

Sulfonylureas and annual medic regeneration on high pH soils

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In 1990, concerns about the residual effects of sulfonylureas on the high pH soils of upper Eyre Peninsula reached a peak, and also implicated supposedly "softer" sulfonylureas in causing problems for annual medics. Trial work was commenced to compare the effects of commonly used sulfonylureas on long-term regeneration of annual medics.

Methods

A trial was conducted in 1990-92 at Minnipa Research Centre (a^y. annual rainfall 320 mm) on a light sandy clay loam soil. The pH (field test kit) varied from 8.5-9.5 at the surface and was 9.5 below 10 cm. Metsulfuron-methyl at 4 g a.i./ha, chlorsulfuron at 11 g a.i./ha, triasulfuron at 21 g a.i./ha, and an unsprayed control were applied to a wheat crop on 27 September 1990. In 1991 the trial was left out to pasture, and in 1992 was sown to wheat.

Results and discussion

Metsulfuron-methyl had no effect on annual medic survival or herbage and seed production, while chlorsulfuron reduced both factors (Table 1). Triasulfuron had no effect on plant numbers, but reduced herbage and seed production (Table 1). Pasture regeneration after chlorsulfuron application will be poor, and in the long term, pasture regeneration may be poor where triasulfuron is used consistently. Whether the annual medic pasture component recovers naturally or needs to be resown will be investigated in future seasons.

Table 1. Effects of sulfonylurea herbicides applied in 1990, on annual medic survival, seed and herbage production in 1991 and 1992 at Minnipa on Upper Eyre Peninsula.

Treatment	1991			1992	
	Medic no's/m ²	Medic dry matter (t/ha)	Medic seed yield (t/ha)	Medic no's/m ²	Wheat yield (t/ha)
Control	630±42a [#]	2.20±0.15a	0.64±0.03a	648±25a	1.26±0.02a
metsulfuron-methyl	662±15a	1.98±0.13a	0.74±0.03a	639±16a	1.26±0.03a
chlorsulfuron	433±46 b	0.49±0.04 c	0.05±0.01 c	185±13 b	2.16±0.08 b
triasulfuron	703±37a	0.82±0.04 b	0.29±0.04 b	723±78a	2.27±0.11 b

[#] Means followed by the same letter are not significantly different (ANOVA; P=0.05).

Chlorsulfuron damage was obvious (purpling; yellowing; stunting; drastically reduced plant numbers), but triasulfuron effects would not have been apparent without an unsprayed control for comparison and this may encourage inappropriate use despite label recommendations.

Increased wheat yields in the metsulfuron and triasulfuron treatments (Table 1) were probably due to better residual weed control, particularly over the summer period prior to cropping when moisture conservation becomes important. Benefits obtained from improved pasture production in metsulfuron-methyl and untreated plots are likely to be long term and less tangible.