

# Spotlight on Agriculture

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## The influence of stocking rate on the grass layer of the Camel Thorn Savanna

### INTRODUCTION

A project was launched on Sandveld Research Station during 1985. The objectives were, to determine whether stocking rate had an influence on the condition of the grass layer and to indicate the influence of rainfall (Kruger, 1998). From 1998 to 2002 surveys were done annually with the objectives, to determine the influence of stocking rate on the species composition of the grass layer and on the grass production, in order to indicate what is the correct stocking rate for the Camel Thorn Savanna (Bester et al, 1999). The materials and methods of the trial are discussed in detail in the Proceedings of the National Annual Agricultural Reporting Conference of 1999.

### RESULTS

The results presented in this paper only aim to indicate possible trends. The stocking rate regime prior to 1998 will drastically influence the results of this short-term trial. In the back of the mind-interpretation of this trial result will lean heavily on the long-term stocking rate regime.

#### **The influence of stocking rate on dry-material Grass Production**

The dry-material grass production in kilograms per hectare and the rainfall in millimeters for the period 1998 to 2002 are presented in Figure 1. Grass production versus stocking rates is presented in Figure 2. From the results presented in Figure 1 it is clear that rainfall has an influence on the availability of grass. The results presented in Figure 2 show a decline in available grass production as stocking rate increases.

#### **The influence of stocking rate on range condition**

Those grass species that occur most frequently and contribute most to the total grass population in the Camel Thorn Savanna are *Stipagrostis uniplumis* and *Eragrostis rigidior*. *S. uniplumis* and the *Eragrostis* species are the so-called sub-climax grass species and can be regarded as desirable grass species. *Anthephora pubescens* and *Schmidtia pappophoroides* are climax grass species and are classified as the highly desirable species. *Aristida stipitata* a pioneer grass species is associated with rangeland in poor condition. In order to indicate trend of the species composition due to stocking rate, the results are tabulated and presented in figures 3 to 7.

### CONCLUSIONS

Rainfall has a major influence on the availability of grass production.

Stocking rate had a slight effect on the available grass production at the end of the growing season.

*S. uniplumis* and the *Eragrostis* species associated with drier climatic conditions tended to increase as stocking rate increased.

These two grass species can however be regarded as the bulk grass species in the Camel Thorn Savanna and are the mainstay of cattle ranching.

*A. pubescens* and *S. pappophoroides* show a drastic decline as stocking rate increases.

*A. stipitata* a pioneer grass species shows a drastic increase as stocking rate increases.

The highly desirables as a whole tend to decline as stocking rate increases.

The high percentage contribution of *S. pappophoroides* to the total grass population indicates a rangeland in good condition.

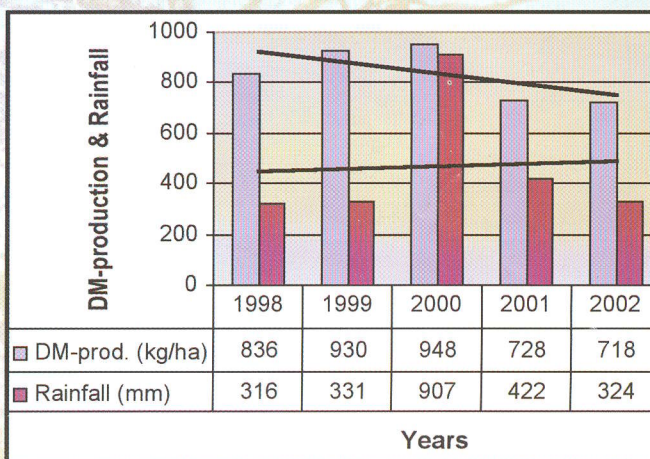


Figure 1: Total grass production at the end of the growing season and rainfall for the years 1998 to 2002.



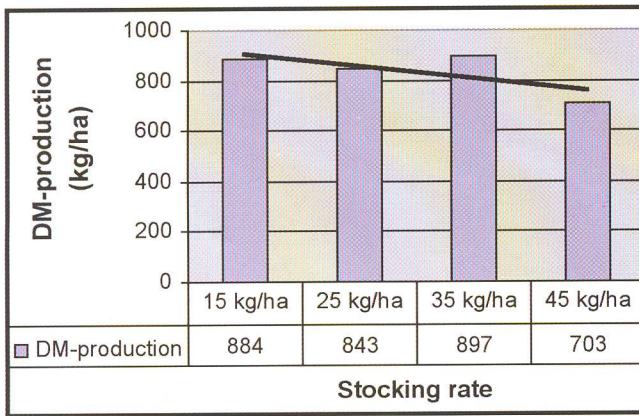


Figure 2: Average grass production (1998 - 2002) for the four stocking rate treatments

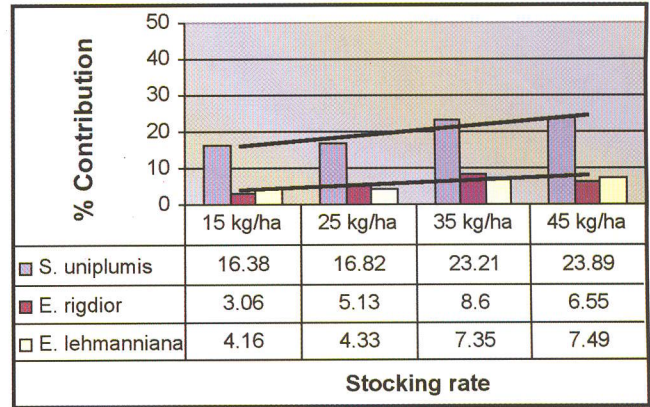


Figure 3: Percentage contribution of the three most common desirable grass species to the total grass population at four stocking rates.

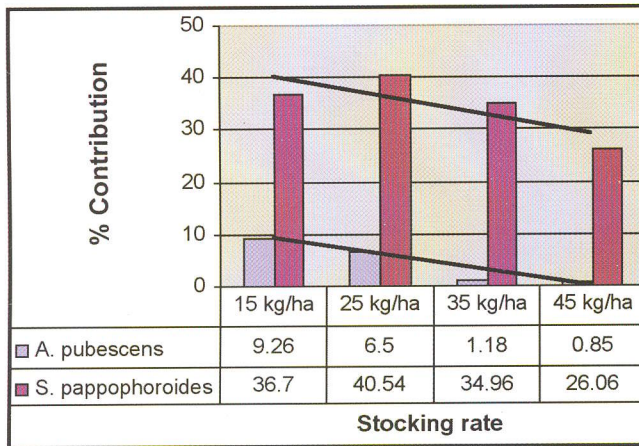


Figure 4: Percentage contribution of two of the highly desirable grass species to the total grass population at four stocking rates.

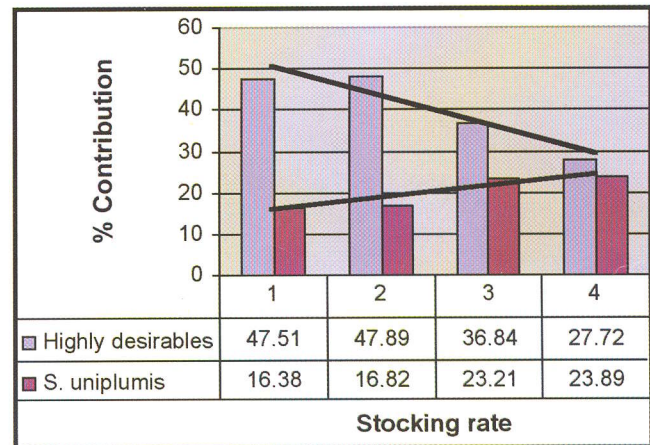


Figure 5: Highly desirable versus *S. uniplumis* at four stocking rates.

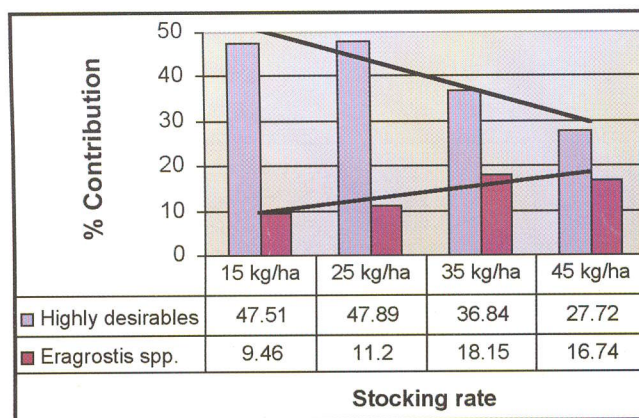


Figure 6: Highly desirable versus *Eragrostis* species at four stocking rates.

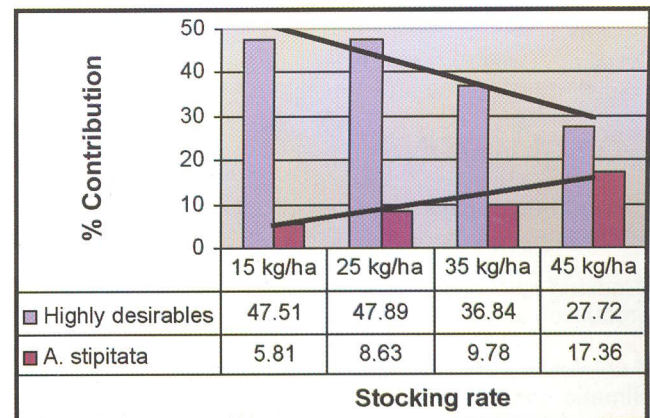


Figure 7: Highly desirable versus *A. stipitata* at four stocking rates.

References: Kruger, A.S. 1998. The influence of stocking rate and cattle type on veld and animal performance in the Camel Thorn Savanna of Namibia. MSc Thesis. University of Pretoria.  
 Bester, F.V., Van Eck, J.A.J. & Kölling, H., 1999. The influence of stocking rate on the species composition and grazing capacity of the natural vegetation. National Annual Agricultural Research Reporting Conference 6 - 10 September. MAWRD, Private Bag 13184, Windhoek.  
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