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SOME OBSERVATIONS ON THE SUCKLING ACTIVITY OF CALVES ON NURSE COWS

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SUMMARY

Seven cows each fostering 3 or 4 calves were grouped together and observations made on the suckling activity of the calves during daylight hours over 5 days.

The main periods of suckling by the cows occurred soon after dawn, in the late morning - early afternoon and in the late afternoon.

Calves attempted to suckle from any cows and cows could not consistently discriminate between the "fostered" and "alien" calves. The number of sucklings were unequally distributed among the cows.

The findings are considered in relation to the method of fostering calves on to nurse cows and to the possibilities of cross infection between cows.

SEVERAL STUDIES have reported on suckling behaviour and the pattern of "early attachment" of the ewe and lamb, and the goat and kid, after the mother and offspring have been separated for various lengths of time (Collias, 1956; Smith, 1965; Klopfer *et al.*, 1964). Similar studies have not been reported for dairy cattle. The use of "nurse" cows for rearing 2, 3 or 4 calves provides conditions in which the earliest bond between the cow and calf has been interrupted, and several "alien" calves have been "fostered" on to the maternal dam.

This paper reports on the suckling activities of 7 nurse cows and 24 fostered calves observed after the nurse herd had been together for several weeks.

EXPERIMENTAL

Calves to be fostered (20 kg minimum weight, hungry, and smeared with neatsfoot oil) were placed in a small yard or paddock with each cow from the fourth day of lactation. After at least a week 7 cows considered to be fostering calves were grouped together.

All the calves were Friesians, and to aid identification charts were drawn of the black-and-white markings of each calf from the left and right sides, and eartags (calves)

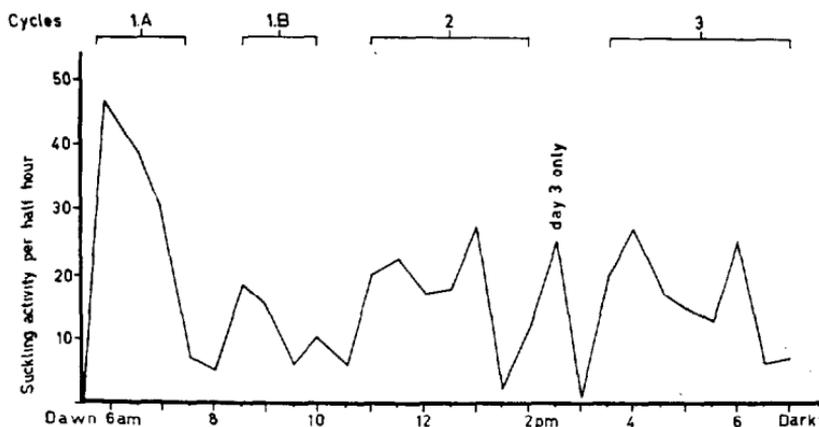


FIG 1: Five-day summation of suckling activity per half-hour interval throughout the day.

and neck tags (cows) were visible through binoculars. Observations on the suckling of calves were made between dawn and darkness over a period of 5 days.

RESULTS

Figure 1 shows the pattern of suckling activity recorded for 30-minute periods and which is the mean of the 5 days' observations. Each day the first suckling period for calves (1.A) occurred soon after dawn when the majority of calves made contact with the nurse cows and attempted to suck. A few calves did not get off the ground until about 0830 hr and they were suckled as indicated (1.B). The second main period of suckling (2) occurred between

TABLE 1: DISTRIBUTION OF CALVES RELATIVE TO THE NUMBER OF COWS SUCKLING (Five-day observation period)

| No. of Cows Suckling | | Calf No. | | No. of Calves | | | | |
|----------------------|------|----------|------|---------------|-----|-----|-----|---|
| 1 | 203 | 204 | 226 | | | | | 3 |
| 2 | 213 | 214 | 222* | | | | | 3 |
| 3 | 215 | | | | | | | 1 |
| 4 | 201 | 206 | 207* | 210 | 225 | 227 | | 6 |
| 5 | 205 | 211 | 212 | 216 | 221 | 224 | 228 | 7 |
| 6 | 208 | 209 | 223 | | | | | 3 |
| 7 | 202† | | | | | | | 1 |

*Own calves.

†Suckled once by foster cow.

TABLE 2: DETAILS OF NURSE COWS AND NUMBER OF SUCKINGS BY INDIVIDUAL CALVES
(Five-day observation period)

| <i>Cow</i> | | <i>No of suckings by individual calves</i> | | | <i>Overall Totals</i> | |
|------------|-----------------|--|--------------|---------------------------------------|-----------------------|-----------------|
| <i>No.</i> | <i>Age (yr)</i> | <i>Fostered Calves</i> | <i>Total</i> | <i>Other Calves</i> | <i>Suckled Calves</i> | <i>Suckings</i> |
| 533 | 7 | 22, 17, 12, 9 | 60 | 12, 8, 6, 4, 2, 2, 1, 1, 1, 1, 1 | 15 | 99 |
| 503 | 7 | 12*, 10, 7, 6 | 35 | 6, 4, 3, 2, 2, 2, 2, 1, 1, 1, 1, 1 | 17 | 63 |
| 914 | 2 | 13, 12, 12 | 37 | 6, 4, 3, 2, 1, 1, 1, 1, 1, 1 | 13 | 58 |
| 953 | 2 | 13, 13, 8 | 34 | 4, 4, 3, 3, 2, 2, 1, 1, 1, 1, 1 | 14 | 57 |
| 931 | 2 | 12, 10, 4 | 26 | 8, 3, 3, 3, 2, 1, 1, 1, 1, 1, 1, 1, 1 | 17 | 54 |
| 805 | 3 | 11, 10*, 4, 3 | 28 | 3, 2, 2, 2, 2, 2, 1 | 11 | 42 |
| 915 | 2 | 12, 8, 1 | 21 | 2, 1, 1, 1, 1, 1, 1 | 10 | 29 |

*Own calf

1030 and 1330 hr and appeared later on successive days. The final period of suckling (3) for the day began as early as 1500 hr and ended as late as 1800 hr. With the onset of darkness the calves in general lay down in close proximity to their foster mothers.

Table 1 shows the patterns of sucking activity for individual calves. More than half the calves in the group took milk from either 4 or 5 of the nurse cows. These findings were in agreement with those of another study where similar observations were made between milkings for four days at weekly intervals (Kilgour, 1969). It seems clear that given the opportunity calves will attempt to suck from any available cow. This is in contrast to the situation where a cow will reject all but her own calf (that is, where the initial social bond between cow and calf has not been disrupted). Table 1 also shows that calf No. 202 was not suckled by its foster dam and had to "share-milk" from any available cow.

Table 2 shows the distribution of sucklings from each cow ranked in order of the 5-days total number of sucklings recorded. The data indicate that once the initial attachment of cow and calf had been upset (as resulted from a week's period of close confinement with other calves) it was not possible for the cow to exclude "alien" calves in complete preference to its own fostered calves. The results also showed that the cows permitted sucking by calves to varying extents.

It was not possible to determine the "adequacy" of each sucking. Calves sucking at the time of milk let-down may have extracted sufficient for appetite within a few minutes whereas other calves sucking later may have obtained only limited quantities for an equivalent or longer period of sucking. During the 5 days, calves sucked on average 17 times (range 9 to 24). The number of suckings each day did not appear to be significantly related to calf liveweight ($r = -0.11$).

CONCLUSIONS

The main finding from these observations was that most calves retained in a group with several nurse cows will attempt to suck from any available cow and in fact can do this successfully to a variable extent. All seven cows initially suckled 3 or 4 foster calves, but suckling of additional calves occurred when the cows were grouped. Two of the cows suckled their own offspring as well as fostered calves but the two daughters were suckled by other nurse cows as well. It was not possible to determine whether the

daughters rather than the fostered calves were preferentially suckled yet it is clear that all cows could not consistently discriminate between fostered and alien animals.

Much variation existed in the number of calves which sucked and in the number of sucklings permitted by the cows. The technique adopted for fostering calves was intended to promote attachment of each cow with its fostered calves but these results suggest this was not satisfactorily accomplished. It might therefore be questioned whether the time (1 week) spent in fostering calves to individual cows was justified in view of the permissive mothering that occurred. An improvement in fostering technique might involve the placing of the 7 cows and 24 calves together in a herd and noting and attending to those calves not being suckled.

Calves sucking from several cows may be instrumental in the transfer of infection from one udder to another. In the normal case of the cow and her own calf cross-infection is unlikely as calves suck exclusively from the mother. It is not known how important multiple suckling is in the transfer of infection yet it might be suggested that when nurse herds are constituted, young cows (low disease level) be kept in one group and older animals placed in another small herd.

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