Impact of Two Coliform Mastitis Vaccination Schedules on Milk Yield, Dry Matter Feed Intake and Intramammary Infections of Holstein Dairy Cattle

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Introduction

Although coliform mastitis vaccine programs are widely implemented and relatively successful, several questions remain unanswered regarding proper administration schedule. In a comparison of two vaccination protocols, effects on dry matter feed intake (DMI), daily milk production and milk bacteriological status of fresh cows were analyzed.

Methods

Late lactation cows from two research herds were enrolled two weeks prior to drying off and randomly assigned to one of two vaccination protocols. Primiparous heifers were enrolled 74 days before expected calving date. Protocol A involved vaccination at drying off, three weeks before expected calving date and 2-9 days after calving. Protocol B involved vaccination at enrollment (two weeks prior to drying off), at drying off and at three weeks before expected calving date. Daily milk weights were recorded from enrollment until the day of drying off. Quarter milk samples were aseptically collected on the first Tuesday after calving and submitted for bacteriological analysis. After calving, DMI and daily milk weights were collected for the day prior to, the day of and the two days following either vaccination in Group A, or the same dates for animals not vaccinated in Group B. In addition, daily milk weights were measured for the first 30 days of lactation.

Results and Conclusions

Descriptive statistics on preliminary data from 180 cows have been summarized. Average decline in milk production over the two-week period prior to drying off was –26.0 lb (-11.8 kg) and –29.9 lb (-13.6 kg) for non-vaccinated cows in Group A and vaccinated cows in Group B, respectively. These were not significantly different.

Milk production on the day prior to drying off in Groups A and B was 26.4 lb (12.0 kg) and 26.8 lb (12.2 kg), respectively. The average milk production at 30 days in milk was 82.5 lb (37.5 kg) and 83.2 lb (37.8 kg) for cows in Group A vaccinated after calving and cows in Group B not vaccinated following calving, respectively.

On the day of vaccination, and the same date for Group B cows, DMI values were 26.0 lb (11.8 kg) and 28.6 lb (13.0 kg) of feed for Groups A and B, respectively (Figure 3). Using a t-test these values are not significantly different (p=0.07). It should be noted that the sample size is incomplete and there is a large variance between individual values. The daily milk production on this same date was found to be 58.3 lb (26.5 kg) and 60.5 lb (27.5 kg) for Groups A and B, respectively.

A total of 656 quarter-milk samples have been submitted for bacteriological culture. Major pathogens were isolated from 29 and 14 quarters in Groups A and B, respectively. Isolations of *E. coli*, Klebsiella spp and Streptococcus non-agalactia spp were found in 12, 3, and 10, versus 3, 1, and 5 of the quarters from animals in Groups A versus B, respectively. *Staphylococcus aureus* was found in 3 and 1 quarters from Groups A and B, respectively. Minor pathogens, including Staph species and *Corynebacterium bovis* were found in 81 and 74 of quarters from cows in Groups A and B, respectively.