

## SURVEY ON THE PROTEIN BALANCE IN DIETS FOR DAIRY BUFFALO HERDS

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### OBJECTIVES

The aim of the work was to survey the mostly used feeding systems in dairy buffalo herds and optimize the protein content in the diets in order to minimize the nitrogen excretion from farms without detrimental effects on milk yield and quality.



### METHODS

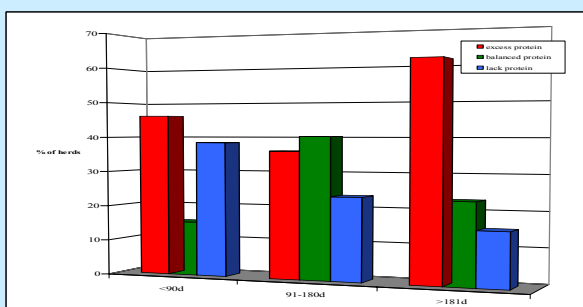
In 98 buffalo herds, located in the centre and south of Italy, protein and energy levels of foodstuff administered to lactating buffaloes were analysed, as well as milk performance traits.

Analized parameters were: herd size, farm extension, dry matter average daily intake (kg/head), crude protein (CP kg/head/d) and energy level (Milk FU/kg DM) of the diets, milk yield (kg/head/d) and composition (protein and fat %), lactation length.

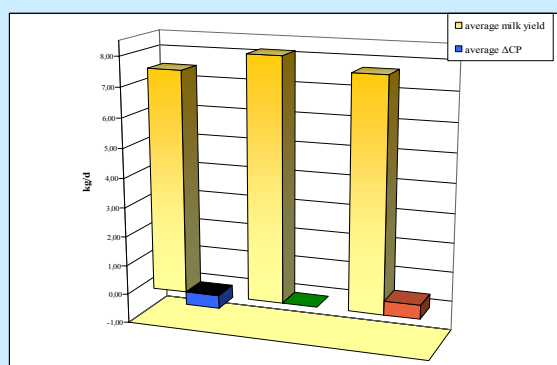
The ratio n° of animals/ha ranged from 0.6 to 6.7 (mean  $3.1 \pm 1.8$ ) (Fig. 1).

In each herd, the difference ( $\Delta$ CP) between the CP content of the administered diets and the requirements of the lactating buffaloes, calculated on the basis of the daily milk production, was assumed as index of balance of the diets. So a threshold value of CP required for milk production was established and the herds were divided in 3 groups according to the estimated  $\Delta$ CP:

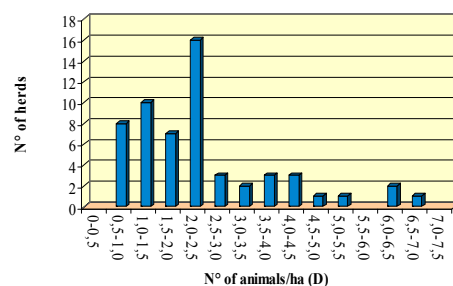
1.  $\Delta$ CP ranging from -100 to +100 g/d for balanced diets
2.  $\Delta$ CP ranging from -961 to -101 g/d for lack of protein
3.  $\Delta$ CP ranging from +101 to +2292 g/d for excess of protein



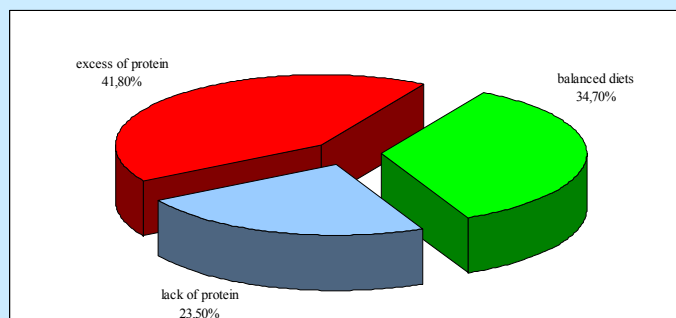
**Figure 3 -  $\Delta$ CP in the three periods of lactation (<90 d, 91-180 d, >181 d)**



**Figure 4 – Average milk yield vs  $\Delta$ CP**



**Figure 1 – Distribution of ratio n° of animals/ha (D) in the herds**



**Figure 2 - Percentage of herds with balanced diets, lack and excess of proteins**

### RESULTS AND DISCUSSIONS

34.7% of the examined herds received balanced diets with mean  $\Delta$ CP =  $48.5 \pm 31.2$  g/d, 23.5% received protein lacking diets with mean  $\Delta$ CP =  $-417.0 \pm 242.1$  g/d and 41.8% received an excess of protein with mean  $\Delta$ CP =  $470.6 \pm 468.8$  g/d (Fig.2).

The protein imbalance was most evident in the last period of lactation (Fig.3), when 61% of the herds ingested a protein amount largely exceeding the requirements (2.30 kg/h/d vs 1.94 kg/h/d).

Moreover the protein excess did not affect milk yield, which resulted higher in the balanced diets (Fig.4).

As far as the environmental impact is concerned, in the herds of group 3 the amount of protein exceeding the requirements of lactating buffalo cows and spread in the environment reached 1.13 kg/ha/d; this result shows that, for a high animals/ha ratio (D), the pollution could be consistent and the optimization of CP level in the diets should be taken into account.