PERFORMANCE OF MALAWI-ZEBU CATTLE ON STATION IN MALAWI

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SUMMARY

The cattle population of Malawi comprises of about 800 000 animals of which Malawi Zebu type cattle is predominant. Malawi's livestock breeding policy has almost exclusively focused on the dissemination of breeding animals from Government farms. The objective of this study was to evaluate the performance of the Malawi Zebu cattle based on data from 1099 male calves and 523 female calves kept on four governmental breeding stations. Effects of station, sex, season of calving and year were significant in the model. Mean birth weights ranged from 15.4kg (SE 0.5) to 22.5kg (SE 0.2) in the four herds. Male calves tended to be heavier than female calves by 1.2kg body weight (18.9 vs. 17.7kg; $P<0.01$). Calves were weaned at an average age of 223 days (SD 30 days) on the four stations. Average weaning weight was 83.9kg (SE 1.1) for male calves and 90.2kg (SE 1.2) for female calves. Male calves were younger at weaning than females. The highest average live body weights at three years of age were observed on one of the stations with 229kg (SD 51kg) and 217kg (SD 27kg) for intact males and females, respectively. Calving interval between first and second parity averaged 15.6 months (SD 4.3) and 23.3 months (SD 0.7) on two stations, respectively. In conclusion the growth potential of the Malawi Zebu was not exploited. It is recommended to review the breeding policy and strategy with a view to establish an open nucleus breeding system enabling farmer participation and to introduce a suitable recording system.
Keywords: Malawi Zebu, birth weight, weaning weight, age at first calving, calving interval

INTRODUCTION

The local Malawi-Zebu (MZ) population contributes approximately 90% of the total cattle population of 800 000 in Malawi (Malawi Government, 1994). The human population is estimated at 10 million with an annual growth rate of 3.3 % (UN, 1993) resulting in an increasing demand for meat and milk. The average consumption of meat and milk is approximately 6.3 kg of meat and 8 kg of milk per head per year, which is 50% of the average for Africa. The mortality of children under five is estimated at 23.4 % (UN, 1993) due to nutritional and disease problems. Over the last decade the cattle population has stagnated due to environmental constraints such as land shortage, droughts, theft and other factors. This aggravating process demands for an intensification strategy, in which livestock improvement through breeding should play a key role. Until recently, Malawi's livestock breeding policy has almost exclusively focused on the dissemination of breeding animals from Government farms.

The Government of Malawi promotes the cross breeding of the Malawi Zebu with the Brahman for beef and with the Holstein-Friesian for dairy. The objective of this study was to evaluate the performance of the Malawi Zebu cattle kept on governmental breeding stations.

MATERIALS AND METHODS

Records from four Government stations located in the Central and the Northern Region of Malawi were collected for the period 1984 to 1993 (Chitala, Mbawa, Meru) and for 1977 to 1981 and 1987 to 1988 (Dzalanyama). Use of multisire mating and missing of substantial data sets over the years did result in insufficient pedigree information to estimate genetic parameters. Calving occurred in the late dry to early rainy season on all stations. After editing, only 1099 male and 523 female calf records were available for further analysis. Data from three stations was pooled but one station (Dzalanyama) was analysed separately due to differences in data distribution. This station recorded only data for male calves. Animals were grazed on natural pasture on all stations. Feed supplementation during the dry season was mostly erratic between years and stations for dams and calves. Also, routine drenching was not practised. Weaning was practised between six and nine months of age. Body weights were recorded at birth, at weaning and in the first, second and third year of life. Weight at first breeding and first calving was recorded in heifers. Data were analysed by SAS (1985) GLM procedure. The model included effects of herd, sex, year and season. The model for Dzalanyama included effects of year and season only. Birth weight and age at weaning was used as covariates when analysing effects on weaning weight.

RESULTS AND DISCUSSION

Table 1 shows birth and weaning weights of male and female calves for the four stations. The herd effect was significant (P<0.01). Male calves tended to be heavier than female calves by 1.2kg body weight (18.9 vs. 17.7kg; P<0.01). Between years mean birth weight ranged from 14.7kg (SE 0.5) to 22.7kg (SE 0.5) reflecting most probably drastic changes in feed supply due to droughts and management. Calves were weaned at an average age of 223 days (SD 30 days) on the four stations. It was observed, that male calves were weaned earlier than female calves regardless of their actual weight. Season of calving had a significant effect on weaning weight. Calves born in the late dry season were heavier compared to calves born in the early rainy season (91.1kg vs. 83.0kg; P<0.05). Weaning weights ranging from 97.8kg (SE 3.1) to 133.4kg (SE 1.8) between years were observed at Dzalanyama. However, this was in different years as the other three stations. Average age at weaning was 205 days. For the three stations decreasing mean birth and weaning weights were observed for the period 1985 to 1993.

Table 1. Mean birth weight and weaning weight of male and female Malawi Zebu calves on the four stations

Station	Birth weight (kg)				Weaning weight (kg)			
	Male			Female	Male			Female
	N	LSM	SE	N LSM SE	N	LSM	SE	N LSM SE
Chitala								
Mbawa								
Meru								
Dzalanyama[1]	582	18.1[2]	.1		581	118.1[2]	..0.9	

a, b, c Means with different superscripts within rows differ (P<0.05)

[1] Data for Dzalanyama were analysed separately [2] raw mean, LSM were not estimable

Body weights were recorded up to three years of age. For example, in year two growth rates ranged from 19g per day (SD 10g) to 170g (SD 54g) in males calves at the four stations. The highest weight of 229kg (SD 51kg) was observed in three year old male calves at Meru. Growing heifers gained on average 152g (SD 59g) and 107g (SD 59g) per day on the two stations, where data were available (Meru and). At three years of age heifers reached 162kg (SD 23kg) and 217kg (SD 27kg). Nec (1970), Beale *et al.* (1979) and Butterworth and McNitt (1984) described similar birth weights as observed in this study but higher growth rates during pre- and postweaning periods ranging from 450 g daily gain during suckling to 730 g daily gain in stall fed Malawi Zebu steers. Our results show that the growth potential of the local Malawi Zebu was not fully exploited on stations. The recommendation of crossbreeding of Malawi Zebu with the Brahman for higher carcass weights and growth rates may lead to even greater problems resulting from higher feed requirements and higher susceptibility to tick-born diseases in the prevailing low-input traditional system. It could be argued that actual survival and low positive growth rates indicate a high adaptive value of the Malawi Zebu under deteriorating environmental conditions.

Body weight at first calving and corresponding age is shown in Table 2. Calving intervals between first and second parities averaged 15.6 months (SD 4.3) and 23.3 months (SD 0.7) for Mbawa and Chitala, respectively.

Table 2. Mean body weight and age at first calving of Malawi Zebu on two stations

Station	n	Weight (kg)		Age at first calving (months)	
		Mean	SD	Mean	SD
Chitala	106	231.4	34.5	49.8	9.0
Mbawa	95	269.8	47.5	50.9	12.0

De Koning (1977) reported an average calving interval of 18.5 months and a calving rate of 63.3% for Malawi-Zebu in the central region of Malawi. Data for Chitala and subjective assessment of the actual herd visited suggested that animals were stunted due to environmental constraints. It is obvious, that conventional breeding programmes with selection for higher growth rates under such extreme conditions would fail. Studies on the adaptive value of the Malawi Zebu are not yet available. Therefore, it would be premature to suggest breed improvement through crossbreeding at this stage. In Zimbabwe Moyo *et al.* (1994) have demonstrated that indigenous breeds perform better than crosses or exotic breeds under marginal environments.

CONCLUSION

The analysis of the available data from governmental breeding stations show that neither a thorough characterisation of the Malawi Zebu nor a selection programme is conducted. It is unlikely that any contribution towards conservation of genetic resources and its utilisation through genetic improvement of the national herd was achieved over the last two decades. The present promotion of crossbreeding or breed substitution is detrimental to the need to retain large proportions of Malawi Zebu genes to maintain this hardy breed. It is therefore suggested to review the existing breeding policy for the Malawi Zebu towards selection within breed as another option and its use for low input beef and milk production systems. The existing facilities could be used in an open nucleus breeding system, which must include recording in private herds of traditionally kept Malawi Zebu. An open nucleus breeding system would result in participation of the farmers possibly leading to herdbook breeding, market development and faster genetic progress.

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