PERFORMANCE OF CATTLE STALL-FED FOR BEEF IN MALAWI

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SUMMARY

Information on the initial and final weights, length of feeding period, grade of the live animal before slaughter, carcass weight and dressing percentage of 2,498 stall fed Malawi zebu (MZ) and crossbred steers from Southern Region and 2,085 steers from the Central Region of Malawi is analysed. Agricultural and household residues were the basis of the feeding system. The genetic composition of individual animals was not known; weight groups were therefore used as proxies for breed types. Final weights were significantly influenced by breed, month and year when the feeding period was started and breed by month interactions. The mean stall feeding period in the South was 188 days and the average daily gain was 0.59 kg. Steers in the Central Region were fed for 213 days and gained on average 0.50 kg per day. Breed did not exert a significant effect on weight gain. However, when daily gain was compared on the basis of metabolic body size, MZ i.e. smaller steers gained significantly more rapidly than crossbred steers. The dressing percentage of animals from both regions was 52.3%. The carcass weight of crossbred steers was higher than that of MZ steers. It is concluded that an effective fattening system can be based on locally available resources and a similar system could be suitable for other parts of the developing world.

INTRODUCTION

Stall feeding of cattle for beef production was successfully started in the Southern Region of Malawi in 1957. The purpose of the scheme is to produce beef for the domestic market with a consequent sparing of foreign exchange. The financial benefits that accrue to the farmer enable him to purchase inputs to intensify crop production whilst the accumulation of manure and bedding play an important role in the maintenance of soil fertility. Cattle for fattening are mainly Malawi zebu but there are also steers of mixed Sussex, Brahman and Afrikander origin. An increasing number of Friesian × MZ steers are becoming available from dairy multiplication centres as well as from farmers' own dairy enterprises. Credit steers normally two in number are issued to each farmer by the Ministry of Agriculture at a fixed price per kg liveweight which includes charges for interest, transport and handling. The farmer is paid on the basis of cold dressed weight and grade after initial charges have been deducted.

Stalls for individual animals are constructed from Eucalyptus poles and thatched with Hyparrhenia spp. grass. Stalls are frequently constructed in a long line to reduce construction costs and to facilitate delivery and collection of the steers. Fattening is carried out in both wet and dry seasons although the latter is more common particularly in the Lilongwe area. Improved Napier (Pennisetum purpureum) or Rhodes (Chloris gayana) grass and indigenous Hyparrhenia, Panicum, Digitaria and Setaria spp. are cut and fed during the wet season. Roughage fed during the dry season is maize stover supplemented with groundnut...
haulms. The concentrate supplement given is maize bran ('madeya') from maize pounded for home consumption.

MATERIALS AND METHODS

Records were available for the years 1972 to 1982 in Lilongwe (Central Region) and 1974 to 1981 in Blantyre (Southern Region). Data included date of start and finish of feeding period, starting and final weights, number of teeth at entry and grade (determined on the live animal at the end of the fattening period on the basis of four categories: prime, choice, standard and (in Blantyre only) common, coded as 1, 2, 3 and 4 respectively). Sample data were taken at random for each year in each centre. After editing there were 2,985 steers in the Lilongwe data set and 2,498 in that from Blantyre.

Histograms of weights of steers at the start of the feeding period indicated a distinct two-peak weight distribution in Lilongwe and a three-peak distribution in Blantyre. This suggests that there were two populations in Lilongwe and three in Blantyre. A truncation point of 250 kg between the two populations was chosen for Lilongwe. Steers weighing up to and including 250 kg at the start of the period were taken to be MZ and those with an initial weight greater than 250 kg to be Friesian × MZ crossbreds. Subdivisions are in agreement with weights of crosses reported elsewhere (Thomas and Addy, 1977). The major source of steers in the Blantyre area was a government breeding station where three lines of cattle were kept. These were single and multiple sire Sussex herds, similar Brahman herds and "offtype" Sussex, Brahman and Afrikander crosses. The three populations were taken to represent MZ (less than or equal to 250 kg), Sussex, Brahman and offtype steers (greater than 250 kg and less than or equal to 340 kg) and crosses between Friesian and offtypes (more than 340 kg).

Five age classes based on dentition (0-, 2-, 4-, 6- and 8-tooth) were established. There were no 0-tooth animals in the Lilongwe data set and no 8-tooth steers in the Blantyre data set.

All characters were analysed by least squares procedures (Harvey, 1977).

RESULTS AND DISCUSSION

Summaries of sample means are given in Table I. Numbers by breed group, grade and number of teeth and least squares means for carcass weight and dressing percentage are presented in Table II. Analysis of variance of the initial and final weights, total and daily weight gain and grade of the 2,498 steers from the Blantyre area showed that significant differences existed among breed groups, number of teeth and month and year of the start of the feeding period. Breed by month interaction was also significant. Final weight of steers was significantly influenced by breed group, month and year and by breed by month interaction. Breed group, tooth class, starting month and year and breed by month interaction exerted a significant effect on both length of feeding period and grade. Month and year had significant effects on both total and daily weight gain. Neither total or daily weight gain were significantly affected by breed or number of teeth. Analysis of data from the Lilongwe area indicated that significant effects were essentially similar to those for the Blantyre data except that number of teeth exerted a highly significant effect on total weight gain but not on either starting or final weight.