

## Effect of grazing management on herbage accumulation of lucerne-orchard grass sward

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**Introduction** Throughout most of México, lucerne (*Medicago sativa*) is the primary forage legume used in the dairy industry. Unfortunately, lucerne does not grow in late autumn and winter due to adverse weather. Recent studies with lucerne have suggested that the inclusion of a companion grass will invariably increase the seasonal distribution and total annual yield of swards (Laidlaw & Teuber, 2001). However the management of mixed swards containing lucerne is difficult as a grazing frequency or intensity which suits one species may be detrimental to the other. Changes in balance between grass and legume, especially in grazed swards, have been observed. In México mixtures of lucerne-orchard grass have a good persistence and productivity. However the explanation for this is unclear. This study examined the effects of different grazing management practices on lucerne-orchard grass production and seasonal distribution

**Materials and methods** The experiment was conducted from July 2000 to June 2001 at the research unit FES-Cuautitlan, UNAM, State of México, on a well-established mixture of lucerne (cv. CUF101) - orchard grass (*Dactylis glomerata* cv. Potomac). Swards were rotationally grazed by sheep every 28 and 35 days to residual heights of 3-6 cm (hard), 7-10 (medium) and 11-14 cm (lax). Treatments were arranged in a 2 x 3 factorial design with four replicates. Plot size was 100 m<sup>2</sup>. Herbage mass was determined from two 0.25 m<sup>2</sup> quadrats per plot, harvested to ground level before and after each grazing. In the middle of each season, from the two ground-level quadrat cuts, one pooled sub-sample of herbage from each plot was used to determine pre-grazing botanical composition.

**Results** There were effects of grazing frequency and intensity on seasonal and total herbage accumulation, but there was no frequency x intensity interaction (Table 1). Total herbage accumulation was 24 and 7% more for hard than for lax and medium grazing, respectively ( $P < 0.05$ ). During spring, summer and winter herbage accumulation decreased as grazing severity decreased from hard to lax ( $P < 0.05$ ). Total herbage accumulation was 4.5 % higher in 28-day than in the 35-day grazing interval. Herbage accumulation was 29 and 30 % greater with 28 than 35 day grazing frequency in summer and winter. In contrast, during autumn and spring 35 day grazing frequency produced 27 and 14 % more than 28 day intervals. Longer photoperiod and warmer temperatures explain summer results, however it is hard to explain the results in winter.

**Table 1** Herbage accumulation (kg DM/ha) of lucerne-orchard grass swards under different grazing management

	Summer	Autumn	Winter	Spring	Total
Grazing intensity					
HG	6790	3720	5970	8890	25370
MG	6100	3880	5820	7920	23720
LG	5050	3320	4900	7260	20520
Significant	**	NS	*	**	***
Grazing frequency					
28	6730	3210	6280	7490	23710
35	5230	4070	4840	8560	22700
SEM <sup>a</sup>	430	270	390	450	560
Significant	***	***	***	**	*

\* < 0.05; \*\* < 0.01; \*\*\* < 0.001; NS no significant differences. <sup>a</sup> Standard error of the least square means.

HG = hard grazing; MG = medium grazing; LG = lax grazing.

**Conclusions** The results of this study show that to increase herbage accumulation grazing interval must be 35 days during spring and autumn and 28 days during summer and winter. The response was greater under hard grazing than medium and lax grazing.

### References

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