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Summary

Weaning is a stressful time for beef calves as they experience a change in environment, change of feed, and breaking of the mother-calf bond. Some behaviours that indicate stress at weaning time are increased vocalization, increased pacing, decreased time spent laying down, decreased time feeding, and decreased rumination (Enríquez et al., 2011). Some of these behaviours can be observed through GPS tracking, including time spent walking (Nickles et al., 2021).

Many factors can lead to stress at weaning time. Cows are herd animals that have a strong bond between cow-calf, which is both emotional and hormonal (Enríquez et al., 2011). Differences in stress behaviour are highest closest to the initial weaning time and decrease until returning to normal within a week (Enríquez et al., 2011). Usually, observations are taken multiple times a day and observed for a set period. Some studies observed the replicates as a group, where others were observed as individuals. Studies where individuals were observed independently provided more information regarding individual cow-calf relationships (Stěhulová et al., 2017).

Stěhulová and researchers found that the frequency of vocalizations was not impacted by the age of the calves while Lambertz et al. found that vocalizations were impacted by age when calves were between six and eight months of age. This indicates that age may be a factor, but more experiments need to be done on various age groups to determine the overall effect. Sex was also determined as a factor that impacts the frequency of stress behaviours. Stěhulová et al. and

Lambertz et al.both concluded that females are vocal two times more often than males. However, Stěhulová et al. predicted this difference was because of evolutionary history.

Research conducted by Haley et al. found that the frequency of walking was reduced when calves were weaned at an older age. Research done by Stěhulová et al. found a positive relationship between age and walking frequency, however, did not find sex and body conditioning had any impact on walking frequencies. They suggested that walking may not be an effective behaviour to study when analyzing stress in beef calves.

Experimenting with two-step weaning methods is the most common literature in this area with an overall goal to reduce stress. The first step of two-step weaning is to remove milk and minimize contact between the cow and calf (Enríquez et al., 2011). The second step is physically removing the calf from the cow (Enríquez et al., 2011). Ungerfirled and researchers found this method decreased vocalization in calves at around 60 days old. Similarly, Haley et al. found the frequency of vocalization decreased when calves were exposed to the nose flap method. In 2010, Enríquez and researchers found that calves fitted with nose flaps had an increased stress response two times. The first when the nose flaps were placed and the second when calves were separated from the cows. Later research done by Hötzel et al. noted the two responses and found the nose flap method prolonged the duration of stress behaviours. Further issues with this method were raised by Freeman et al. when they found the flaps caused nasal sores. Their data also found the nose flap method and abrupt weaning had similar stress responses.

Another method of two-step weaning is called fenceline weaning where pairs are first separated by a fence. This prevents calves from nursing, but they can still vocalize, make physical touch and interact with their mothers (Enríquez et al., 2011). Price et al. found that fenceline separation was an effective method to reduce vocalizations during weaning. In 2010,

Enríquez and researchers found reduced pacing and vocalization compared to calves that underwent abrupt weaning. This method has been studied less but may be a promising option as more issues arise with the nose flap method.

For future experiments, I would want to mix calves weaned and different times which could determine the impact of a new environment. I predict that by mixing newly weaned calves with previously weaned calves, the newly weaned ones would settle in faster and return to baseline behaviour quicker. This area of research is broad and there are many areas I want to explore.

Referneces

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