

## THE EFFECT OF LAMENESS ON MILK YIELD AND FERTILITY IN AUSTRIAN DAIRY COWS — RESULTS FROM THE NATIONAL EFFICIENT COW PROJECT

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Lameness is one of the three major factors influencing the profitability and economic stability in modern dairy farming. It is associated with pain and has a clear negative effect on welfare. The objective of this study was to analyze the effect of lameness on milk yield and fertility in Austrian dairy cows within one 305-day lactation period.

Within the scope of the big national “Efficient cow” project data on locomotion scores and lameness episodes, milk production and fertility parameters were collected from 2013 to 2015 in 5392 Brown-Swiss, Simmental and Holstein cows from 166 dairy herds from all over Austria. All the cows were scored every 60 days during one 305-day lactation period for locomotion (Sprecher method), and were grouped regarding their observed locomotion score and number of lameness observations during the lactation period into five groups (LOC-G 1: never lame; LOC-G 2: only two observations with locomotion (LOC) score 2; LOC-G 3: more than two observations with LOC-score 2 and one LOC-score 3 observation; LOC-G 4: two and more observations of LOC-score 3; LOC-G 5: one or more observations of LOC-score 4 and 5). The impact of lameness on milk yield and selected fertility parameters was calculated by various statistical tests and a mixed ANCOVA-model using various covariates and fixed effects.

The statistical model calculation for all breeds showed significant differences in milk yield and milk protein yield between non-lame and lame cows. Regarding milk yield per 305-day lactation differences between cows of LOC-G 1 and LOC-G 4 (–234 kg) became evident. The milk protein yield per 305-day lactation resulted in significant differences in cows of LOC-G 1 and 2 compared to LOC-G 4 (–13 kg) for all breeds and for Holstein cows (–23 kg) respectively.

In regard of the fertility parameters evaluated (calving to conception interval, time from the first to the successful insemination, calving interval) between never lame cows (LOC-G 1) of all the 3 breeds and the other lameness groups were particularly statistically significant for each breed.

The mean calving interval for cows of LOC-G 3, LOC-G 4 and LOC-G 5 of all breeds was significantly longer compared to never lame cows. The mean calving interval for never lame Holstein cows was 392.5 days compared to 425.3 and 429.0 days for LOC-G 5 and LOC-G 4 respectively. The mean calving to conception interval, the mean calving interval were significantly lower in never lame cows within the first 100 DIM compared to cows with lameness during the first 100 DIM. First service conception rate was assessed to be the highest for never lame cows (50 %), the poorest results with 35.4 % were observed for cows of LOC-G 4 ( $P < 0.05$ ).

This was the first study of the impact of lameness in dairy cows on milk yield and selected fertility parameters in Austria. The results indicated that the milk yield and even fertility parameters were significantly negatively influenced in cows being moderately and severely lame on repeated observation dates compared to never lame cows.

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