



# PhD activities: 1<sup>st</sup> year

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PhD Cycle: 32<sup>nd</sup>



## ► Effect of the presence/absence of long hay and the administration of ad libitum or restricted TMR

The objective of this study was to investigate in high producing cows diets, the effects of presence or absence of long hay and the administration of ad libitum or restricted TMR on feed intake, digestibility, ruminal pH and productive performance. Treatment one(24h+): feed available at the feed bunk for 24h, with long grass hay; treatment two(24h-): feed available at the feed bunk with no long grass hay; treatment three(19h+): restricted TMR(19h/d), with long grass hay; treatment four(19h-): restricted TMR, with no long grass hay. Eight multiparous Holstein cows were assigned to a 4 x 4 Latin square design, with 3 weeks adaptation and 1 week of collection. Dry matter intake, milk production and quality, and rumination time, measured by collar, were measured daily. Rumen pH was measured continuously by ruminal bolus. Rumen liquor was collected two times point and analysed for ammonia and VFA. Fecal samples were collected at multiple time points and then weekly averaged. Diets and feces were analyzed for aNDFom, ADF, ADL, uNDF<sub>240</sub> and pNDF, in order to calculate total tract fiber digestibility. During the experimental week of each period, diets were sampled daily and analyzed for chemical composition. All data were statistically analyzed with a factorial arrangement of treatments using the MIXED procedure of SAS(v9.1). The results obtained showed the diet available for 24 hours improve significantly dry matter intake(27.36vs23.27 in 24h and 19h P<0.05) and tend to improve NDF intake(8.79vs7.73 in 24h and 19h respectively P<0.1). Milk production tends to be higher in cows receiving long hay(37.87vs36.56kg/d in F+ and F-, respectively P<0.1). When calculating the ECM that consider the milk fat and protein content, the difference became significant(40.26vs38.23 in F+ and F- respectively P=0.01). However it was detected for the first time as far as we know, that a restriction of TMR availability for 5 hours could led to an increase significantly in feed efficiency(1.91vs1.40 in 19h and 24h respectively P<0.05) The pH average results obtained testify to a situation concerning the physiological pH of the rumen for the type of animals in experiments. There were no difference in rumination time, average ammonia and ruminal VFA. The conclusions obtained in this experimentation showed that in our condition the administration of TMR constantly available, associated with the presence of long hay, offers the best conditions of ruminal function and pH stability.

Table 3. Daily pH pattern.

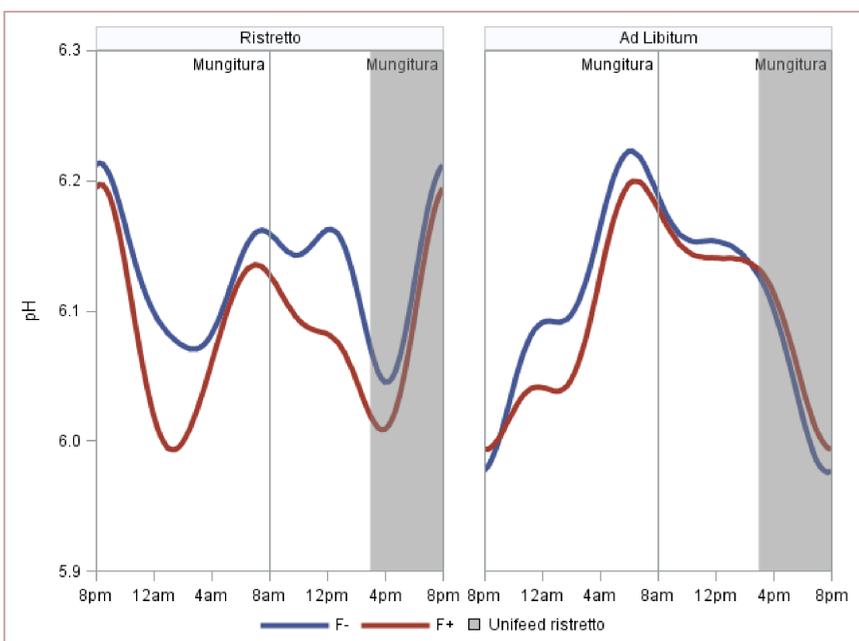


Table 1. Daily pattern of DMI.

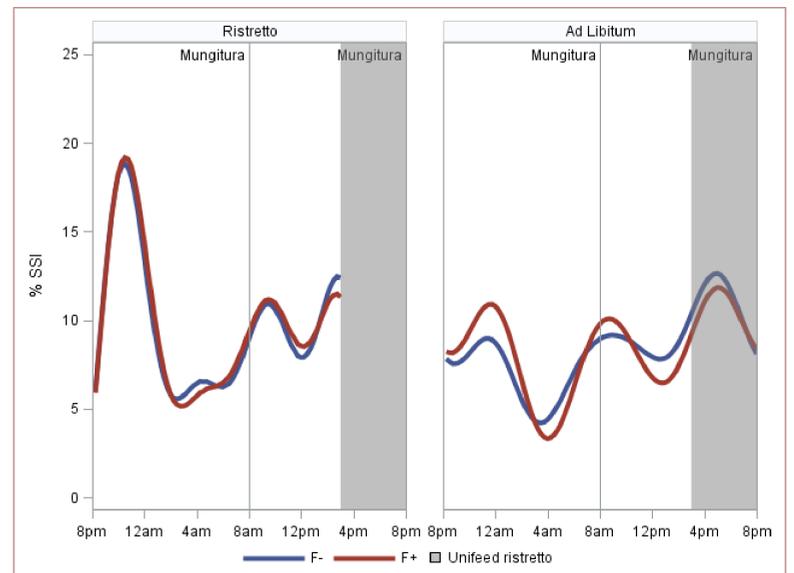
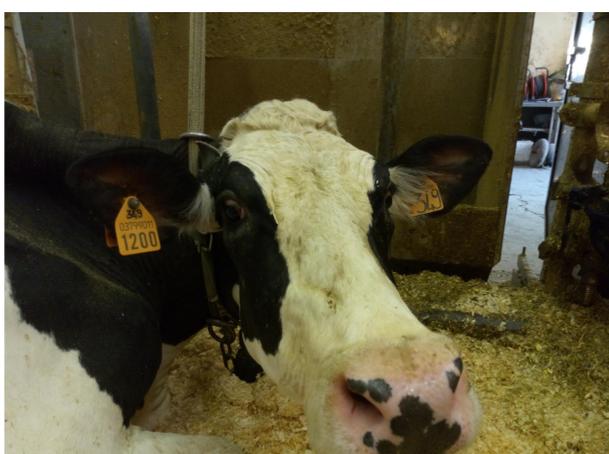
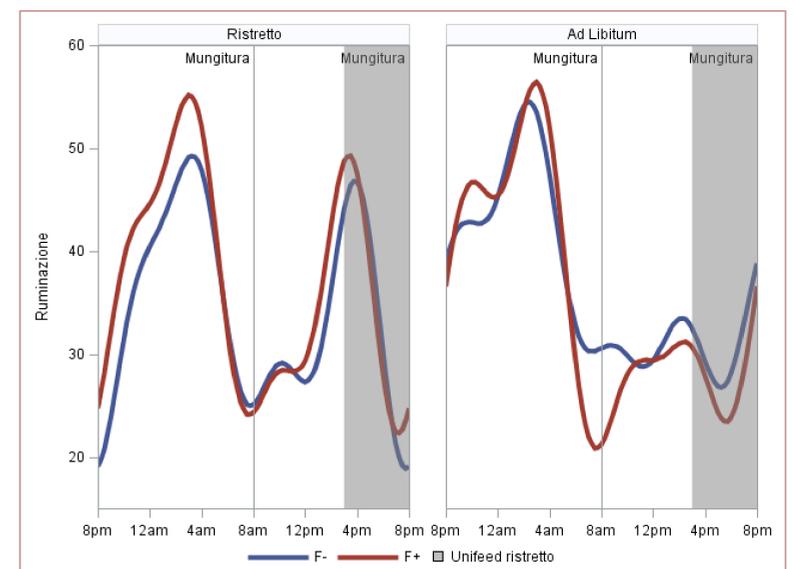


Table 2. Daily pattern of rumination.



### Future proposal:

#### Study of immune status and inflammatory response in dairy cows exposed to environmental and nutritional stress

Stressful events can have high negative impact on the immune system of animals. In particular, dairy cows are very susceptible to any abrupt changes in management, diet or social conditions.

Objective of this study will be to studied the innate immune system and inflammatory response of dairy cows undergoing stressful events commonly experienced by animals in the farm like the abrupt change of stabulation and the abrupt change of diet lacking in fiber.