

# DETECTION OF POSSIBLE MASTITIC COWS BY USING MILKING SYSTEM WITH ON-LINE SOMATIC CELL COUNTER

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**INTRODUCTION.** On-line cell counter (OCC, DeLaval) built in the milking robot is offered for assessing somatic cell count (SCC) of an individual cow at every milking. Every day several SCC values can be obtained for all cows. However, farmers are concerned about the practical use of them, especially when SCC fluctuates. The aim was to study individual cow SCC dynamics, characterize changeability over milking sessions, and to work out recommendations for practical use of OCC.

**MATERIAL AND METHODS.** The research was performed on a large dairy farm where the milking robot had been implemented for more than a year. Studies were carried out in a group of 60 high yield cows in October 2009 and 2010. The somatic cell counting by OCC was compared to the results of routine laboratory method (automatic analyzer Somacount300). On the test day, a qualitative comparison of both SCC data was performed and Cohen's kappa coefficient was calculated at mastitis diagnostic SCC threshold of 200 000 cells ml<sup>-1</sup>, totally in 53 cows. For a quantitative comparison, the percentage of congruence below and above threshold of SCC measured at one milking session (test day) and average value of SCC results obtained by OCC during three, five and seven days after the test day were calculated. The pattern of SCC dynamics obtained from the herd management data system was graphically analyzed. The patterns of dynamics were defined depending on the level and changeability of SCC.

**RESULTS.** The qualitative agreement of OCC and reference method results was high (kappa=0.92). On the test day, in cows (n=39) with SCC below the threshold, the congruence of next three-day average SCC was as high as 95%, although in cases above the threshold (n=14) – only 29%. The average SCC calculated from OCC measurements during three, five and seven days was of equal detecting value, supporting a practical recommendation to use a three-day average SCC value instead of five- or seven-day average values. Our results suggest that it would be necessary to use a three-day average SCC to substantiate any SCC result above 200 000 cells ml<sup>-1</sup> if measured in a sample only per one milking. According to SCC pattern in individual cows during 20 milking sessions (7 days or one week), they could be divided into four SCC dynamic types: dynamics below the threshold – cows with permanently low SCC (in our investigation 24% of cows), dynamics below the threshold with some increases – cows with sporadic increases of SCC above the threshold, however most of results are below 100 000 cells ml<sup>-1</sup> (in our investigation 35% of cows), dynamics near the threshold – cows with several increases of the SCC above the threshold and most of results are near the threshold (in our investigation 26% of cows), and dynamics ranging widely around the threshold – cows with large scale fluctuations of the SCC, where more than 30 % of values are exceeding the threshold (in our investigation 15% of cows).

## CONCLUSIONS.

1. Milking robot on-line cell counter is a reliable tool for monitoring of somatic cell count in milk of individual cows.
2. Any somatic cell count result above 200 000 cells ml<sup>-1</sup> if measured only per one milking session should be substantiated with a three-day average value of somatic cell count measured by on-line cell counter.