Calf Vocalization to Increase Milk Production

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Many different approaches are being used in attempts to increase milk production of dairy cows. Dairy nutritionist are constantly refining the rations of both milking and dry cows to try to get a pound or two of additional milk. Various pharmaceuticals such as BST are used on many dairies to increase milk production. This article presents the results of a California study where playing the sounds of hungry calves to cows in the milking parlor was used to increase milk production.

Vocal communications play an important role in the social relationships in many animal species. Calling to one another is particularly important between mothers and their infants. These vocalizations may be used to locate and maintain contact between mothers and their offspring. Cows frequently bawl when separated from their calves at weaning time. Vocalizations are often used by hungry youngsters to signal to their mothers that it is time to eat. Every dairyman has witnessed the calling of hungry dairy calves as they anticipate being fed. In many under-developed countries, dairymen believe that cows will not letdown their milk unless her calf is tied to her foreleg and is calling to her. As an US Air Force veterinarian stationed in the Azores, Portugal, I witnessed this many times as cows were being hand-milked in the hillside pastures.

In this study, vocalizations or callings of calves less than a week of age were recorded just prior to feeding on a commercial dairy in Tulare, CA. Each of four calves was recorded 25 times. The recordings were edited to remove all sounds except for the calf vocalizations. Each of the recordings was arranged in a randomized order for playback to the milking cows.

Milking cows on two other commercial dairies served as the test dairies. One dairy had about 700 cows from 6 pens while the other dairy had about 1800 cows from 15 pens. On each of these dairies as is the routine on most California dairies, the newborn calves were removed from their mothers within hours of birth. At each milking, a string of approximately 100 cows at about the same stage of lactation and production were exposed to the calf recordings.

For a period of one month, the milking cows were exposed to the calf recording as they moved through the milking process. At each milking, the cows heard the vocalizations of one of the four calves. The playback rate for the calf vocalizations was at about the same rate that the calves called when the recordings were made when they were hungry prior to feeding. Cows heard the recordings 2 to 3 days each week.

Hearing the calf vocalizations during the milk process significantly increased the milk production of the exposed cows compared to non-exposed control by 1-2 % over the duration of the study. Over the duration of this study, the cows did not appear to become used to this stimulus and return to their pre-exposure level of milk production. However, the researchers suggest that long-term exposure to these hungry calf callings should be done to determine if habituation might occur. Detailed examination of the data to determine which cows were responding found that the higher producing cows in their first 90 days of lactation were more heavily stimulated than others in the trial. For reasons not determined in this trial, approximately 40% of the cows did not respond to the recordings.

Results of this study suggest that non-invasive, non-chemical methods may be used to increase milk production in dairy cows. As such, it would be a more animal-welfare friendly method. In addition, it may also be less labor intensive. Interestingly, the effect of hearing recordings of calf callings on milk production was above and beyond that normally generated by BST. Further studies may define optimal use of playing back calf callings by using related calves, matching the calf-age with the stage of lactation of the exposed cows and other bioacoustic variations to the playback.

Results of this trial were published by McCowan B, DeLorenzo AM, Abichandani S, Borelli C and Cullor JS., Bioacoustic tools for enhancing animal management and productivity: Effects of recorded calf vocalizations on milk production in dairy cows. Applied Animal Behaviour Science 77: 13-20, 2002