is thin and bony in appearance. An animal in very poor condition tends to be weak and listless and susceptible to illness and disease. Body condition is related to the amount of fat stored on an animal's body.

FEED COMPONENTS

Pastures, leaf browse and supplementary feeds contain different amounts of energy, protein, minerals, vitamins and water. The amounts are affected by plant species, growth stage, time of year, date of cutting, storage methods etc. These factors also influence the ease of the animal to digest the food to obtain the nutrients. New grass growth is relatively rich in nutrients and easy to digest, while rice straw contains coarse fibre in a form that is quite difficult to digest.

For work, animals require energy-giving foods, and the most common energy-foods for oxen are grass, stover, hay and straw. Cereal grains are rich in energy and they can make good feeds, although they are often too expensive and valuable for this. Fats and oils are not essential for work, but oil-rich seeds (eg, cotton seed or groundnuts) make good high-energy feeds. Protein-rich feeds such as legume hay (eg, groundnut, bean and cowpea hay) are generally popular and easy to digest. Proteins are also found in cereal grains and the leaves of some fodder trees. Minerals (eg, calcium, iron and phosphorous) and vitamins are needed in very small quantities. They are generally found in most mixed grazing, but can also be easily provided by mineral blocks and licks.

FEED REQUIREMENTS OF WORKING ANIMALS

The main requirement for work is energy. Additional protein, vitamins and minerals are not normally needed just for work. In any case most energy-giving feeds will provide some extra nutrients besides energy. A possible exception is salt, and some extra salt may be needed to replace that lost during sweating. Hand feeding of small quantities of salt is a management technique that favours good human-animal relations. Salt and mineral licks can also be used.

The total nutritional requirements of draught animals depends not only on their work, but also on their stage of growth (immature or mature). For female animals it also depends on their state of reproduction (pregnancy or milk production). Mature oxen have requirements only for maintenance and work. A young male work animal (2.5 to 4 years old) has feed requirements for its body growth, as well as for maintenance and work. Cows used for draught need adequate feed not only for their maintenance and work, but also for their reproductive functions.

The type of work will affect the amount of feed needed for work. It is possible to think in terms of light, medium and heavy work draught operations, but the duration of work is as important as the draught force required. Ploughing a heavy field may require a heavy draught, weeding may be a medium operation, while pulling cart on flat ground can be quite light work. However, with heavy draught work, the animals may only work for three hours, with plenty of rests. With the lighter tasks, the farmer may work for six hours, without many rests. The total energy used in the "light" work can be just as much as the "heavy" work, if the work duration is long.

FEED AND BODY WEIGHT

The normal food of cattle is natural pasture and forage. The availability of this occurs in cycles, with periods of plenty in the rainy season alternating with periods of scarcity. Grazing cattle tend to follow a similar cycle, they can gain and lose weight. Cows also tend to lose weight when they are producing a great deal of milk, but they regain it later. Provided loss of weight and condition are not too great, such cyclic changes are considered normal and acceptable.

There does not have to be an immediate link between food and work, although making such a link is often a good management practice. If the animals are in reasonable condition, it may not be necessary to feed extra supplements simply because of the work. The animal can be allowed to lose some weight and some condition - **but this must not be taken too far!** An animal's resistance to disease and willingness to work tends to decline as it loses weight. If resources are available, it is best to keep working animals in good condition.

THE MAIN FEEDING PROBLEM

Work animals suffer from the fact that they are required to plough at the beginning of the rains. This is the time of year that they are in poorest body condition due to natural cycles. The severity of this problem varies with the region and the year. The problem is made worse because of lack of grazing time - work generally takes place in the cool hours of the day which are also best for grazing. At night, animals are commonly kept in pens and during the heat of the day

animals tend to seek shade. Furthermore the grazing that is available tends to be of poor quality, and difficult to digest. For these reasons, farmers generally like to give extra feed to their animals immediately before and during the working period.

POSSIBLE FEED RESOURCES

Natural grazing is by far the most common feed. Animals feed themselves, getting what they can from available pastures. **Crop residues** are the next most common feed. Farmers gather up maize stover, groundnut hay and other crop residues after the harvest. They are often stored in or on the roof of the cattle shed. If stocked, they are preserved from wastage and trampling.

Forage trees can be important. In some areas, farmers lop off branches of locally-known suitable trees towards the end of the dry season. In intensive management systems, people may harvest leaves specially for the animals. The leaves of many legume trees are good feedstuffs. Examples are *Acacia*, *Sesbania* or *Leucaena* species (local farmers and/or agricultural officers should know the most suitable local varieties).

In some areas **hay** (harvested grass which is dried and stored) can be fed. The nutritional quality of hay can range from excellent to very poor. Conditions suitable for good hay production are generally found in the more temperate areas and highlands. Natural standing hay in semi-arid areas can be of good quality. In higher rainfall areas, dried tropical grasses tend to be of poorer quality, and such areas seldom have an absolute shortage of pasture, unless stocking densities are very high.

Household and **milling residues** may be fed. Maize bran, left after traditional pounding, is a good feed, as are cotton seeds. Rice bran tends to be less popular with cattle, but it can be most useful when pasture is short. Purchased **feed supplements** include cotton seed cake, wheat bran and brewers' grains. Molasses not only supply energy, they make crop residues more palatable. The use of such supplements depends on their availability and the economic importance of the work. Where there is ample land, **rotational grazing** may be practised.

CHEMICAL TREATMENT AND SILAGE

There are certain techniques for enhancing feeds that require high levels of management. One example is the use of chemicals, such as urea, to treat straw and stover. Another is the fermentation of feed materials to make silage. Chemical treatment and silage production are both technically possible, but mistakes are easily made at the village level, which can be harmful to

the animals or lead to wasted feed resources. At present, these techniques are not widely practised by smallholders in sub-Saharan Africa. Local experiences (on-farm and on-station) should be assessed before actively promoting such technologies.

FEEDING STRATEGIES

The nutrition of draught animals is often more of a problem of cost than knowledge. Farmers using animals only for ploughing sometimes know how to feed their animals better but they choose not to do so. Farmers with dairy animals or with animals hired out for transport tend to feed their animals well because they can get an immediate cash benefit. Feeding ploughing animals well may only be economically justified if they have to work long and hard, and/or their condition is very weak and/or if cash income can be earned.

Animals in poor condition may be able to plough quite effectively in the short term. For farmers with great problems in feeding their animals this is important. Provided the animals are not at risk, and provided that they will be able to gain weight when the grass starts growing again, it may be a reasonable strategy to allow them to lose weight before and during the ploughing season. Despite this, it is best to keep animals in good condition, if this is at all possible.

There are low-cost, but effective ways of improving draught animal nutrition. The most obvious one is the stocking of maize stover, groundnut hay and other crop residues. Stocking residues is easiest if the farmer has a cart: in many countries stocking of animal feeds has followed expansion of the use animal-drawn carts. Several household and farm residues are valuable feeds. These include cotton seeds and maize bran. Planting multipurpose fodder trees can provide feed supplements at little cost.

If land is fenced, or if farmers have control of grazing, specific areas can be left for the late dry season. This can be very effective, but it has risks. The reserved grass can be diminished by fire, wild animals and other people's cattle. Thus farmers often adopt the strategy of letting their animals graze all areas. Their argument is that food reserves are best stocked within the animals themselves!

Remember - animal nutrition is a seasonal problem throughout the world, and over generations farmers have found ways of coping. If there are local farmers experienced with cattle husbandry, they are probably using their available feed resources quite wisely. Their expertise may be a valuable resource for others.