

USE OF A VACCINE TO PREVENT SUBCLINICAL MASTITIS CAUSED BY *Staphylococcus aureus*: FIELD EXPERIENCE

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OBJECTIVE

The objective of the present study was to evaluate the efficacy of STARTVAC® on prevention of subclinical mastitis caused by *Staphylococcus aureus* (*S. aureus*).

INTRODUCTION

Subclinical mastitis is among the diseases that cause the greatest financial losses in dairy herds. This form of mastitis is frequently caused by *Staphylococcus aureus*. There are few or no clinical symptoms to identify it. However, somatic cell counts (SCC) are elevated, and a decrease of 10 to 15 percent in milk yield can be anticipated. Attempts are being made all over the world to treat this disease effectively, or to prevent infection in the first place.

MATERIAL AND METHODS

The dairy farm described here, which had always issues with *S. aureus* in the past decided to implement vaccination (STARTVAC®) as part of Milk Quality Program. The herd had reported a very high SCC in January 2010 (370,000 cells/ml) as well as high cull rate due to impaired udder health and mastitis problems. Dairy cows were in tethered housing with straw bedding and with occasional pasturing in the summer. Animals were milked twice a day; the teats were first dry-wiped with wood wool, and the first streams of milk were milked into a strip cup. After milking the teats were dipped in an iodine-containing dip. The farm has a pipeline milking system and is equipped with four milking units. No particular milking order is followed.

On this farm, 19 lactating cows quarter milk samples were collected three consecutive times for microbiological culture before the vaccinating period started. In the further months quarter milk samples were taken twice, every 15 days, in an interval of one week. The whole herd was vaccinated with STARTVAC® on February 1st 2010 and 4 weeks later booster vaccination was performed. Heifers were vaccinated according to standard protocol (45 and 10 days before and 52 days after calving). A total of 4 animals were culled during the study period: 3 were culled due to fertility disorders, all of them were *S. aureus* positive in at least one udder quarter; and 1 cow was removed due to hip arthritis.

RESULTS

Microbiological culture: 12 cows (63.2%) were found to have a *S. aureus* infection before vaccination period. In the following months to vaccination prevalence of *S. aureus* was 32.9% (25 quarters) of all quarters. *S. aureus* infection was present in 44% of the forequarters and 56% of the hindquarters. Over the entire study period, infections with other pathogens (coagulase negative staphylococci, *E. coli*, streptococci and *A. pyogenes*) were found in an average of 4.3% of all quarters. No new infection cases caused by *S. aureus* were detected after the vaccination period started.

The cow producing highest milk yield in the herd was *S. aureus* positive in one quarter (SCC 400,000 to 600,000 cells/ml) for the entire period of the study. The owner of the dairy farm decided not to cull this cow. However, after the dry period, SCC for this cow dropped to 50,000-250,000 cells/ml.

SCC: By looking at the cell count progression in relation to the first shot vaccination, it is clear that even after vaccination there was an average increase in cell counts after 45 days and yet another increase after about 80 days. Thereafter, the cell counts remained consistent at about 100,000 or between 65,000 and 110,000 cells/ml. The results are shown in the following graphs.

Figure 1. SCC from February to November 2010 (x 1,000 cells/ml).

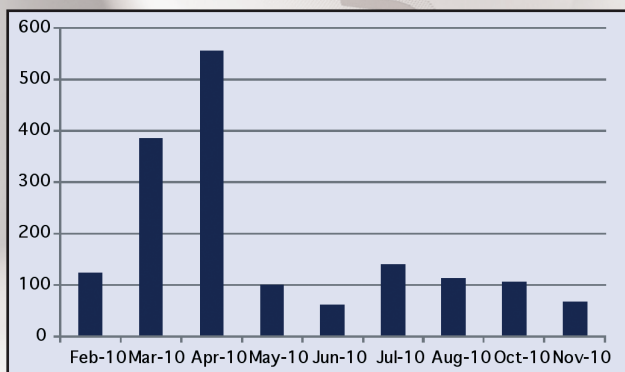


Figure 2. SCC < 100,000 cells/ml from February to November 2010 comparison with same period previous year (x 1,000 cells/ml) (ND=No Data).

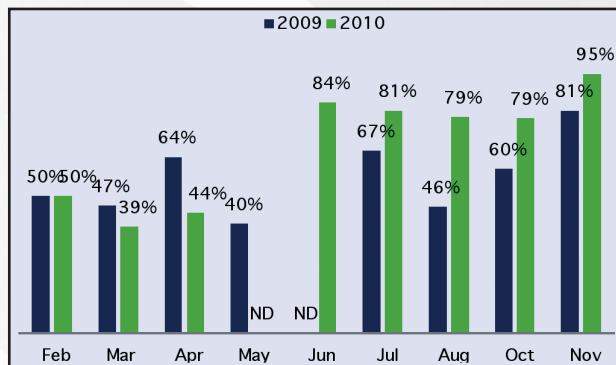


Figure 3. SCC > 100,000 < 200,000 cells/ml from February to November 2010 comparison with same period previous year (x 1,000 cells/ml) (ND=No Data).

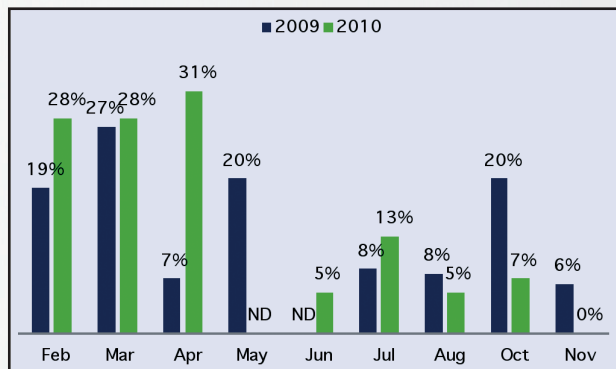
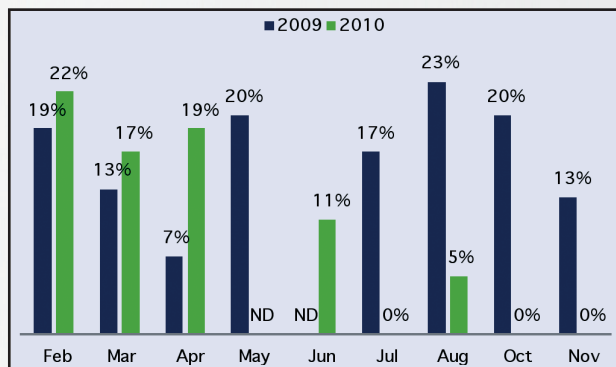


Figure 4. SCC > 200,000 < 400,000 cells/ml from February to November 2010 comparison with same period previous year (x 1,000 cells/ml) (ND=No Data).



CONCLUSIONS

Vaccinating against *S. aureus* with STARTVAC®, while still maintaining good hygiene procedures and an ongoing vaccination programme, prevented this farm from having to deal with new infections caused by this pathogen. After vaccination period, none of the heifers had to be separated from other dairy cows due to mastitis. The newly acquired heifers that were vaccinated according to standard protocol remained free of mastitis.

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