

Herbicide banding to aid establishment of sod-sown pastures in southern Queensland

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Establishment of improved pastures by oversowing can reduce establishment costs, particularly where there are large areas to be sown that are wooded or partially cleared. However, many oversowings, including sod-seeding and aerial broadcasting, have failed and the techniques are therefore considered unreliable. Failures have been attributed to competition from the existing vegetation, frequently aggravated by lack of soil moisture.

Seedling growth and persistence are markedly improved when competition is controlled by herbicides, but blanket herbicide application to large areas is expensive. The banding of herbicides in rows around the seed can reduce herbicide costs. However, it is not known if herbicide bands will control competition well enough to enable introduced species to establish in highly competitive subtropical pastures. Hence, the feasibility of band spraying as a method of establishing species into native speargrass pastures was studied.

Methods

A seed mixture of green panic (1.7 kg ha¹) and Siratro (2.5 kg ha¹) was sown into cultivated strips 5 cm wide and 2 cm deep on 20 Jan 1981. The rows were 5 m long and spaced 1 m apart. Three herbicide treatments were applied: control (no herbicide), 23 cm herbicide band, and blanket spray treatment. In the

bands and in the blanket treatments glyphosate was applied at 0.72 kg a.i. ha⁻¹.

Germinating rains started on 7 Feb 1981 (day '0') and continued for three days. Total emergence was estimated at day 10, at which time five grass and five legume seedlings were tagged in each row for seedling growth and survival studies. The treatments were replicated six times.

Results and Discussion

Rainfall during germination and early establishment (days 0-20) was 222 mm. Subsequent soil water conditions were also favourable, with soil water tension in the top 20 cm falling below -15 bars on only five occasions to March 1982, the longest dry period being 12 days. All plants were frosted during the winter.

Siratro survival was unaffected by treatment and exceeded 90%. However, as in previous experiments (1), green panic was more sensitive to competition and its growth and survival were increased by herbicide application (Table 1).

Table 1. Growth and Survival of green panic seedlings in herbicide bands

	Herbicide Treatment		
	Control	Band	Blanket
Plant Size - Height (cm)	5.8	19.4	32.0
(at day 104) - No. leaves	1.7	3.8	16.0
% Survival of Tagged Plants (at day 470 - Jun 1982)	19	57	93

A higher-than-expected survival of Siratro and green panic in the controls (1) was attributed to the better moisture conditions of a relatively wet year. Green panic plants in the bands did not grow or survive as well as those in the blanket treatment; nevertheless, their survival was three times that of the controls. Combining this band width with row spacings of greater than 1 m can reduce herbicide costs to about

25% of those for blanket spraying. Additional savings can be made by banding fertilizer and reduced seeding rates.

1. Cook, S.J. and Dolby, G.R. 1981. Aust. J. Agric. Res. 32, 749-59.