

VELD MANAGEMENT

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INTRODUCTION

Natural pasture, or veld, forms the basis of animal production in South Africa. Well managed veld is an excellent and relatively cheap source of nutrition for livestock. It has been found at Mara Research Station that good veld management can improve animal production with up to 87% if measured in terms of the average daily gain of oxen (Lüdemann, 1979). Large parts of South Africa's natural grazing are however in a poor condition, with an abundance of unpalatable species and a prevalence of bush encroachment.

It has been estimated that 60% of the country's natural grazing is in a poor condition, 30% is in an average condition and 10% is in a good condition. It is further estimated that up to 3 million ha of bushveld is lost to animal production due to bush encroachment (Aucamp & Danckwerts, 1989). The main reason for the deterioration of veld condition is poor veld management practices.

WHAT IS VELD MANAGEMENT?

Veld management entails the planned utilization and conservation of the natural vegetation for the mutual benefit of plant and animal. It should be remembered that the vegetation should not be changed to suit the animals but that the animals should be adapted to suit the vegetation. Good veld should have two main attributes: Firstly, it should be productive and palatable in order to sustain maximum animal production and ensure economic benefits in the short term; secondly, it should be stable and prevent soil erosion to ensure long term sustainable production.

INTERACTION BETWEEN ANIMAL AND PLANT

There are more than 900 different species of grass in South Africa. It is common knowledge that grass species differ in terms of palatability and nutritional value. This is the main reason why grazing animals prefer certain areas over others and always tend to concentrate on the palatable and nutritious species. Animals tend to keep on grazing selectively, even during times of high grazing pressure (Danckwertset al., 1983). After animals have grazed tufts once, they will initially prefer ungrazed plants and ignore partially-grazed tufts. They will however return to the ungrazed parts of partially-grazed preferred species before utilizing unpalatable species (Danckwerts, 1984). After the stalks and the tufts have been grazed down, it grows again and if the animals remain in the camp long enough, they will probably return to graze again on the regrowth. In this manner it can happen that the regrowth of preferred species is grazed repeatedly while the unpalatable species are grazed relatively lightly or not at all. This process leads to the over-utilization of palatable species and the deterioration of the veld in the long run.

A grass plant must have adequate leaves during the growing season in order to produce the nutrients that are necessary for regrowth. If the veld is continuously grazed short, the regrowth becomes dependant on stored reserves and the grass plant can die or become vulnerable to drought conditions as the roots die or the reserves are being drawn from there (Dekker, 1989). As the unpalatable grass species become more prevalent, less nutritious material will be available, which will lead to lower intakes of feed and poor animal performance in terms of reproduction and growth.

THE RESTING OF VELD

Periods of rest is necessary to give grass plants a period in which uninterrupted development can take place and the plants can have an opportunity for the processes which are necessary for their survival without any disturbance. These include seed production, the development of seedlings and the formation of carbohydrate reserves. Periods of rest are also recommended in order to build up fodder reserves for utilization during the dormant season. It has been found through extensive research that it is imperative that natural pasture should be rested for certain periods in the grazing season. Periods of rest are essential if the condition of veld must be maintained or improved, irrespective of the grazing management system that is used.

There are two types of rest: those for the short-term interest of the animal, with short periods of absence, very typical to rotational grazing systems; and those that are specifically aimed at the restoration and improvement of veld, which will improve animal production in the long term because of increased fodder production.

The periods of rest based on the needs of the plants can be divided further into four groups:

1. Spring rest, with the aim of allowing plants to accumulate leaves and to allow the leaves an uninterrupted period of growth (photosynthesis) in order to replace the reserves that was used at the start of the spring growth period.
2. Summer rest, primarily aimed at improving seed production.
3. Autumn rest, for the formation of carbohydrate reserves that is used during winter period for respiration and for growth in the ensuing spring period.

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- Rest for a full season, especially suitable for sweet veld areas, because the erratic rainfall experienced there can prevent that the proper results can be achieved with the shorter periods of rest

A full season's rest is especially important for the improvement of plant species composition in areas of low rainfall (<500mm per year) (Tainton & Danckwerts, 1989). In these areas periods of rest must be planned to encourage seed formation and the development of seedlings, and a program of rest, rather than a single period of rest in the time of seed formation, is necessary for this. It is therefore recommended that a third of the available veld be rested for a full grazing season on a yearly basis in the sweet veld areas - for the accumulation of fodder reserves as well as for the regaining of vigour of the palatable species (Danckwerts, 1984; Dekker, 1998).

STOCKING RATE

Stocking rate refers to the number of animals kept per unit area on a farm. It is usually expressed in terms of ha per large stock unit (ha/LSU). In an analysis of more than 50 grazing trials in South Africa O'Reagain & Turner (1992) found that stocking rate is a major determining factor of veld condition and animal production and that it is the most important management-dependant variable under control of the farmer. Stocking rate is considerably more important than other factors such as the number of camps on the farm and the grazing management system that is employed. A four-camp system with the correct stocking rate is infinitely better than a multi-camp system that is over-stocked (Danckwerts & Drewes, 1989).

There is a tendency to increase the stocking rate when the financial returns of a livestock enterprise are too low. If that, however, leads to higher stocking rates than what the carrying capacity of the farm allows, it will not yield the desired results. The reason for this is that over-stocking will lead to a further deterioration of the condition of the veld and that the financial returns will decline even more in the long term. This is illustrated by the general relationship between stocking rate and animal production in Figure 1 below.

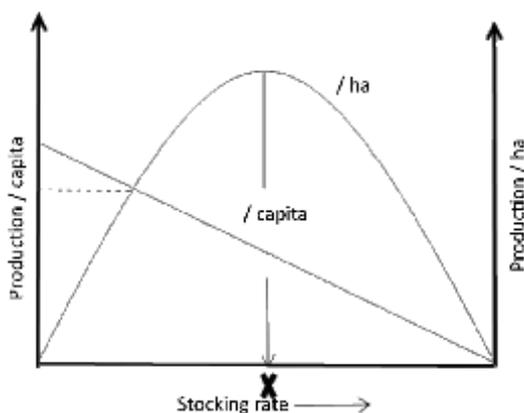


Fig.1: The general relationship between stocking rate and *per capita* production, and between stocking rate and animal production per ha (according to Jones & Sandland, 1974). The point marked "X" indicates the critical stocking rate.

Production *per capita* (whether it is live weight gain, milk- or wool production) remains constant at very light stocking rates but it declines as stocking rate increases. Total animal production per ha, on the other hand, increases as stocking rate increases up to the point where the critical stocking rate is reached, after which it declines. The carrying capacity of the veld is usually somewhere between the two points (stocking rates) where individual animal production and production per ha are both at a maximum (the critical stocking rate). If a farm's stocking rate is already on or over the critical stocking rate, any further increase in the stocking rate will lead to the decrease in animal production and consequently in financial returns.

GUIDELINES FOR A GRAZING MANAGEMENT PROGRAM

- Know the various grass species and their value as grazing plants.
- Accept that not all grasses are valuable grazing species. The main source of nutrition should be palatable perennial grasses.
- Plan your farm and create camps according to veld types.
- Accept that good animal production can only be achieved when animals have access to an adequate supply of nutritious palatable grasses.
- Maintain the correct stocking rate by adjusting animal numbers to the current veld- and climate conditions. The production of veld in arid areas can vary with up to 300% between seasons.
- Never graze camps bare. Only utilize about 60% of the leaves and leave the rest for photosynthesis and the recuperation of the plant
- It is imperative that veld is rested occasionally during the growing season for the formation of reserves, seed production and the establishment of seedlings. Remember that rotational grazing does not necessarily imply a rest period and an occasional full season's rest is recommended for sweet veld.
- Keep records of the numbers of animals and the numbers of days that a camp is utilized in order to be able to calculate the carrying capacity.
- An accumulation of organic material on the ground and an abundance of perennial species is an indication that the veld management program is on the right track.

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Heuningspruit Ngunis

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