Improving *Lotus* persistence through management: site establishment

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To examine the effects of grazing intensity and spelling time on yield and persistence of Lotus "core" trials have been established at four sites (Ginninderra, Nowra, Casino and Glen Innes) comparing three Lotus cultivars (Grasslands Maku, Grasslands Goldie and Sharnae) with seven grazing treatments. In addition five "co-learning" sites (Mila, Booral, Gloucester, Red Range and Swan Vale) have been established to compare strategic grazing management with traditional grazing management on a paddock scale (Blumenthal *et al.* 1995). The aim of this paper is to review Lotus establishment at these sites.

Results and discussion

Grasslands Maku tended to have slightly more seedlings establish as a percentage of germinable seed sown then either Grasslands Goldie or Sharnae (Table 1). In terms of biotic presence both Grasslands Maku and Goldie contributed more to total dry matter than Sharnae. Both the number of established plants and biotic presence varied greatly between sites and reflected local soil moisture conditions at and after sowing rather than site parameters such as latitude, average annual rainfall or sowing method. At the three sites where establishment was compared with different companion grasses the winter growing grasses were more competitive with Lotus sown in autumn having an effect on seedling numbers in spring but less of an effect on contribution to yield (Table 2). Grazing management treatments have been imposed in early autumn 1996 at at all sites except Glen Innes (plant and biotic presence too low) and Casino (Lotus severely effected by *Rhizoctonia* spp. over summer).

Table 2. Effect of companion grass on plant numbers and % composition of Lotus in the spring following an autumn sowing

Site	Companion grass	Seedling establishment (plants/m^2)	Composition (dry matter) (%)
Ginninderra	Phalaris	1025	2
	Danthonia	133	60
Nowra	Perennial rye	70	27
	Kikuyu	87	32
Casino	Setaria	-	34
	Paspalum /carpet grass	-	37

Table 1. Seeding rate, seedling establishment and % composition of Lotus six months after sowing averaged over all "core" and "co-learning" sites. (Range in brackets)

Cultivar (number of sites sown in brackets)	Mean seeding rate (kg/ha)	Plants established (plants/m^2)	Plants established (% of germinable seed sown)	Composition (% of total dry matter)
Grasslands Goldie (8)	7	56 (15 - 140)	9.9	30.9 (2 -72)
Sharnae (4)	3	44.5 - 108)	7.8	20.0 (3 - 33)
Grasslands Maku (7)	3	57 (13 - 106)	14.1	31.4 (8 - 53)

Reference

Blumenthal, M., Kelman, W., Hochman, Z. and Ayres, J. (1995). Improving lotus persistence through breeding and management. *Proceedings of the Tenth Annual Conference of the Grassland Society of NSW* p. 114.