

6. Summary

A mastitis control program in a large dairy farm under the conditions of udder infections with mycoplasma

In a dairy farm with more than 1200 cows kept in loose housing and with 10-14% Streptococcus agalactiae-infected animals, mycoplasma californicum was first detected in the milk of 16 dairy cows in 1993. Over a period of 3 years and 6 months, a mastitis control program was tested, by which the farm intended to lower the infection rate and lessen predisposing factors. The program focussed on the improvement of cleaning and disinfection as well as optimisation of milking hygiene. In addition, antibiotic treatment for drying off milk cows was carried out. Cows, with clinical mastitis during lactation had to be treated, kept in isolation from the herd and handled separately. Unproductive cows and cows with therapy-resistant mastitis were rigorously selected. The success of these measures was verified by clinical examination of all the udders of the herd, via the time-course of the morbidity rate, the mastitis frequency rate and the proportion of cows having diseased udders, and via the results obtained from bacteriological checks and the time-course of the cell counts. By analysing the culling and reproductive rates, the cost incurred by veterinary treatment and the reduced profit due to the smaller amount of milk, the financial losses caused by udder health disturbances were established for 1993–1996.

Besides, the efficacy of Enrofloxacin (Baytril ®) in cows having mycoplasma mastitis was tested. Fifteen cows during lactation and 7 dry cows were treated with 5 mg/kg of Enrofloxacin on three successive days. The therapeutic success was tested by means of clinical, cytological and bacteriological control checks. The results derived from milk recording as well as the subsequent morbidity rate and the culling rate were compared with those of a control group.

Our studies yielded the following results:

1. Even after two years of investigation, pathological findings were obtained from udders of 43% of the cows. 20.1% of the cows examined had an atrophic quarter and 3.1% a dead quarter. 4.6% of the cows suffered from teat wounds.
2. The mean value of the monthly morbidity rate continued to rise from 1994 till 1996. The annual morbidity rate per cow and the mean value of the proportion of cows having diseased udders increased in the period under study.
3. The proportion of Streptococcus agalactiae-infected cows could not be reduced between October 1993 and November 1995. Simultaneously, the proportion of cows

having pathogens in the milk rose from 19.5% to 45.9%. The infection rate with mycoplasma could not be assessed on the basis of mixed milk yields.

4. In the random sample tests, mycoplasma was detected in the milk of cows having diseased udders, in addition to *Sc. agalactiae*, staphylococci and other streptococci. In species differentiation, the laboratory identified either *Mycoplasma californicum* or *Mycoplasma alcaescens*.
5. The geometric annual mean of cell counts in bulk milk and in milk recording rose in 1995 – 1996 as compared with 1993 – 1994. The greatest value in milk recording was measured in August 1996. It was only by handling cows with cell counts greater than million/ml separately from the remaining crowd that the farm prevented financial losses caused by reduced milk yield. The proportion of cows with cell counts of less than 100.000/ml fell from 45.,2% in 1993 to 31.,7% in 1996.
6. The culling rate did fall from 48.06% in 1993 to 41.00% in 1996, but remained above the national average of German cattle-breeders while investigations were in progress. The proportion of cows to be slaughtered because of udder health disturbances was greater than 60% throughout the study.
7. The annual cost per cow incurred by the farm due to udder health disturbances amounted to 521.91 DM in 1993, 538.07 DM in 1994, 408.95 DM in 1995 and 464.92 DM in 1996. Less expenditure was achieved only by reducing the herd, i.e. by lowering the cost for reproduction.
8. The therapeutic application of Baytril ® to 15 lactating cows diseased with mycoplasma mastitis resulted in a recovery rate of 73.3%. In all bacteriological control checks mycoplasma was no longer found in the milk of the lactating group, nor in the group of dry cows. However, in four of nine cows examined in the control group, mycoplasma was again detectable. The decrease in milk yield and the recurrence rate were higher in the control group than in the lactating group. The changes in cell counts were better in the lactating group than in the control group.

In conclusion, it can be said that the farm was able to supply consumable milk throughout the study. The measures taken by the farm did not result in improving udder health of the herd. The financial burden caused by udder health disturbances was above the national average. Unless existing predisposing factors are eliminated and pathogenic infection is reduced, a decrease in mycoplasma-infection and *Streptococcus agalactiae*-infection will not be achieved. Ultimately, only consistent separation of infected animals from uninfected ones will lead to freeing the herd from disease.