

Establishment of surface-sown pastures on cracking clays near Walgett

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More than 45% of land in western N.S.W. requires treatment to restore degraded vegetation or to control erosion (1). Research into the applicability of surface sowing as a method of establishing exotic and native pasture species in this area could result in large areas being sown quickly and cheaply by using aerial techniques (2). Investigations were started near Walgett on grey cracking clays because previous research, near Coolah (3), had shown that surface sowing could be successful on similar soils.

Methods

Seeds of six pasture species (*Afedicago truncatula*, cv. Sephi; *AL sativa*, cv. Baron; *Phalaris aquatica*, cv. Sirolan; *Astrebla lappacea*; *Setaria incrassata*, cv. Inverell; and *Panicum coloratura*, var. makarikariense cv. Bambatsi) were surface sown on a fenced area on June 18, before the seasonal break, and on August 18, 1986, after the seasonal break. Broadleaved weeds (mainly Brassicaceae) were sprayed with glyphosate immediately before sowing (2 treatments) and with 2,4-DB after sowing (1 treatment, Table 1). All seeds (spikelets of *A. lappacea*) were treated with permethrin to reduce losses from seed-harvesting ants; no fertilizer was applied. Rainfall was: June 0, July 85, Aug. 29, Sept. 95, Oct. 41mm. Establishment (number of plants / 4 x 0.25m² quadrats / plot) and botanical composition (% ground cover, visual estimate) were recorded in October 1986.

Results and Discussion

In the nil herbicide treatments establishment of *M. sativa* and *P. aquatica* was higher ($P < 0.05$) from the June sowing because sown species germinated with the weeds whereas the weeds were already present and competitive at the August sowing (Table 1). Time of sowing had no effect on establishment in the plus herbicide treatments because *AL sativa* and *P. aquatica* germinated with the weeds in both sowings while *A. lappacea*, *S. incrassata* and *P. coloratura* germinated in September (delayed by low temperatures) after the weeds. Plants of *M. sativa* and *P. aquatica* were much larger on the June sowings but plants of *A. lappacea*, *S. incrassata* and *P. coloratura* were largest on treatments sprayed in August. Although the establishment of *AL truncatula* was not influenced by treatment its growth was much greater from the June sowings.

Table 1. Establishment (% viable seed) of sown species and ground cover (%) of weeds on October 23, 1986

Time of: Sowing and spraying		Establishment +						Weed cover
		M. truncatula	M. sativa	P. aquatica	A. lappacea	S. incrassata	P. coloratura	
June 18	Nil	18a	7.2a	7.4a	2.4b	0.6a	0.6a	66c
Aug. 18	Nil	15a	2.3b	0.8b	1.4b	1.8a	0.4a	67c
June 18	June 18	16a	5.7a	6.2a	3.6ab	1.5a	0.1a	61c
Aug. 18	Aug. 18	26a	6.1a	6.4a	5.7a	2.4a	0.7a	23a
June 18	Aug. 18	21a	7.9a	7.2a	3.6ab	1.5a	0.6a	47b

+ Values in columns not followed by a common letter differ $P < 0.05$

1. Anon. (1983) 1st Rep. Joint Comm. Legis. Counc. D. West Gov. Print.
2. Campbell, M.H. (1986) Proc. AWC Symp Pasture Prodn & Util, Leura.
3. Campbell, M.H. and Freebairn, R.D. (1987) 4th Aust. Agron. Conf.