

Innovative management for improved productivity - Beef Phase II

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Focus Area: Livestock production with global competitiveness (2)

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This report presents the final results of the combined first and second phase of the project: Innovative management for improved productivity: Beef. The motivation for this project was that the South African beef market has changed with a need for livestock research and development to think in terms of a livestock systems approach. This entails the combination of sound natural resource utilization, forage management and reproduction management to ensure a sustainable production enterprise over time through the allocation of limited resources.

When the project was planned, it was clear that a period of 3 years was not enough to evaluate extremely valuable long term effects on herd life and veld condition; however, the RMRD-SA only fund projects for a maximum of 3 years and therefore a second application was approved to cover the remaining two-year project period.

South Africa is still a net importer of beef. Therefore, by increasing off take in the beef sector, South Africa can move towards self-sufficiency. With fertility being regarded as one of the main components influencing total beef herd efficiency, it is essential that the quoted calving percentage of 62% in the commercial beef sector of South Africa must be improved. If the long calving seasons can be shortened and the calving percentage increased, more and heavier calves with a more uniform age can be weaned. Cows that calve early also have a better chance of conceiving in the next breeding season and are generally seen as the more fertile animals

Development, production and quality of replacement heifers is a crucial component in the extensive beef production system. In general, beef heifers are managed to calve for the first time at three years of age, but in some cases mating of heifers at one year of age have been advocated.

All extensive beef production systems in South Africa are dependent on natural veld and it is well documented that veld condition have a huge influence on a number of beef production parameters. Studies conducted on natural veld have concentrated mainly on aspects that affect herd efficiency, including calving percentage, pre-weaning growth and supplementation of cows and calves. However, none of the studies focused on the reproduction performance of beef cattle mated naturally after synchronization, heifer age at breeding and effect of grazing system on veld condition.

The aim of the study was to evaluate: the effect of estrous synchronization followed by natural mating on the calving percentage and calving distribution of multiparous beef cows and heifers; effect of breeding heifers at either 14 months or 26 months of age and the evaluation of a high

utilized grazing system and controlled selective grazing on veld condition and animal performance. The effects of climate on cow-calf production characteristics over time was also evaluated.

The study was conducted from 2009 to 2015 at the Roodeplaat experimental farm (REF) of the ARC-Animal Production Institute (25°34'11.27"S; 28°22'05.36"E) on 900 ha of natural rangeland described as Sourish Mixed Bushveld. The experimental herd (n=92) was divided in four sub-herds consisting of 23 cows each at the beginning of the project in 2009. It was ensured that the four sub-herds were as uniform as possible at the beginning of the project e.g. age, weight, previous number of calves.

Within each sub-herd, 50% of the cows and heifers were synchronized prior to the commencement of the breeding season. Two sub-herds were subjected to high utilized grazing and two sub-herds were subjected to controlled selective grazing. The two grazing systems were related to the use of 30% or 60% of the available grass dry matter. Half the heifers were mated at 14 months and the other half at 26 months.