



# Effect of feeding strategy on milk production and animal behavior of primiparous dairy cows in early lactation

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## INTRODUCTION

In the last decade, Uruguayan dairy has increased its productivity per cow and ha, in a context of increased competition for land with other agricultural activities. Thus intensification has been based on a significant increase in the use of concentrates and forage reserves (Chilibroste et al., 2012).

Grazing dairy systems, particularly when cows calve in fall, present an imbalance between nutrient supply from pastures and demand of early lactation. Therefore, the use of total mixed rations (TMR) or supplementation of grazing with partial mixed rations (PMR) could be useful management practices to increase productive and reproductive responses of dairy cows (Astessiano et al., 2015; Fajardo et al., 2015).

## OBJETIVE

To evaluate the effect of feeding strategy (total mixed diet, TMR vs. grazing + partial mixed diet, PMR) in early lactation on milk yield and composition and animal behavior of primiparous Holstein cows

## MATERIALS AND METHODS

- Primiparous Holstein cows calving in fall (n = 18; 528 ± 40 kg BW, 3.2 ± 0.2 BCS) were used in a randomized block design with 2 treatments assigned at calving (until 60 days postpartum, DPP):



**TMR (G0)**  
100 % TMR *ad libitum*  
17 kg DM day<sup>-1</sup> offered  
70% forage, 30% concentrate



**PASTURE + PMR (G1)**  
Grazing in 3-day strips of lucern for 6 h day<sup>-1</sup> with 20 kg DM day<sup>-1</sup>.cow + PMR (70% of *ad libitum* TMR)

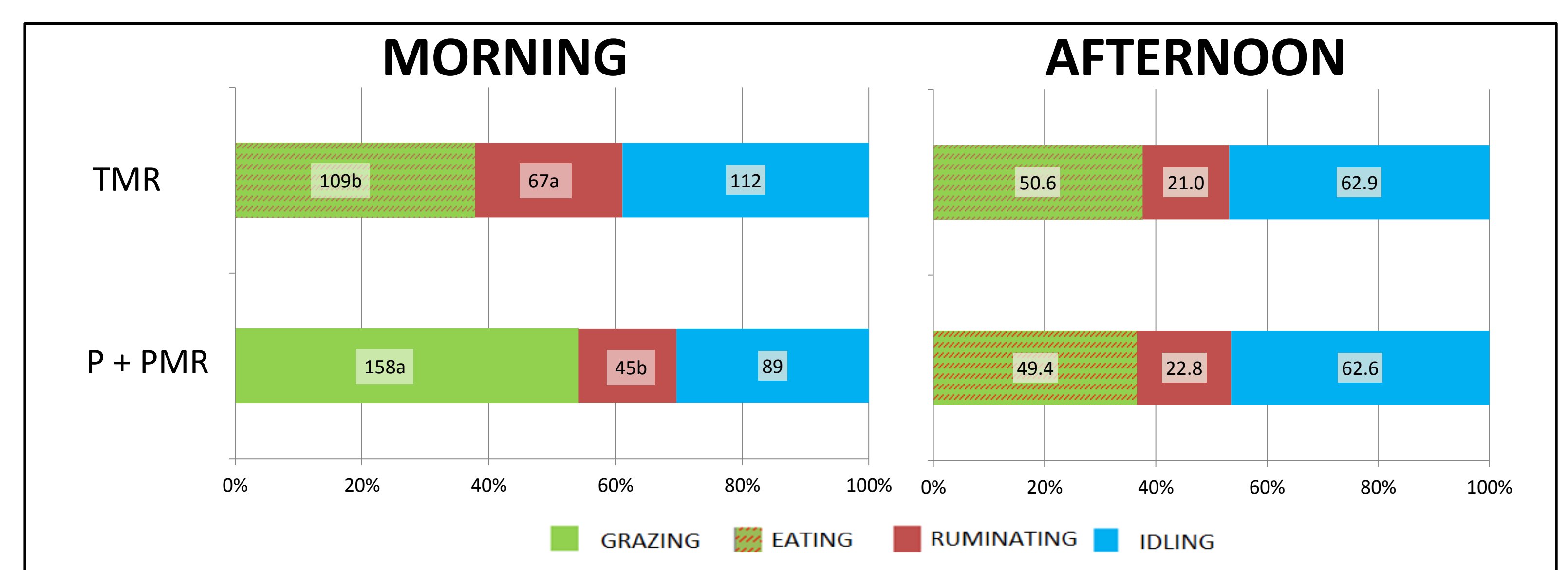
- All cows milking twice a day and consumed 2.2 kgDM day<sup>-1</sup> of a commercial concentrate in the parlor at each milking
- Milk yield was recorded daily and milk samples were collected weekly
- Feeding behavior was recorded visually at +20 and +40 DPP
- Statistical analysis.* Data were analyzed with a mixed model including treatment, DPP, and the interaction as fixed effect, block as random effect and calving data as covariate

## RESULTS

**Table 1.** Mean daily milk yield and composition, milk NEL output and body condition score (BCS) of cows fed TMR (G0), or grazing + PMR (G1) in early lactation

	Treatments		S.E.	P-value
	G0	G1		
Milk, L/d	27.5a	25.6b	0.58	0.03
Fat, %	4.15	4.20	0.15	0.10
Protein, %	3.21	3.35	0.06	0.90
Lactose, %	4.96	4.90	0.08	0.54
NEL, Mcal d <sup>-1</sup>	20.9	19.2	0.57	0.07
BCS	2.7	2.5	0.05	0.25

- ✓ Milk yield was greater in G0 than G1 cows



**Figure 1.** Visual record of activity along the day of cows fed TMR (G0), or grazing + PMR (G1) in early lactation. Bars with different letter differ (P<0.05). Time is expressed inside the bar in min.

- ✓ In the morning, when G0 cows were in TMR-fed in confinement and G1 cows were at pasture eating time was greater (p<0.01) while ruminating time was less (p<0.03) in G1 than G0 cows
- ✓ In the afternoon, when both G0 and G1 cows were in confinement, behavior did not differ between treatments

## FINAL COMMENTS

Reduce milk yield was associated with more time spent eating for G1 than G0 cows, suggesting increased energy costs due to the walking and grazing activity.