

THE EFFECT OF GEOGRAPHICAL AREA AND ECOTYPE ON THE PERFORMANCE OF NGUNI CATTLE

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The objective of this research was to assess the effect of geographical area of birth and ecotype on the reproductive and productive performance of Nguni cattle raised in sub-tropical environments to enhance strategies for livestock development and restocking programs of rural communities and beneficiaries of land reform within the southern African region.

The first dataset used comprised of a nucleus of females and bulls of the Nguni ecotype (breed) from different farmers in South Africa imported into Mozambique and animals from the Landim, a Mozambican Nguni ecotype, from the Chobela Research Station. These animals were all taken to the Impaputo Breeding Station, where there was another herd of Landim cattle. The Impaputo Breeding Station is in the southern region of Mozambique, which is characterized by irregular rainfall, varying from 400mm to 600mm, with high risk of drought, and large pasture areas mainly composed of sweet or mixed grass species.

The results of the Landim and Nguni ecotypes that were kept at Impaputo Breeding Station indicated that ecotype, place of birth, year and season of birth/calving had significant effects on age at first calving and calving interval. The following is worth noting:

- Age at first calving for the Landim ecotype was significantly lower than that for the Nguni ecotype.
- Origin of the herd had a significant effect on age at first calving, with heifers born at Impaputo Breeding Station being younger at calving than the ones born at Chobela.

- Both calving interval and calving rate were also significantly influenced by herd of origin, with the South African derived cows having longer calving intervals and lower calving rates than those from Impaputo Breeding Station.
- Year-Seasons as well as ecotype-by-Year-Season interaction had a significant effect on calving interval.
- In the dry seasons Landim and Nguni cows had similar calving intervals, while in the wet seasons Nguni cows had shorter calving intervals than the Landim.

It is important to note that although the South African derived Nguni cows had longer calving intervals than those from Impaputo Breeding Station, the Nguni ecotypes borne at Impaputo Breeding Station had similar calving intervals in the dry season and shorter calving intervals than the Landim ecotype in the wet seasons. This indicates that the Nguni ecotypes born at Impaputo Breeding Station were better adapted than those imported from South Africa.

The Nguni cattle exported to Mozambique originated from 11 different herds in the Limpopo Province. These herds were grouped, according to the geographic coordinates obtained by the geographic information system (GIS) of the farm and the veld (grassland) characteristics of the area, into four geographical regions, namely the arid sweet mopani veld (2 herds), mixed sweet acacia bushveld (3 herds), mixed veld (4 herds) and sour veld of high altitude (2 herds).

The study of the reproductive and productive performance of Nguni herds, from which cattle were imported into Mozambique, in their original environments of South Africa found that:

- Age at first calving was lower in dry year-seasons than wet year-seasons.
- Dry year-seasons showed shorter calving interval than wet year-seasons.
- Breeders (herd) had a significant effect on calving interval.
- Birth and weaning weights were significantly affected by the region. Birth weight in region 4 (sour veld of high altitude) were different from regions 1 (Arid sweet Mopani veld) and 2 (mixed sweet acacia bushveld). Weaning weight in region 2 (mixed sweet acacia bushveld) was different from regions 1 (arid sweet mopani veld) and 4 (sour veld of high altitude).

This is the first study to demonstrate that the reproductive and productive performance of Nguni cattle is influenced by various factors such as ecotype, agro-ecological region, origin of the dam, breeder / herd management and year-season of birth / calving. It seems that Nguni cattle in southern Africa perform differently according to the conditions, confirming that environment-by-genotype interactions affect its performance.

This provides information which can better aid the planning of future cattle development and stocking programs in southern Africa. This includes caution when moving cattle from one geographical area / climate to another in the process of restocking, since the cattle may not be adapted to the new environment.

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