

## Effect on sward botanical composition of mixed and sequential grazing by cattle and sheep of upland permanent pasture in the UK

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**Introduction** Previous work has shown benefits of sequential grazing by cattle and sheep, with superior liveweight gains being recorded for lambs grazing swards previously grazed by cattle. A preliminary study of the effects of mixed sheep and cattle grazing also suggested that more extensively grazed swards offer scope for complementary grazing between sheep and cattle. The aim of this experiment was to directly compare these two approaches of integrating the grazing of cattle and sheep.

**Material and methods** The experiment was conducted on a ryegrass/white clover-dominated permanent pasture. Four treatments were compared: 1) sheep only grazing during the growing season from May to October (S/S); 2) cattle only grazing during May to July, followed by sheep only grazing from August to October (C/S); 3) cattle and sheep grazing during May to July, sheep only grazing for the rest of the growing season (C+S/S); and 4) cattle and sheep grazing for the whole grazing season from May to October (C+S/C+S). Each treatment was replicated three times. On cattle-grazed plots Charolais-cross steers were used throughout the season. On sheep-grazed plots, Beulah Speckle Face ewes and their Suffolk cross lambs were used from the start of the experiment until weaning at the end of July, and then from weaning until termination of grazing the plots were grazed by weaned lambs. Sward height was maintained at 6 cm using a 'put and take' stocking system. Other experimental details were as given in Fraser *et al.* (2005). To determine the effect of grazing treatment on sward composition quadrat cuts were taken at turn-out of livestock at weaning in late July. On each occasion, six 145 cm x 14 cm quadrats were cut to ground level within each experimental plot and a botanical separation carried out on a representative sub-sample of the material collected.

**Results** There were no statistically significant effects of grazing treatment on botanical composition at weaning in the first year of the experiment (2001). However, over the subsequent two years significant between-treatment differences in the proportions of key sward components likely to influence nutritive value of herbage, such as white clover, flower stem and dead material, were identified.

**Table 1** Effect of grazing treatment on sward composition (proportion x 100)

Year	Sward category	Treatment				s.e.d.	Significance
		S/S	C/S	C+S/S	C+S		
2002	Grass lamina (live)	58	53	57	61	2.5	*
	Grass pseudostem (live)	8	9	8	9	1.5	ns
	Grass flower stem (live)	15	5	9	11	3.1	**
	Clover (live)	6	11	7	9	1.9	*
	Other dicots (live)	10	10	6	6	2.2	*
	Dead material	17	26	24	19	3.0	*
2003	Grass lamina (live)	52	50	54	54	2.2	ns
	Grass pseudostem (live)	4	3	4	2	1.0	ns
	Grass flower stem (live)	12	9	8	8	3.0	ns
	Clover (live)	4	12	9	15	2.0	***
	Other dicots (live)	6	10	5	9	2.6	ns
	Dead material	29	28	30	24	2.4	*

**Conclusions** The results demonstrate that, even under relatively controlled conditions, choice of grazing system can influence sward composition, which in turn are likely to be linked to effects on animal performance (Fraser *et al.*, 2005).

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### References

Fraser, M.D., J.E Vale & G.E Evans (2005) Effect of mixed and sequential grazing by cattle and sheep of upland permanent pasture on liveweight gain. *This meeting*.