

## Broad-leaved weed control in annual medic pastures

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In low rainfall areas with high pH soils, grass-free annual medic pastures provide high quality feed, improve soil properties, and break cereal disease cycles. Effective broad-leaved weed control is essential for successful annual medic pastures, but herbicides used for broad-leaved weed control can also damage annual medics and need to be evaluated carefully before use.

### Methods

A trial was conducted in 1992 on upper Eyre Peninsula at Minnipa Research Centre (a<sup>y</sup>. ann. rainfall 320 mm) on a light sandy clay loam soil with a surface pH of 8.5-9.5. Dominant weeds were Indian hedge mustard (*Sinapsis orientale* (L.)) and rough poppy (*Papaver hybridum* L.). Nineteen herbicide treatments were applied over three annual medic varieties.

The European Weeds Research Council (EWRC) rating system was used to assess efficacy of weed control (1: complete (100%) kill; 2: 98% kill; 3: 95% kill; 4: 90% kill - sufficient in practice, but plants affected could recover; 5: 82% kill; 6: 70% kill; 7: 55% kill; 8: 30% kill; 9: no (0%) kill, as untreated) and phytotoxicity effects on annual medic plants (1: no effect (as untreated); 2: very light symptoms; 3: light symptoms; 4: symptoms not reflected in yield; 5: medium (yield depression likely); 9: complete kill). Dry matter was measured using a capacitance meter, and pods were collected using a vacuum harvester prior to thrashing and aspirating to obtain clean seed.

### Results and discussion

Results for treatments with an EWRC efficacy rating of greater than 5 are not presented, as they are unlikely to be of commercial value. The remaining treatments had efficacy and phytotoxicity ratings plus seed yields that would make them suitable for further evaluation (Table 1). Dry matter production (1.4-1.9 t/ha) did not vary significantly between treatments. Flumetsulam was the best treatment, with good weed control, low phytotoxicity ratings and high seed yields, and the dillufenican+bromoxynil was worst, with high phytotoxicity ratings and low seed yields (Table 1).

**Table 1. Chemical treatment effects on broad-leaved weed control, phytotoxicity, and yield in three annual medic varieties sown at Minnipa on upper Eyre Peninsula in 1992.**

Chemical treatment (g.a.i./ha)	Phytotoxicity rating <sup>a</sup>				Seed yield (t/ha)		
	Efficacy rating <sup>1</sup>	Para-binga	Harbin-ger AR	Para-ggio	Para-binga	Harbin-ger AR	Para-ggio
Unsprayed control	9.0a <sup>b</sup>	1.0a	1.0a	1.0a	0.88a	0.96a	0.76abc
7.5 diflufenican+75 bromoxynil	4.7 b	2.8 b	3.5 c	4.5 c	0.80a	0.73a	0.64ab
80 2,4-D ester	4.7 b	1.0a	1.0a	1.0a	1.00a	0.89a	0.51a
5.6 diflufenican+37.5 MCPA amine	4.3 b	1.7ab	1.3ab	1.7ab	0.99a	0.96a	0.85 bcd
50 diflufenican	4.3 b	2.0 b	1.3ab	1.7ab	0.98a	0.91a	0.59ab
62.5 MCPA ester+6.2 diflufenican	3.5 b	2.9 b	1.7ab	2.7abc	0.88a	0.96a	0.77abc
48 imazethapyr (ammonium salt)	3.3 b	2.1 b	1.7ab	1.7ab	0.90a	0.95a	1.03 cd
350 MCPA amine	3.3 b	3.1 b	2.3 bc	2.3ab	0.82a	0.99a	0.71ab
20 flumetsulam	2.0 c	1.7ab	1.0a	1.3a	1.00a	1.00a	1.10 d

<sup>a</sup> European Weed Research Council rating system - see materials and methods section.

<sup>b</sup> Means followed by the same letter are not significantly different (ANOVA;P=0.05).