

Animal welfare, etológia és tartástechnológia



Animal welfare, ethology and housing systems

Volume 9

Issue 3

Különszám/Special Issue

Gödöllő

2013

USING OF RAPID ELECTRONIC TESTS FOR MASTITIS DETECTION

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Abstract

Even in the best dairy farms there are many cows with health problems. There are for example mastitis, laminitis, and etc. Mastitis, or inflammation of the mammary gland, is the most common and the most expensive disease of dairy cows throughout the world. Because these health problems have a great influence on economy of milk production each farmer has to know about them. The question is: How can farmer get to know which cow is ill? In our Institute we are developing under projects: "MLIEKO No. 26220220098" supported by the Operational Program Research and Development funded from the European Regional Development Fund and project APVV-0632-10 of the Slovak Research and Development Agency, Bratislava different rapid electronic tests for health disorders of dairy cows. For detection of mastitis we have developed two rapid electronic mastitis tests. One of them is: SCC counter (somatic cell counter) which works on the basis of milk viscosity measurement and another one: REM test (Rapid electronic mastitis test) which works on the basis of milk electrical conductivity measurement. In the first experiment the accuracy of REM test was tested in laboratory conditions, and then in practical conditions. The results have shown the accuracy was excellent (1 % from measurement range). The statistical value of electrical conductivity of healthy cows was 4.8 mS/cm (sd 0.4 mS/cm) and cows with health disorders was 6.4 mS/cm (sd 0.9 mS/cm). The difference between them was significant ($p < 0.01$). In the second experiment we tested SCC counter for its accuracy and reliability in practical conditions as well. Samples of milk were taken during milking. From each sample the control one was sent to the certificated laboratories for SCC analysis. Total fifty samples have been measured. The correlation coefficient between SCC from SCC counter and SCC from laboratories was computed ($r = 0.96$, $p < 0.01$). It was found out that the SCC counter can measure SCC in a range 150 000 to 3 000 000 with sufficient accuracy. Based on our previous experiments, we can say, that these two electronic mastitis tests are good tools for mastitis prevention. REM test is suitable for quick monitoring of the whole herd of dairy cows whereas the SCC counter can serve as quick and cheap equipment for SCC measurement.

Keywords:

Mastitis, SCC measurement, electrical conductivity measurement, rapid electronic tests, dairy cow