Short Communication

A RETROSPECTIVE STUDY OF CALF MORTALITY IN THREE SETTLED CATTLE HERDS IN ZARIA, KADUNA STATE

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SUMMARY

A retrospective study of calf mortality and the effect of management on calf mortality in three settled cattle herds in Zaria, covering a period of four years (1990-1995) was conducted using farm records. A very high overall mortality rate of 32.0% considered to be associated with substantial economic losses was obtained. Management was also found to have significant effect on calf mortality (p<0.05). Calf mortality was least in farm A where farm care was by both the owner and hired labour, and milk from cows was reserved for the nutrition of calves. The other farms where care was by only hired labour, and milk from the cows was sold for human consumption had significantly higher calf mortality. It is suggested that a prospective study be conducted to determine the causes of calf mortality in these herds and others in the area as a basis for designing control and preventive strategies against this important condition.

KEYWORDS: Retrospective, calf, mortality, management, settled, cattle, herds, Zaria

INTRODUCTION

Calves form the raw material of any cattle industry (Tekdek, 1983) and their survival is important for replacement of slaughtered cattle in a beef herd and for the expansion of dairy herds (Umoh, 1982). Calf mortality therefore, invariably affects the productivity of a country's cattle industry. The extent to which calf losses contribute to total losses incurred in Nigerian cattle industry is not known but may be significant (Tekdek and Goje, 1988). A low calf mortality rate of 4.5% has been reported for the semi-settled Fulani cattle herds in Zaria (Tekdek and Goje, 1998). However, this figure cannot be extrapolated to the settled herds. Consequently, this study was designed to examine in retrospect, calf mortality and the effect of management on calf mortality in settled cattle herds in Zaria.

MATERIALS AND METHODS

Records of three (3) settled cattle herds (A, B, C) in Zaria covering a period of four years (1990-1993) were examined for calf mortality and the effect of management on calf mortality. Zaria is located at latitude $11^{\circ}11''N$ at an altitude of 686 metres above seas level. It has mean annual rainfall, average temperature and mean relative humidity of 1055 millimetres, $24.55^{\circ}C$ and 43.6% respectively (Meteorological services Office, IAR, ABU, Zaria). Management practice in these farms is as described below:

Farm A

The herd structure in this farm consisted of bulls, cows and calves herded together. The source of animals was on-farm breeding. However, bull-calves were also purchased from markets for fattening. Weaning was by natural means. Milk from cows was reserved exclusively for the nutrition of calves. The care of animals was by the owner and hired labour. There was regular veterinary care such as deworming, ecto-parasite control, vaccinations, treatment of sick animals, etc. Salt licks and water were provided *ad libitum*. Concentrate (cottonseed + maize) was supplemented to the needy animals such as pregnant cows at no specific amounts. Housing was open-fenced, concrete floor that was regularly cleaned.

Farms B and C

The herd structure in these farms was similar to that in farm A. The source of animals was essentially on-farm breeding. Weaning was by natural means. Milk from cows was in addition to feeding the calves, also sold for human consumption as a source of income for the owners. The animals were cared for by hired labourers only. Veterinary care and salt licks were provided only occasionally, while water was provided twice daily, in the morning and evening. Housing was open-fenced, non-concrete floor and was only cleaned occasionally.

Information obtained from the records included the total number of calves born during the study period, and the total number of calves that died during the same period. Calf survival and death were considered over a-6 months duration of life. Calf mortality rate was obtained by dividing the number of calves dead by the total number of calves born during the study period and multiplied by 100. Calf mortality rates in the different farms were subjected to the Z-test for proportion to test for any statistically significant differences among the farms.

RESULTS

Table I shows the calf mortality rate in the various farms as well as the overall calf mortality rate. The highest calf mortality rate was obtained in farm C (46.7%), while the least was in farm A (19.3%). The overall calf mortality rate (pooled value for all farms) was 32.0%. There were statistically significant differences in calf mortality rates between farms A and B and between farms A and C ($P<0.05$). However, no such statistically significant difference existed between farms B and C.

TABLE I: **Calf mortality rates in settled cattle herds in Zaria**

Farm	Parameters		
	Total no. of animals	No. of animals dead	Calf mortality (%)
A	114	22	19.3[a]
B	55	22	46.7[b]
C	87	38	43.7[b]
All Farms	256	82	32.0

a,b-superscripts where different indicate significant difference, and where similar indicates no significant difference.

DISCUSSIONS

The overall calf mortality rate (CMR) of 32.0% recorded in this study is considered very high even though calf mortality is considered undoubtedly very high in the tropics (Roy, 1970). A calf mortality of 5% is the economic rate (Roy, 1970). This

overall calf mortality rate is also much higher than the figure reported for the semi-settled Fulani herds in Zaria (33.3 Vs 4.5% respectively). The result supports the assertion that calf mortality is lower in livestock under traditional system of husbandry which does not allow the build up of pathogens (Nuru, 1974) when compared with settled herds without efficient sanitation. There is no doubt that this level of CMR is associated with substantial economic loss to the cattle industry in Zaria.

The lower calf mortality rate in farm A (19.3%) supports the results of other workers that farms cared for by hired laborers only usually suffer a higher calf mortality than those cared for by the owners and hired labourers (Speicher and Hepp, 1973; Tekdek and Goje, 1988). However, this CMR (in farm A) is in itself higher than the economic mortality rate of 5%. Lack of adequate sanitation in housing and insufficient care for calves, which are features of management under hired labourers account for higher CMR in such farms.

Furthermore, the milk in farm A which was reserved for the nutrition of calves as opposed to the other farms where milk was also sold for human consumption may have provided calves in the former with better nutrition and protection against diseases and consequently low mortality (Rege *et al.*, 1993). The provision of regular veterinary care and concentrates to the pregnant cows as obtained in farm A are other management practices that are expected to be associated with better calf performance and low calf mortality.

The specific causes of CMR were not determined in this study being a limitation of a retrospective investigation. It is desirable that a prospective study be conducted to establish the causes of CMR with the view of designing strategies for their control and prevention. The results of such a study will certainly help to reduce the substantial losses associated with the high calf mortality figures in settled cattle herds thereby improving the productivity of cattle in the area.

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