UTILISATION OF SOUTH AFRICAN SOURVELD FOR BEEF PRODUCTION

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1. INTRODUCTION

The objective of the study was to describe a system, based on sound research findings that would allow for the utilization of sourveld throughout the year. As a general rule sourveld occurs in areas of higher rainfall and high altitude, and consequently has a higher carrying capacity than other South African grassland (veld) types. Sourveld is classified subjectively by farmers and researchers alike as providing grazing for six months or less (Zacharias 1990). Veld remains a low cost source of feed on any farm, and it makes economic sense to investigate methods of utilizing veld throughout the year as the basis of any fodder flow programme (Kirkman & Moore 1995).

Keywords: grass composition, burning, resting

2. GRASS COMPOSITION

South African sourveld comprises varying amounts of a wide range of species, with varying grazing values. Livestock producers can benefit from utilization strategies that increase the abundance of the most palatable and productive grass, *Themeda triandra*, relative to other species. These strategies are the increased use of resting, early burning (August) and non-selective grazing. However, where summer burning takes place *T. triandra* will be lost from the sward (Everson, Everson & Tainton 1985). Species such as *Hyparrhenia hirta* and *Tristachya leucothrix* on the other hand are favoured by infrequent defoliation (le Roux 1989). The presence of species such as *H. dregeana* indicate extreme under-utilisation.

3. RESTING OF VELD

Season long rests are required at regular intervals (Peddie, Tainton & Hardy 1995, Zacharias 1995). Rests of shorter duration may actually decrease root reserves (Barnes 1956). The rested area provides roughage of reasonable quality for the winter, as it is not selectively grazed during the growing season. Sufficient area must be rested, to ensure that after winter utilization, there will be sufficient material to burn.

4. WINTER UTILIZATION STRATEGY

Utilization in the dormant period is based on continuous light stocking (selective grazing) of areas that have been given a full growing season rest. This requires the use of smaller herds. Animals over-wintered on sourveld are likely to lose between two and ten percent of their mass. The selection of early to medium maturity type beef animals will restrict this winter mass loss. Protein needs to be supplemented by urea-based supplements during the winter.

5. BURNING

The unutilised material is burnt at the end of winter (August), while the grass is still dormant. The biomass of herbage remaining and the relative humidity will influence the intensity of the fire. Intense fires occur where there is over two tons of biomass per hectare, and the relative humidity is under 30%. These fires are more effective in controlling invading tree seedlings. Early grazing of burnt areas will reduce winter feeding costs.

6. SUMMER UTILIZATION STRATEGY

Acocks (1966) described a system of non-selective grazing (NSG) with the objective being to use all the species in the sward. This system is based on the rotation of larger herds to utilize all the herbage non-selectively, including unpalatable species. Regrowth of grass, rather than time is the criterion in deciding whether a camp should be grazed or not (Venter & Drewes 1969). Researchers have recommended early utilization of burnt grass. "There is an economic

incentive for graziers to burn rangeland, and graze it immediately (<14 days) after the fire" (Zacharias 1994). Danckwerts (2001) used the term "nutrient wave" to describe the enhanced nutritional value of early grazing of burnt grass, allowing animals to gain mass rapidly.

7. RESERVE

As with any utilization system in Africa, a fodder reserve needs to be built into the system, to cater for the variability of rain early in the growing season and droughts, as well as other emergencies as may be caused by uncontrolled fires.

8. PRACTICAL APPLICATION

The above principles have been applied on a farm in the Dry Highland Sourveld / Moist Tall Grassveld of Northern KwaZulu Natal from 1996 to 2002 (Table 1). No block of the natural pasture has the same treatment in successive years, and there are only three alternative treatments. The strategy suggested involves the division of the total area into five blocks of equal carrying capacity, each with a number of paddocks equal to or greater than the number of herds. This allows for the rotation of larger herds between paddocks in a block.

Table 1. Natural pasture utilization programme

	Block 1	Block 2	Block 3	Block 4	Block 5
Year 1	REST[1]	NSG[2]	REST	NSG	RESERVE[3]
Year 2	NSG	REST	NSG	RESERVE	REST
Year 3	REST	NSG	RESERVE	REST	NSG
Year 4	NSG	RESERVE	REST	NSG	REST
Year 5	RESERVE	REST	NSG	REST	NSG

[1]REST. Rest for growing season, selectively graze in dormant period, burn in August.
[2]NSG. Non-selective grazing using quick rotation for the growing season.
[3]RESERVE. Reserve block. Aim for 50 % utilization.

9. RESULTS

In 1994 it was decided that improvement in several key performance areas for profitable livestock production was necessary. An example is given of some of the results obtained using the recommended strategies.

10. GRASS COMPOSITION

Four veld transects each of 200 m in different paddocks were marked and species composition recorded in 1994. The species composition was again recorded in 2002, which indicated beneficial changes in composition:

Themeda triandra had increased from 7.6% to 21.5%. *Hyparrhenia hirta* decreased from 30.2% to 15.0% and *Hyparrhenia dregeana* from 4.0% to 0.1%..

11. CONCEPTION RATES

The average conception rate of all females to bull over the last six seasons has been 85.14%.

12. BEEF PRODUCTION

Over the period August 2000 to November 2002, all livestock on the enterprise have been mass recorded every three months. The average stocking rate has varied from 166 to 178 kg ha^{-1}.

Beef production per year has varied up to 56 kg ha^{-1}. Beef animals are marketed off grass at 27 to 30 months as class AB2, and cull cows kept after weaning are sold as class C3 and C4 the following summer.

13. VETERINARY ASPECTS

Higher production from the beef herd will necessitate a comprehensive veterinary programme. The increased milk

production and greater animal concentration provides ideal conditions for outbreaks of diseases such as calf paratyphoid and rotavirus in spring.

14. CONCLUSION

The system suggested differs from the orthodox idea of mature steers grazing in knee high forage. Adopting new strategies often requires a change of the mindset. It is important to understand the principles of any new system. The success of any enterprise is dependant on enthusiasm, commitment and the willingness to adapt where necessary. Further research is necessary on the long-term effect of the system on grass and animal performance. This includes grass composition and condition, as well as the effect on encroaching shrubs and trees.

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