Long-Term Effects of Fall Dormancy & Grazing Frequency on Forage Production & Consumption of Lucerne

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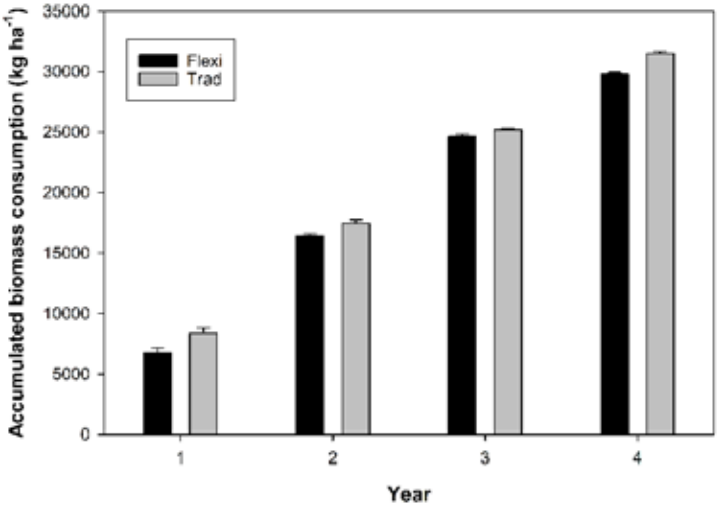
Introduction: Lucerne is the main grazed forage of Argentina. However, there is a large consumption gap on most dairy and beef farms. There is potential to close such gap by increased grazing frequency (Jáuregui et al., 2022). However, the long-term effects of such management on lucerne productivity, and the role of FD are unknown. The objective of this experiment was to compare the long term (i.e. 4 years) effects of two grazing frequencies and two cultivars on lucerne production (i.e. biomass accumulation) and consumption.

Materials and Methods. A split plot rainfed experiment with 3 replicates was carried out at Gentos Research Station in Pergamino, Argentina. The experiment was sown on March 29th, 2016. Seeds were direct drilled at a rate of ~10 kg of seed/ha. Main plots consisted of two cultivars (L820 [820] and Nobel 620 [620]) and subplots corresponded to two grazing treatments: a traditional [Trad] grazing management (year-round 500°Cd GDD grazing frequency), and a flexible grazing management [Flex] (400°Cd GDD grazing frequency during increasing photoperiods, and at least one rest [500°Cd] during declining photoperiods per year). Historical data of temperature was used to define ex-ante the day that each experiment was grazed. Base temperature used was 5°C. About 100 sheep (60 kg LW) were allocated to each grazing treatment (3% daily allowance) every time they reached their accumulated GDD. Pre-grazing biomass was determined by cutting one 0.25 m2 quadrat per plot. Post grazing biomass was measured on 40 occasions during the experimental period. The data were used to estimate total consumed pasture during the whole period by regressing the % of consumed pasture with the pre-grazing biomass. ANOVAs were used to analyse differences in biomass accumulation and consumption. Tukey tests were used for means separation at α = 0.05.

Results and Discussion: There was no interaction (P>0.05) between grazing frequency and cultivars for either measured variable. When each year was analysed separately, accumulated biomass was higher for Trad than Flex in each of the four years (P<0.05), while higher biomass was observed for 620 than 820 in year 1 and the opposite in year 4 (P<0.05). Total accumulated biomass was also different (P<0.05) between treatments (56.2 and 43.9 t ha^{-1} for Trad and Flex, respectively) and cultivars (51.7 and 48.5 t ha^{-1} for 620 and 820, respectively).

Figure 1. Accumulated biomass consumption of lucerne from sowing until 20.Jan.2020 in relation to grazing management treatment. Vertical bars represent the standard error of the average accumulated biomass of each year.



Conclusions: Despite Trad producing ~30% more forage, total consumed pasture did not differ between treatments. 620 accumulated more (P<0.05) biomass and had higher total biomass consumption than 820 regardless of grazing treatment applied. A higher grazing frequency during Spring could be applied to lucerne pastures of contrasting FD's without compromising total consumed pasture. Such higher frequency could reduce the need for using post-grazing mowing and the costs associated with this practice. Also, higher forage quality linked to earlier commencement of grazing could increase total energy consumption.

References

Jáuregui, J. M., Ojeda, J. J., Berone, G. D., Lattanzi, F. A., BaudraccO, J., Fariña, S. R., & Moot, D. J. (2022). Ann. Appl. Biol., 1– 11.

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