



agriculture & rural development

Department:
agriculture
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PROVINCE OF KWAZULU-NATAL

Beef Production: The Basics

Drought

Droughts during the early 1990's had a devastating effect on beef farms in the Cape, Transvaal and Free State, as well as Zimbabwe. Comparable problems faced beef farmers in the drier parts of KwaZulu-Natal. In the higher rainfall areas of KwaZulu-Natal the lack of rain caused hardship, but many farmers were able to cope by:

- a judicious reduction in stock numbers
- the use of supplements, especially poultry litter
- using cultivated pastures (irrigated with the little water remaining in their dams).

Many farmers in KwaZulu-Natal did not reduce stock numbers in the hope that predicted beef price increases, boosted by sales to fellow farmers in the other parts of Southern Africa and the replenishing of breeding stock once rains had fallen, would lead to substantial profits. This approach cannot be faulted and, had it rained, would have provided profits to an industry that suffered large cost increases in previous years. When the rains did come, however, there were floods, and beef imports kept beef prices down.

The following comments can be made:

- South Africans tend to forget that the land is endemically prone to droughts.
- More than ever before, the need to keep a fodder bank was brought home to farmers and advisers alike. Table 11 can be used to obtain an indication of the amount required for a cost effective fodder bank.
- Efficient grazing management and ruthless culling of livestock numbers when feed shortages were looming, was the saving of many beef producers.
- Farmers cannot always rely on feed supplies from other parts of the sub-continent to relieve food shortages.
- Beef price increases are apt to be negated by other factors *e.g.* beef imports.

Table 11. Minimum and maximum fodder bank sizes at different levels of annual rainfall.

Rainfall mm/annum	Minimum fodder bank % of annual DMR²	Maximum fodderbank¹ % of annual DMR²
600	13	91
650	13	88
700	12	85
750	12	82
800	11	79
850	11	77
900	11	75
950	10	73
1000	10	71
1050	10	69
1100	10	68

¹ Maximum fodder bank can be larger for greater security, but cannot be justified economically.

² DMR = dry matter requirement.

When farmers are experiencing difficulties, it is tempting, but dangerous, to ignore the problem in the hope that the rains will come and all will be well. The following can serve as guidelines for decision making.

Livestock numbers

In a drought situation, it is essential that farmers evaluate the available amount of fodder in relation to the livestock numbers on their farms. If food is limiting, then numbers of livestock should be reduced using the following guidelines:

- Reducing livestock numbers is most effective if done timeously. This is often difficult because it requires some guesswork.
- The breeding herd should be kept intact as far as possible.
- Older steers and cull animals should be sold first. Cull animals would be cows with poor records as well as weaner heifers and steers at the bottom of the selection list.
- Older cows in calf suffer most severely during times of food shortages.
- Young stock are more prone to lose condition and die during food shortages than are mature animals.
- Young steers and surplus heifers have low maintenance requirements and put on condition rapidly once the feed supply improves, thus providing much needed funds in the post-drought period when they are sold.
- Culling mature cows and keeping more heifers than normal is a possible strategy to follow, but could lead to depressed production for a relatively long period of time once conditions have improved.

Feeding

In times of drought, the obvious solution is for a farmer to obtain more feed. Unfortunately this goes hand in hand with increased expense, which could land a farmer with greater financial problems than he already has. Therefore, before attempting this strategy, the availability of funds should be ensured as well as the probability of returning to profitable farming within a reasonable period of time after the drought. The following guidelines can be used:

- Renting grazing is usually the cheapest. The problems with this option are that such grazing is often of poor quality, watering points are not provided and fencing non-existent or of poor quality. In addition, the necessity for transporting stock which may already be in a weak condition can cause large losses due to stress and even death in some cases.
- Feeding can take the form of providing appropriate supplements to veld or buying-in feed. Bought feeds can take many forms, and many strategies can be followed to obtain the maximum use of such feeds. It is suggested that the best method be worked out for each individual enterprise. The type of feed that can be obtained, the cost, the body condition of the stock to be fed and the objective (survival or maintenance or production *i.e.* fattening for sale) must all be included in any strategy to be considered.

Supplementation

A useful procedure for using urea as supplementation is to spray veld with molasses containing urea (15 kg urea and 25 kg molasses powder dissolved in 100 to 200 litres of water, or the use of a ready-mixed commercial product, sprayed at a rate of 1 litre of mix per animal over a thick stand of grass). Treating poor-quality roughage with the same mixture is highly effective in promoting intake, as well as improving its nutritional value. The poorer the quality of roughage used, the better the response to this treatment.

When using urea as a protein supplement, it is noteworthy that ruminants utilise urea more effectively in the presence of a readily available energy source such as molasses or maize meal. With complete feeds of a high energy content, mature cows of 500 kg can effectively use as much as 120 gm urea per day. In survival feeding, where relatively low levels of roughage and energy are available, the levels of urea must be reduced. Hungry animals must not be allowed sudden, free access to licks containing high levels of urea. In addition, animals not fed urea for a period exceeding 48 hours, must first be adapted by gradually increasing the levels of urea in the supplement.

Urea, through improved ruminal fermentation, stimulates the intake of poor quality roughage. Steers with access to urea have been shown to ingest up to 50% more poor quality hay than steers receiving no urea. This could be a problem when grazing veld with little grazeable material. If the intention is to ration this sparse roughage over a long period, urea should not be included in the lick as it could lead to poor utilisation of the urea. The amount of urea fed must be reduced in proportion to the dry matter intake.

Limited amounts of low-quality roughage, *e.g.* bagasse and wheat straw, may be available on the market. These roughages may be mixed with better quality roughages, to extend roughage availability. In most cases energy is limiting, but can be added in the form of molasses, maize meal, hominy chop or casava (the casava must be limited to 20% of the total dry matter intake).

Protein is required at a rate of 400 to 500 gram crude protein per cow per day for maintenance. A useful source of protein and roughage is poultry litter, fed to mature animals at a rate of one and a half to two kilograms per animal per day in addition to low

quality roughage. When using poultry litter (preferably sterilised), all the necessary precautions should be taken to ensure that the litter is dry, does not contain the ionophore maduramycin, and that animals have been inoculated against botulism before feeding commences.

Complete feed

Buying complete feeds can be the only recourse left. In some cases it could be cost-effective, assuming funds are available. In many cases, buying complete feeds could prove economically disastrous, especially if fed to the wrong class of stock. This option must be considered with great care and adopted only after careful costing of each group of animals to be fed.

When deciding to feed livestock, the animals must be fed in groups, divided according to type, size and condition. Weighing a sample of animals in each group (six animals in small groups of up to 40, or 10% of the animals in groups of more than 40) will provide an accurate record of changes in body mass, indicating good or poor responses to the feed supplied. This management procedure will be helpful in streamlining the feeding regime by providing an accurate determination of the feed need for each group of animals. Body condition scoring, based on the condition scoring system advocated by Cedara, can be used in the absence of a scale and is a better indicator of the nutritional status and potential reconception rate in mature cows than is live mass. Tables 12 and 13 provide a list of the nutrient and dry matter requirements of heifers, steers and cows in certain mass categories.

Table 12. Potential dry matter intake by, and nutritional requirements of heifers and steers for maintenance and gain.

Class	Mass (kg)	DMI ¹ (kg)	Maintenance ²		ADG 0.5 kg /day	
			Energy	Protein	Energy	Protein
			(MJME ³) (g)		(MJME) (g)	
Calf	150	4.3	22	230	38	515
Weaner	200	5.3	27	300	44	555
Replacement heifer (pregnant)	320	7.6		425		
	380	8.6	38	488	61	665
	420	9.3	43		66	720
			47	524	71	785

¹ DMI = Potential dry matter intake. Intake can be restricted when feeding good quality roughages.

² It is not advisable to continue with maintenance feeding for extended periods of time with growing animals, especially pregnant heifers.

³ MJME = Mega-joules metabolisable energy.

Table 13. Potential dry matter intake by, and nutritional requirements of cows.

Class	Mass (kg)	DMI (kg)	Maintenance ¹		Additional energy to increase CS from 2 to 2.5 (MJME)
			Energy (MJME)	Protein (g)	
Dry cow (non- pregnant)	450	9.8	54	390	2
	550	11.3	63	450	
Lactating - post partum	450	12.7	76	860	11
	550	14.7	85	970	
Middle third of pregnancy	450	9.8	54	390	4
	550	11.3	63	450	
Last third of pregnancy	450	9.8	64	480	7
	550	11.3	73	540	

¹ Add 5 MJME if animals walk 5 km horizontally and 7 MJME if they climb 100 m.

The livestock class with the highest priority for feeding is the cow with calf at foot. It could be decided to feed cows in relatively good condition to reconceive, while allowing cows with a poor condition score to skip a season, thus requiring only maintenance feeding for the drought season. Dry, non-pregnant cows, or steers, could be fed every second or third day, a strategy that allows good utilisation of smaller quantities of feed.

Note: Using this feeding method in pregnant animals, could lead to abortions and it therefore should only be considered under extreme feed shortages.

Management

Livestock suffering from a nutritional imbalance or feed shortage are prone to eat almost anything. Objects such as wire or pieces of metal should not be left lying around. A feed shed door left open has caused the death of many animals by allowing them access to excess amounts of concentrate.

In all situations, deworming stock will reduce stress to the animal and will ensure that feed is used efficiently. Grouping animals according to type, condition and weight class will ensure that all animals receive their allotted share. This can only take place if adequate trough space is provided (200 and 600 mm trough space per mature cow for *ad lib* and limited feeding, respectively). Early weaning of calves is a strategy that requires additional management inputs and facilities, but is highly effective in maximising the efficient utilisation of feed, and substantially reduces the stress on breeding cows. These early weaned calves (calves older than 3 months or heavier than 100kg can be weaned effectively) can be placed on a complete feed. A new development worth considering is the removal of calves from their dams overnight, a strategy that could improve conception rates in cows with poor body condition. Finally, farmers must reduce animal movement (especially up-hill) and animal handling to the minimum.

Veld management

Taking the aforementioned guidelines into consideration, as well as the good "farmer sense" which farmers have in abundance, will ensure that most farmers will reach the crucial phase of overcoming the ravages of a drought, *i.e.* the post-drought period.

After a drought, veld needs extra care. It is widely known that sweetveld areas recover rapidly after rains, given adequate care and the opportunity for regrowth and reseedling. The sourveld areas, on the other hand, need special attention. Heavy utilisation of the veld, and lack of time for recuperation, could lead to these areas being invaded by pioneer species with little chance of a return to a healthy, productive plant community. Farmers and advisers, therefore, must ensure that veld care is not neglected. The cost of damage caused to veld in the long term may far outweigh the short term advantage to cash flow by returning too soon to grazing that is still in poor condition. Overstocking, especially on veld at this vulnerable stage, remains the major cause of veld deterioration.

A problem experienced by farmers allowing animals to return to the veld relatively early is losses caused by plant poisonings. Many poisonous plants, *e.g.* senecio and tulip, tend to develop green leafy material well in advance of most veld grasses. Even animals accustomed to avoiding these plants, are at risk when hungry for greenfeed, following a period on conserved feed or dry winter veld.

Planning for the post-drought period should include:

- Allowing time for the veld to recuperate.
- Planning for the farm under examination to return to full production by examining feed production for medium and long-term needs of the livestock on the farm. Plans should be made to rest a portion of the veld by the next winter. If this is not possible, then the timeous planting of crops for winter utilisation should be investigated. In many areas it could be too late to plant maize, but then the planting of other crops, *e.g.* sorghum, babala, millet, teff, oats and Japanese radish should be considered, keeping in mind that the availability of seed could be a major limitation.