Spotlight on Agriculture

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FRAME SIZE - THE BIGGER THE BETTER?

INTRODUCTION

The question is often asked: "What is the ideal size for a beef producing cow? There is no straight answer, for breeds differ in size. With-in breeds, animals of different sizes are also found. It is known that under intensive production conditions, larger framed animals produce better and in the tropics, smaller animals do better. Namibia is an extensive beef production country with a low and variable annual rainfall which influences the amount of grazing available for animal production. Smaller animals, due to their lower maintenance requirements, will maintain body weight and production easier during times of shortages. The ideal is to have cows which conceive every year, give birth to a healthy calf, and wean a calf weighing 45-55 % of it's dams mass at weaning.

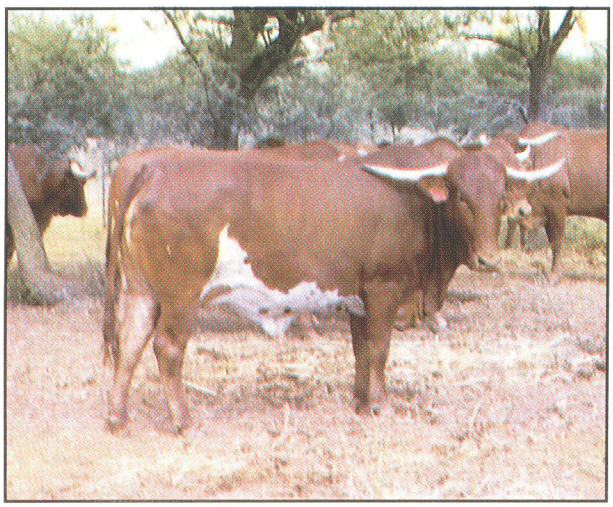

FIG. 2: MEDIUM FRAME SIZE AFRIKANER COWS AT OMATJENNE RESEARCH STATION

FIG. 1: THE SIMMENTALER IS A LARGE FRAMED BREED USED IN PURE AND CROSS BREEDING, FOR BEEF PRODUCTION

REPRODUCTION RATE

Research done at Omatjenne, Sonop and Sandveld Research Stations indicated differences between breeds in reproduction and production, as well as between smaller and bigger animals of the same breed (Venter & Barnard, 1983; Lepen, 1991, unpubl.; Els, 1997). At Omatjenne the small framed Sanga produced more kilogram (45.9) weaning mass/100 kg cow mass mated than the medium framed Afrikaner (31.0) and the larger framed Simmentaler (36.6). At Sonop in an evaluation study of small framed Afrikaner and Santa Getrudis cows maintained higher fertility rates and better body condition, than their larger framed sisters.

FRAME SIZE VS ANIMAL NUMBERS

Animals consume on average 3% of their body mass daily in dry material to maintain themselves. Thus a cow weighing 450kg would need 14kg, and a cow weighing 550kg would need 17kg of grass per day to supply their maintenance needs. Should both cows consume 17kg of food, the larger cow would just be able to maintain itself, where as the smaller cow would have consumed 3kg of grass that could be used for production (growth of fetus, weight gain or milk production).

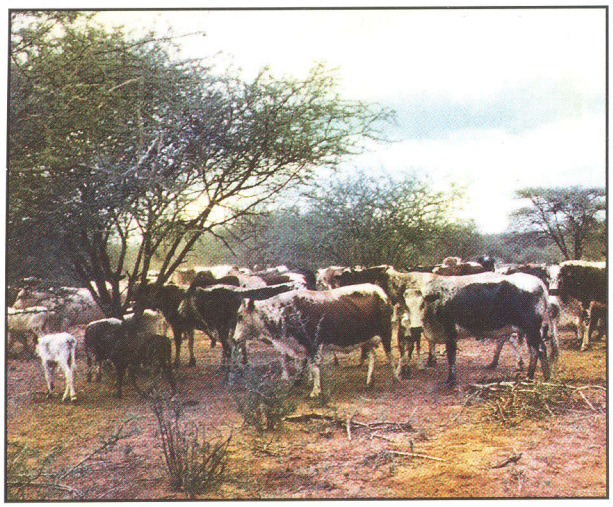

FIG 3: THE SANGA AS AN EXAMPLE OF A SMALL FRAME SIZE BREED WITH AN AVERAGE MATURE MASS OF 350KG

On a 5 000 ha farm with 620 000 kg of available dry matter, 100 head of cattle weighing 550 kg each could grazed for 365 days if they consumed 17 kg of grass each, per day. In contrast 121 head of cattle weighing 450 kg and consuming 14 kg of grass each, per day, could be kept for the same duration. That gives one 21 cows more that can calve and contribute to total production.

At Sandveld Research Station two different sizes of animals are compared with each other under four different stocking rates. (Table 1)

Table 1: Herd numbers (cows) of small and large framed breeds at various stocking rates

Stocking rate Biomass/ha	Large frame (LF)	Small frame (SF)
15kg/ha	15	25
25kg/ha	28	42
35kg/ha	40	60
45kg/ha	52	72

Research results in this project are favoring the smaller animals.

Table 2: Production figures from the Sandveld project (1987 – 1997)

	LF15	SF15	LF45	SF45
Weaning mass/100kg cow mass mated	46.4	48.7	40.2	43.0
Total mass/ 100kg cow mass mated	51.6	54.3	43.6	47.1
205day mass prod. Kg/ha	4.65	4.77	11.01	12.60
Total herd prod. Kg/ha	**5.18**	**5.34**	**11.98**	**13.91**

The heavier weaning mass, (221kg) of the larger framed animals vs 153kg of the smaller framed does not offset the effect of the larger number of small framed animals kept on the same area of land. The larger framed animals will need higher calving and weaning percentages to produce more meat per unit area.

RECOMMENDATIONS

Nature, through available grazing will always determine the size of animal that it can sustain. Producers can help, no matter the choice of breed, by selecting for the most efficient producers in their herds which is not necessarily the bigger animals!

References

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