COMPARISON OF CARCASS MASS IN THE SANDVELD STOCKING TRIAL

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INTRUDUCTION

Beef cattle production is the most important agricultural activity in Namibia today. Gross cattle numbers vary between 1.8 and 2.5 million as a result of fluctuating rainfall patterns affecting the viability of beef production (Lepen, 1996).

This study is part of an ongoing project which is conducted at the Sandveld Research station, situated approximately 60km north east of Gobabis. Sandveld Research station is situated in the Camel Thorn Savannah (Giess,1971; Kruger, unpublished).

Seven different sites with more or less the same grazing capacity was used. Two beef cattle breeds at four fixed stocking rates each are compared in this project, the small framed (SF) Sanga and the large framed (LF) Simmentaler x Afrikaner crossbreeds. In this following discussion the effect of the two breeds and the four stocking rates on warm carcass mass will be presented.

MATERIALS AND METHODS

The two different cattle breeds used in this project are the small framed Sanga and the large framed Simmentaler x Afrikaner crossbreeds. Each of this cattle breeds is evaluated in terms of four fixed stocking rates. The sites are Ouplaas, Geelhout, Acacia, Vergenoeg, Uitsig, Dagbreek and Nuwe Opstal. The four different stocking rates are 45kg biomass per hectare, 35kg biomass per hectare, 25kg biomass per hectare and 15kg biomass per hectare(i.e. LF15, LF25, LF35, LF45, SF15, SF25, SF35, SF45.) With commencement of the project in 1986, the cows were classed into different groups in terms of age, mass and previous performance. For each treatment the same percentage from each stratified group was allocated to ensure that there were no differences between the treatments (Kruger, unpublished).

A botanical survey was conducted before the start of the project in 1984 (Kruger, unpublished). According to that data as well as different camp sizes and locations on the farm, the camps were also stratified into different groups. From these stratified groups, six camps were allocated to each treatment to ensure that no treatment was favoured. The total area allocated to each group is almost similar. To achieve different stocking rates, different cow numbers are allocated to each treatment. Cattle are rotated between camps on a weekly basis during the growing period. During the dry season the grazing period of each camp is extended to 14 days. The cow masses fluctuated over the years because of the rainfall. The stocking rate in terms of biomass was not adjusted on a yearly basis, but the number of cows is kept constant in each treatment (Kruger, unpublished).

The cows are mated from 1 January to 31 March. Cows are replaced at 12% per year within each group. Calves are weaned at an average age of 210 days. The first steers that were selected usually had a weaning index of about 100. All the other steers were selected as close as possible to the same index. Different numbers of animals were selected for each treatment due to different stocking rates. (Kruger, unpublished)

During the growing season all animals receive a summer lick (50% salt, 50% fermafos 12P) and during the dry season a winter lick (50% salt, 25% phosphate P21, 12.5% urea, 12.5% econolick)(Kruger, unpublished).

The steers are slaughtered on the age of 18 months. The weighing of the carcasses is done at Meatco abbatoirs.

RESULTS AND DISCUSSION

The carcassmass dropped slowly in the different stocking rates as shown in the graphs of Figure 1. The graphs indicate the influence of the four different stocking rates on the large framed and small framed animals for every year. The data of 1988 and 1989 were discarded due to a lack of data.

In 1992 slight increase in the carcassmass except the stocking 35 kg/ha was found. Looking at the rainfall data in Figure 4, it is evident that 1990/91 was a good rainfall period. That was the period that the steers of 1992 were born. No statistical analysis was done for the rainfall because not enough data was available. Figure 2 displays a decreasing tendency for warm carcass mass for the 35kg and 45kg stocking rates from 1992 -1996. This could be an indication of a lack of pasture due to possible overgrazing in these categories. In the first years of the trial, there could have been sufficient reserves on the veld to sustain animal production.

The 15kg and 25kg groups show a random variation in mass. It will be interesting to monitor this tendency after the good rain of 1996/97.

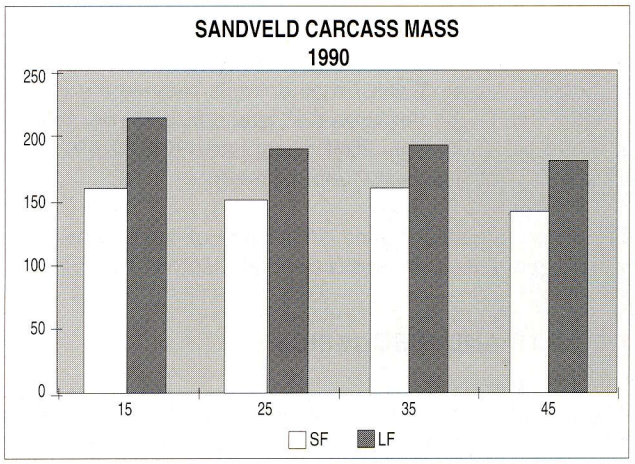
A Kruskal - Wallis One Way Analysis of Variance test was done and the differences in the median values among the treatment groups are greater than would be expected by chance; there is a statistically significant difference ($P<0.05$). Which means that there is an overall decrease in mass over the years for all stocking rates. When the large frame 45kg biomass/ha was excluded, no statistically significant difference was found, which means that the 45kg biomass/ha stocking rate had the largest influence on the carcass mass. The carcass mass of the LF45 (164kg) tended to decrease to the level of the SF15 (157kg) due to the high stocking rate.

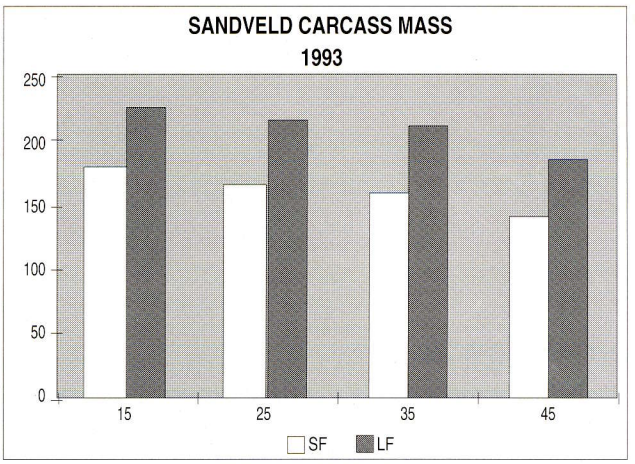
It is clear that the higher the stocking rate, the lower the carcass mass, the effect is less with the small frame animals, but more with the large frame animals. The influence of the poor rainfall seasons might play a role comparing the performance (graphs in Figure 1) with Figure 4.

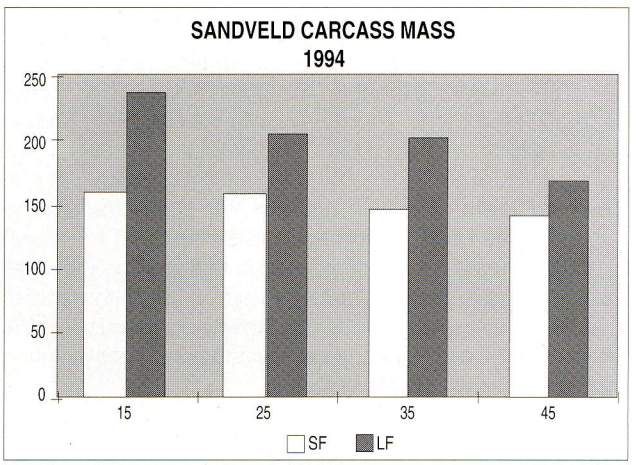
CONCLUSION

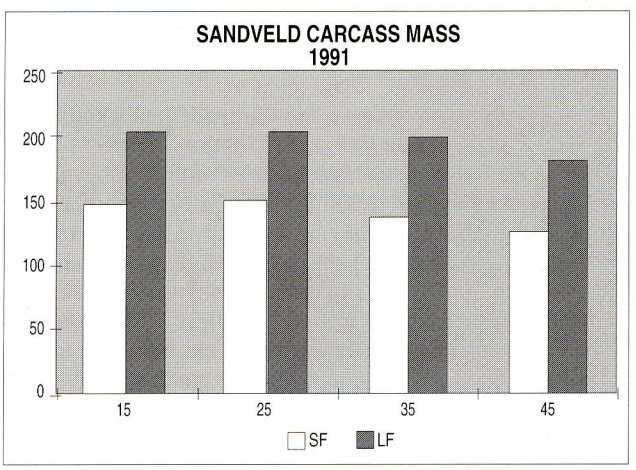
Comparing the rainfall data to the carcass weight, no consistent relationship could be found. Stocking rate has an important influence on warm carcass mass. The large framed animal on a high stocking rate tend to become smaller over years with differences diminishing between LF45 and the light stocking rate of the SF animals.

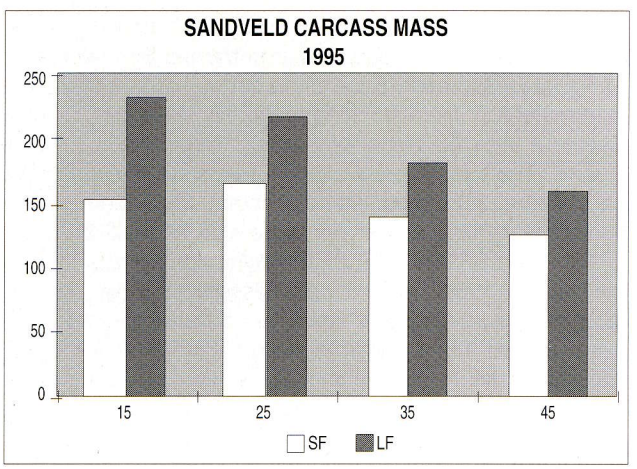
FIGURE 1: CARCASS MASS FOR ALL GROUPS FROM 1990 - 1996.

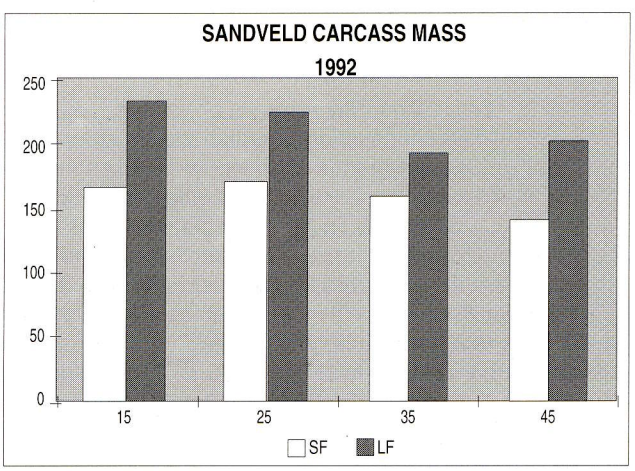


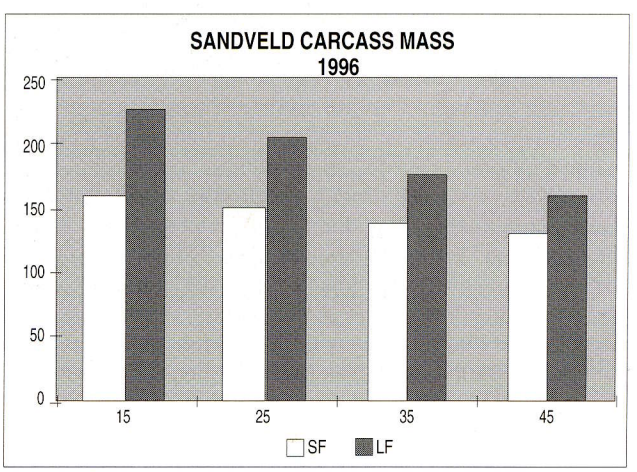












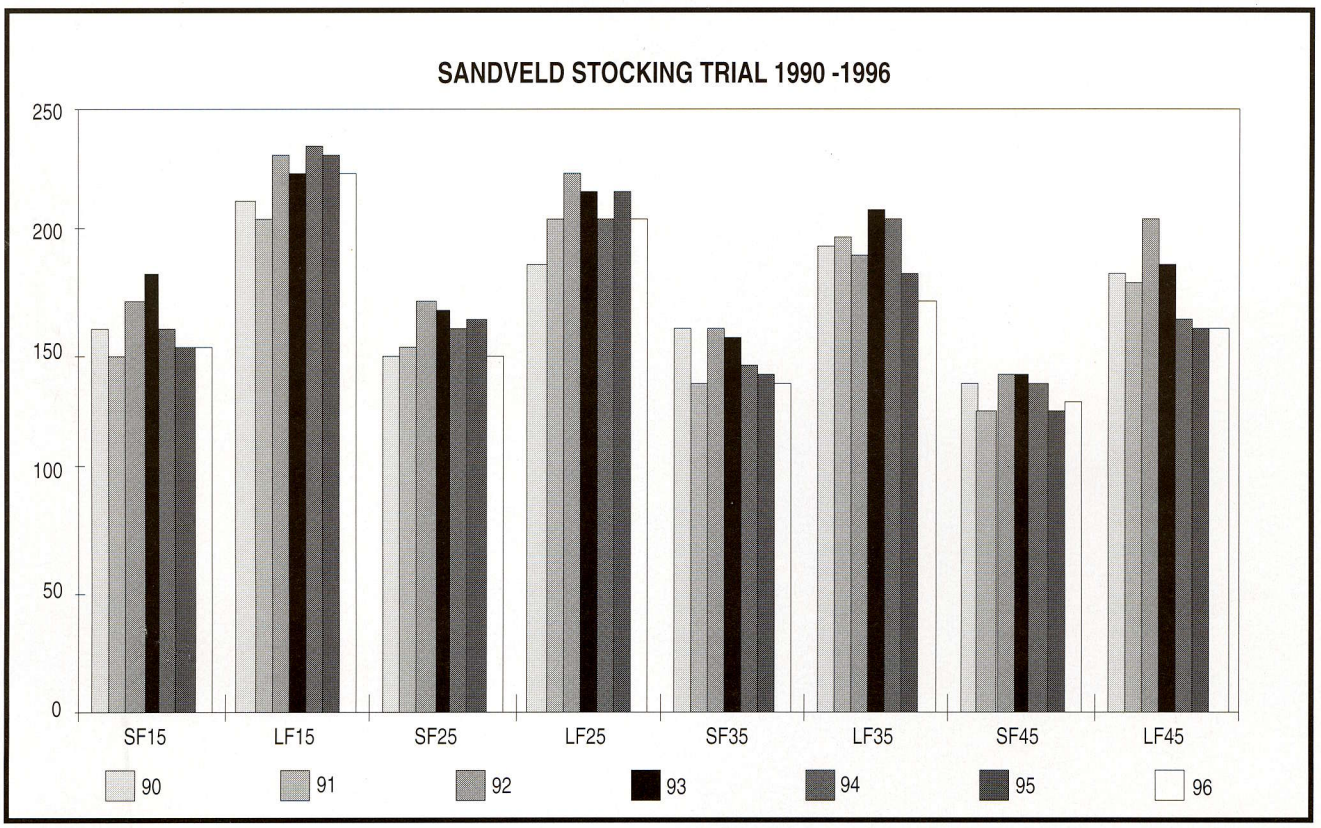


FIGURE 2: THE DIFFERENT AVERAGE CARCASS MASSES OF ALL DIFFERENT STOCKING RATES OVER THE PAST SEVEN YEARS

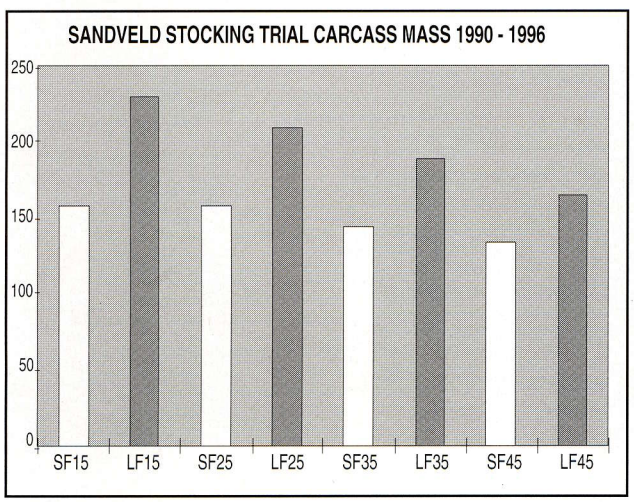


FIGURE 3: SHOWS THE AVERAGE CARCASS MASS OVER THE YEARS 1990 -1996 FOR ALL THE STOCKING RATES

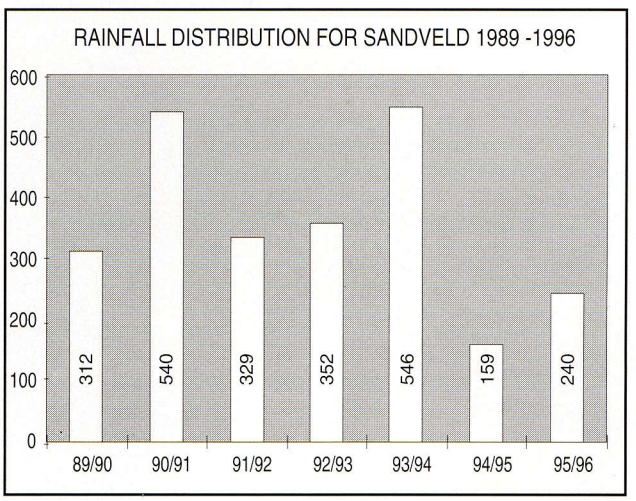


FIGURE 4: THE AVERAGE RAINFALL (MM) 1989 - 1996

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REFERENCES

GIESS,W., 1971. A preliminary vegetation Map of South West Africa. Dinteria 4.
KRUGER, B., 1996. MSc. (unpublished).
LEPEN, J.M., 1996. Breed characterisation studies in Namibia.
REED, E. (personal).
SWANEPOEL , J.J., 1995. Sandveld annual report.