## 16. New Milk Recording Methods and Services

## Title presentation

Recording Individual Real Yield in Mozzarella Cheese in the Italian Mediterranean Buffalo population

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## Abstract

The objective of this study was to setting up a new protocol for data recording of individual real yield in mozzarella cheese to be included in selection programs for increasing the production of mozzarella cheese in the buffalo population.

Almost all the milk produced by Italian Mediterranean buffalo is transformed in mozzarella cheese. Thus, increasing Buffalo Mozzarella Cheese (BMC) is the main goal of the selection programs. Traditionally, production of BMC is estimated from the observation of milk, fat and protein by the well-known formula of PKM. However, yield in BMC not only depends on the percentage of proteins in the milk, but also on the type and on the proportion of the different proteins. Studies showed that buffalo with the same percentage of proteins in milk, may differ for yield in mozzarella cheese. Therefore, selecting for protein percentage do not guarantee selection for higher yield in mozzarella. Moreover, the formula of PKM is highly correlated to the milk yield. Thus, in the population is increasing the number of buffalo that produce more milk than mozzarella cheese.

The most accurate and not expenses trait to be recorded for estimating the individual cheese yield, is the Dry Matter Yield in Curd (DMYC). A total of 499 of 1 kg milk samples, from 89 buffalo distributed in 8 farms from year 2010 to year 2015, were collected during morning milking, from 3 to 6 times during a single lactation, at intervals of about 40-45 days from 30 to 270 days in milk. To obtain DMYC from each milk sample, the Real Yield in Curd (RYC) was first calculated by the micro-cheese making technique according to the following protocol: 1 kg of milk sample was heated at 37°C after adding to it 1 mL Kg-1 of liquid rennet (80% Chymosin) with a concentration of 160 IMCU mL-1 (International Milk-Clotting Units, mL-1). The obtained curd was put in a plastic tray containers, refrigerated at 4°C and weighted after 24 hours to getting the Real Cheese Yield after 24 hours (RYC24h). From the RYC24, 50 grams of curd were utilized to determine the percentage of dry matter in the curd by drying the RYC24 at 103°C; DMYC was then obtained by multiplying the weight of the curd from 1 kg of milk sample by the percentage of DM.

To evaluate the effectiveness of using the DMYC as estimation of the individual RCY, correlation analysis of DMYC with the RCY24h, and PKM was performed. In addition, correlations of the average DMYC for all DIM intervals and DMYC for each DIM interval overall animals, were evaluated to find out the opportunity of collecting a unique milk sample during the whole lactation.

DMYC resulted highly correlated to RCY24h, and to PKM. Thus, DMYC might be utilized as estimator of the individual RCY. DMYC estimated at DIM interval of 181-210 was highly correlated to DMYC estimated at all DIM intervals within a lactation. Thus, collecting only one milk sample at DIM interval 181-210, might allow to estimate accurately the individual DMYC in the whole lactation.

DMYC at DIM 180-210 is a novel, simple and not expenses trait to be recorded for the genetic selection of buffalo to increasing in the population the number of high yielding buffalo that will produce more mozzarella cheese than milk.