ANIMAL SCIENCES GROUP
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# Milk quality and automatic milking: effects of teat and system cleaning

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**With the introduction of automatic milking (AM) systems, some increases in total bacterial count (TBC) and of free fatty acids in milk were observed. Contamination of milk, resulting in elevated TBC, originates from 4 main sources: inside of the udder, outside of the udder, the milking machine and the bulk tank. Effects of cleaning the outside of the udder and the milking equipment were studied.**

## Objective

To investigate the efficacy of teat cleaning devices.
To study the effect on milk quality of two and three system cleanings per day.

## Materials and methods

### *1. Teat cleaning*

A protocol was developed testing the efficacy of teat cleaning by applying a mixture of sterilised manure and poppy seed (20% w/w) on teats of ten cows per farm. Two farms per brand were selected by the manufacturers. Six brands and two conventional farms were tested, so results of 14 farms were obtained.

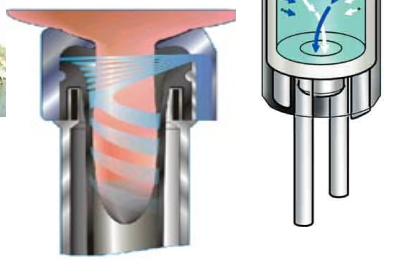
### *2. System cleaning*

On 13 farms systems were cleaned two and three times per day during certain periods. Milk quality was determined on bulk tank samples.

## Results

### *1. Teat cleaning*

Variation in teat cleaning efficacy could be concluded (Figure 1.). This variation was not due to specific methods like brushes (mean reduction was 77% for three brands) or water and air cleaning in a teat cup (mean reduction was 70% for the other three brands).



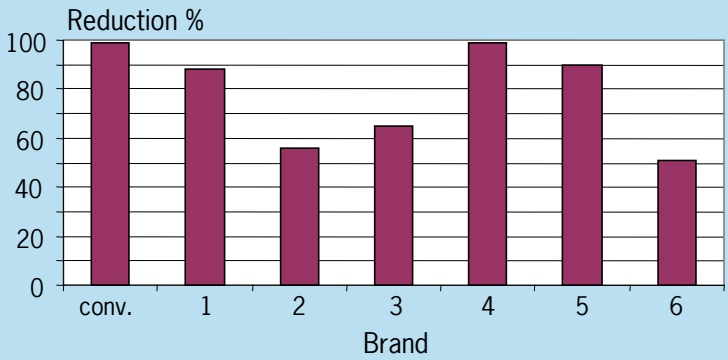



**Figure 1.** Poppy seed in milk with and without previous teat cleaning for six AM brands and conventional milking systems.

### *2. System cleaning*

Cleaning AM systems three times a day resulted in lower TBC, coliforms, thermoduric and psychrotrophic counts (Table 1.). However TBC counts were far within penalty limits.

**Table 1.** Effect of cleaning frequency on milk quality

| Cleaning frequency<br>Quality parameter | 2x/day | 3x/day |
|---|---|---|
| TBC (x1000 cfu/ml) | 13[a] | 10[b] |
| Coliforms (cfu/ml) | 173[a] | 13[b] |
| Thermodurics (cfu/ml) | 877[a] | 320[b] |
| Psychrotrophics (cfu/ml) | 1047[a] | 522[b] |

[a,b]statistically significant difference on the same row (P<0,05)

## Conclusion

Teat cleaning systems all removed contamination, but variation in efficacy between brands were found.
Three system cleanings per day resulted in better milk quality than two system cleanings per day.

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