Behaviour of Single-suckled Angus Cattle from Calving to Weaning

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ABSTRACT

The main objective of this study was the investigation of behaviours which might influence the number and/or weight of calf weaned from single-suckled Angus cows. The behaviour patterns involved were those relevant to parturition, the cow-calf bond and nursing. The effect of such factors as maternal experience, sex, and age of calf and the presence of non-lactating cows were also investigated. In addition, the liveweight of the calves was taken at birth and thereafter at regular intervals throughout the course of the study.

Observations began on average 31 d (range 4 to 65 d) pre-partum and continued until 3 weeks post-weaning, *c.* 33 weeks after the start of the investigation and involved >900 h of field observations.

Eighteen pregnancy-tested Angus cows were involved of which 14 calved. Of these, 5 primiparous and 6 multiparous reared their own calf. Two calves, 1 born from a primigravid and the other born from a multigravid cow, appeared to die as the result of abnormal maternal behaviour. These maternal behaviours resulted in either physical injury to the neonate and/or refusal by the cow to allow the calf to nurse. The latter behaviour was followed by hypothermia in the calf, although adverse weather conditions probably accentuated this heat loss. Two primigravid cows rejected their calves and had to be isolated for up to 5 d and restrained before the cow would accept the calf's presence and nursing activities.

A method of predicting the order and time of calving for each cow was devised. Determination of the calving order was possible in 12 of the 14 cows prior to the birth of the first calf.

The use of 24 physical signs allowed prediction of calving time to within 48 h in all 14 cows. Changes in such behaviours as posture and social activity were associated with calving within the following 3 to 4 h in all except 1 cow. This animal was found to exhibit dystocia, i.e., an extended parturition of >19 h.

On average the physical signs were observed before the behaviours and more cows were recorded for the presence of physical signs than for behavioural signs. However, there was wide variation in the number of signs recorded and the time they were first observed for each of the cows. No single sign could be effectively used for prediction of either calving order or the time of calving, i.e., delivery of the calf.

There was a highly significant difference between the primigravid and multigravid cows in their calving time. The heifers showed a decided tendency to calve during daylight whilst equal numbers of the older cows calved during daylight as during darkness.

The area chosen for calving did not appear to be random. A very highly significant number of cows calved in the same area which provided the parturient cow with visual isolation up to 20 m. The importance of such isolation and subsequent localization to a specific area on the early occurrence of nursing and primary socialization was demonstrated.

Determination of onset and termination of first-stage labour on the basis of either physical or behavioural criteria was only an approximation. Overall, it was more difficult to determine the duration of the various stages of parturition using behaviours than when using physical signs, although there was a tendency for the different behavioural parameters to occur more frequently and/or at greater intensity at specific times during the process.

The effect of experience on maternal behaviour was demonstrated on a number of occasions. For example, with one exception all the primiparous cows showed a significantly shorter duration of maternal grooming of the neonate than did the multiparous cows.

With the exception of 1 multiparous cow, abnormal maternal behaviour was observed only from the primipara. Five of these 6 cows showed some form of agonism on first seeing the neonate. In all except 1 cow this ended several minutes after the cow had investigated the calf.

Other abnormal behaviours such as orientation toward the calf during its teat-seeking activities were recorded only amongst the first calvers and on all occasions resulted in a longer time taken prior to location of the teat by the calf.

On termination of the dam-offspring association at weaning the response from cows and calves was apparent in changes in their behaviour. During the following 7 d the calves showed a very high level of unity in their activities and spatial distribution. As well the form of social interaction changed and became predominantly agonistic. This resulted in rapid establishment of a social rank which appeared to decrease further agonism and instead increased such epimeletic behaviour as grooming.

Despite these changes in behaviour the liveweight of the calves did not significantly change from 11 d pre-weaning until termination of the study 21 d later.

The cows reacted to weaning by increased aggregation, vocalization and walking for up to 9 d post-weaning. These changes were reflected in an apparent decrease in grazing and rumination duration. Fence damage and localized areas of severe pugging was also recorded.

Nursing was investigated for the form and degree of occurrence of both maternal and filial behaviours, including cross- and non-nutritional nursing, as well as the pattern of sucking, i.e., sucking frequency, duration and time spent nursing, and the diurnal and circadian rhythms.

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