

Beef Cattle on Veld

Natural grazing lands constitute the main feed resource for domestic livestock in South Africa, especially beef cattle. For optimum beef production while retaining veld stability, farmers need to study veld (natural grazing lands) in conjunction with their livestock. They need to try and understand the growth of plants and the development of plant communities as well as the factors that affect plant growth and plant community development *i.e.* climate (temperature, light, water), soil type, soil fertility, the effect that animals have on grazing and the influence and role of fire. An investigation of plants must include the grasses animals graze as well as the trees and bushes that are browsed.

Although it is common practice to study cattle as a separate entity to veld, the animal cannot be separated from the veld on which it is kept, primarily because there is a dynamic equilibrium between the animal and the plants the animal utilizes. It is therefore suggested that this manual is studied in conjunction with a handbook on veld and pasture management.

Grazing lands can be classified according to their community structure or their production characteristics, which includes carrying capacity and season of use, which are of practical significance to beef farmers. In South Africa, season of growth is expressed as sweet-, mixed- and sourveld. Sweetveld is veld which remains palatable and nutritious when mature, whereas sourveld provides palatable material only in the growing season. Mixed-veld is intermediate between these two extremes, and varies from sweet-mixed (9 to 11 months grazing per year) to sour-mixed (6 to 8 months grazing per year). Usually, the distinction between sweet- and sour-veld is reasonably clear.

Sourveld

The first limiting factor for beef production in the sourveld areas is overwintering. During winter, the protein content of grasses is low and the lignin content is high. Cattle lose condition when the quality of the natural pasture can no longer provide in the nutritional needs of their bodies, partly because they ingest less grass due to the high lignin content and partly because the protein content of the grass they ingest, is relatively low. Research has indicated that cattle tend to lose mass once the protein content of the veld they are grazing declines below 6% on a dry matter basis.

A number of strategies are followed to prevent winter live mass losses, including:

- conserved feeds, usually hay or silage, are fed in winter
- crop residues are grazed or processed for winter feeding
- winter fodder crops are established which can

be grazed or
foggaged for winter feed

- supplementary feeding is practised *i.e.* winter licks are provided.

Where beef farmers neglect to plan their winter feeding strategies well in advance, heavy losses can result if feed has to be bought in at a time when feed costs are at a premium *i.e.* late summer, or as a result of poor conception rates during the subsequent summer.

For a beef herd, winter commences during spring of the previous year because:

- seasonal breeding, a practice aimed at reducing the winter feed need, requires that bulls enter herds in spring and are removed from herds 3 to 4 months before the commencement of winter
- early weaning of calves takes pressure off the dam and, to be effective, must be done before live mass and body condition losses have taken their toll
- summer fodder crops for the production of conserved feeds are established in spring.

For successful beef farming in the sour-veld, the primary objective is to make summers as long as possible by using the correct grazing management, including applying the correct stocking rate. This shortens the winter feeding period, the most costly part of running a beef herd in sourveld areas. In conjunction with longer summer grazing periods, the costs of winter feeding must be reduced by using the most cost effective winter feeding system. With winter feeding, care must be taken not to fall into the trap of using winter feed to hide poor management and grazing practices applied during the previous summer, leading to reduced profit margins.

Feedneed

The amount of feed, expressed as kilogram of dry matter intake (DMI) per day, is calculated using the metabolic live mass of an animal. Metabolic live mass (MLM) is calculated as the live mass of the animal, measured in kilogram, raised to the power 0.75. As a rule of thumb, cattle ingest 10% of their metabolic live mass per day. Thus, for a heifer weighing 350 kg:

$$\text{DMI} = 10\% \text{ of } 350^{0.75} \text{ kg per day } \textit{i.e.} \text{ 8.1 kg of dry matter per day}$$

In the case of lactating females, 30% more feed is allocated to allow for the additional nutrient requirements for milk production.

Example:

A herd comprises 5 dry cows (420 kg), 6 lactating cows (400 kg), 6 calves (80 kg), 2 heifers (300 kg) and a bull (600 kg). Calculate the amount of feed needed to feed this herd for 30 days.

Solution:

Class of livestock	No	Live mass (kg)	MLM	Add for lactation	DMI (kg)	Dry matter needed for 30 days (kg)
Dry cows	5	420	92.8		9.3	1395
Lactating cows	6	400	89.4	26.8	11.6	2088
Calves	6	80	26.7		2.7	486
Heifers	2	300	72.1		7.2	432
Bulls	1	600	121.2		12.1	363
					Total	4764

Should the intention be to feed hay, which is 90% dry matter, then:

4764 x 100 / 90 kg of hay must be provided, excluding wastage.

The feedneed is therefore 5293 kg of hay to feed this herd for 30 days.

Sweetveld

In sweetveld areas, grasses remain palatable and retain a relatively high nutritive level *i.e.* protein content, for longer. However, "sweet" and "sour" are relative terms. Thus, there are sweetveld areas where grasses retain palatability and high nutritive values throughout the winter, often over years *e.g.* in Namibia. However, in mixedveld, palatability and nutritive value tends to decline for a time in winter. Beef farmers find out how "sweet" or "sour" the different paddocks on their farms are through experience and this information is used to streamline grazing management for the relevant farm.

Sweetveld areas are characterized by a lower rainfall than sourveld areas. Therefore, although winter feeding is not necessary, droughts often cause fodder shortages in sweetveld areas and lower stocking rates must be applied.

A number of strategies are advised to overcome the ravages of unexpected droughts in sweet- and mixed-veld areas. The general principle is to divide a farm into three blocks. One block is grazed during the rainy season. At the end of the summer grazing period, the available dry matter is assessed in relation to how long this block lasted. If fodder was enough *i.e.* it was not necessary to move to the second block before the end of the designated summer period, then livestock can be kept for the rest of the year. If there was a shortage *i.e.* grazing of the second block had to commence before the designated date, then livestock numbers must be reduced. The second block is used for winter grazing and the third block for spring grazing. The third block is the block that is rested for the full summer period prior to being subjected to spring grazing. Blocks are rotated from year to year.

Carrying capacity of veld

The determination of the carrying capacity of a farm needs a thorough examination of the veld types present on the farm, the areas involved, the veld condition amongst others and falls outside the scope of this publication. As a guide, Table 5 lists the potential carrying capacities of land in KwaZulu-Natal.

Table 5. Approximate potential carrying capacities of land in KwaZulu-Natal.

Bioregion	Veld condition	Animal units/ha/year
1 - 4	Good	0.5 to 1 (summer only)
	Poor	0.25 (summer only)
6,8	Good	0.2 to 0.5 (8 to 12 months)
10	Good	0.1 to 0.2 (all year)
	Poor	0.0 to 0.05 (all year)

One animal unit is an animal with a mass of 450 kg which consumes 10 kg dry matter of herbage per day.