Mixed Fattening of Steers and Lambs on Improved Grasslands in Uruguay: I. Pasture Performance

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Introduction The use of P fertilisers together with legume broadcasting is a low cost and high impact technology for improving native grassland (Risso *et al.*, 2001). Its use is increasing in Uruguay, although not for mixed grazing, even though this management is a common practice on native grasslands. Good pasture response may occur under mixed grazing when it is adequately managed (Nolan & Connolly, 1989). The following trials characterise pasture response with such management, in Uruguayan conditions.

Materials and methods The trials encompassed an average of 265 d per year (March-Nov.) for three years (2000-2002), in the granitic soils region of Uruguay. Type of pasture improvement (IT) and lamb/steer ratio (LSR) were evaluated. Two 9 to 11-year-old pastures were studied. These were oversown with: a) a mixture of *Trifolium repens* cv. LE Zapicán plus *Lotus corniculatus* cv. San Gabriel (WCL) or b) *Lotus subbiflorus* cv. El Rincón (LR). The LSRs evaluated were 1.5:1 (L) and 4:1 (H) in 2000 with these values increased to 4:1 (L) and 7:1 (H) in 2001 and 2002. A rotational paddock grazing system was applied, with 10 d of grazing and 20 d of resting. Average stocking rate was 470 kg LW/ha. The experimental design was a complete randomised block, with a factorial arrangement and two replicates. Pasture estimates were: sward mass at ground level (SM; kg DM/ha) before (BG) and after (AG) grazing, sward height (SH; cm) measured by ruler and spring legume percentage (LP).

Results No general treatment effects were detected, although high LSR resulted in significantly higher BG and AG, more frequently than did low LSR, possibly as a response to a differential increase in stocking rate, based on the higher proportion of steers gaining weight in both cases (Table 1). There was a slight trend for higher values of BG and AG in favour of WCL rather than LR. The tendency to lower LP (23% vs. 33%) when managing the high LSR, was probably due to lamb selectivity. Legume percent was also influenced by IT, with LR resulting in higher values than WCL (33% vs. 25%). Sward mass and SH were highly correlated (Table 2). The lower BG values per cm height during the autumn-winter period were the result of reduced fresh sward growth after the late summer grazing. The increase in BG per cm in spring was associated with a higher DM content in the swards.

Table 1 Sward mass (kg DM/ha) before (BG) and after (AG) grazing according to treatment

Year		2000	2001	2002
BG	WCL H	1797a	1868	1326b
	WCL L	1502b	1931	1755a
	LR H	1675ab	1863	1378b
	LR L	1554b	1873	1236b
AG	WCL H	1147	1478	1315a
	WCL L	1046	1496	997b
	LRH	1144	1418	1121ab
	LR L	1028	1300	1047b

* Values with different letters within columns, are significantly different (P<0.05)

Table 2 Regression equations for predicting sward mass (kg DM/ha) before (BG) and after (AG) grazing using sward height (cm) (SH)

IT	Fall-Winter	R^2	RSD	Spring	R^2	RSD
WCL	BG=73.3SH+772	0.852	228	BG=119.4SH+461	0.846	366
	AG=136.5SH+370	0.895	148	AG=132.8SH+105	0.725	491
LR	BG=76.5SH+744	0.776	306	BG=142.8SH+467	0.868	368
	AG=134.9SH+328	0.928	109	AG=118.0SH+573	0.752	534

Conclusions Throughout the study period, both IT maintained their good condition. No consistent effect on pasture attributes was observed due to LSR at the ratios used. The high associations between SM and SH both before and after grazing indicated that SH provided a reasonable estimate of the seasonal pasture on offer in both IT.

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