EVALUATION OF HERBICIDES FOR CONTROL OF SUMMER GRASS AND CROWSFOOT GRASS IN COUCH

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Summary. The efficacy of a range of pre-emergence herbicides was assessed on summer grass, *Digitaria sanguinalis* L. Scop., and crowsfoot grass, *Eleusine indica* L. Gaerth. Pendimethalin at 1.0, 1.5 and 2.0 kg a.i. ha^{-1} prodiamine at 0.38, 0.5 and 0.75 kg a.i. ha^{-1}, benfluralin at 1.4 kg a.i. ha^{-1},butamifos at 5.0 kg a.i. ha^{-1}. oxadiazon at 6.0 kg a.i. ha^{-1}, atrazine at 1.75 kg a.i. ha^{-1} and chlorthal at 7.5 kg a.i. ha^{-1} were evaluated. All chemicals at all rates controlled summer grass and crowsfoot grass. Pendimethalin was slightly more effective than the other herbicides for control of crowsfoot grass, while atrazine gave poor control of summer grass. All herbicides inhibited recovery of couch. This effect, however, was negligible except for atrazine where turf recovery was not complete until mid December; other treated plots recovered by mid October.

INTRODUCTION

Summer grass and crowsfoot grass are the major summer growing weeds in football ovals, parks and lawns in eastern Australia (1). Currently registered post emergence herbicides do not give satisfactory control following severe infestation of bare turf after winter wear. DSMA is only partially effective because older plants survive and it can only be used in couch and bent turfgrasses.

Diclofop-methyl gives excellent control of crowsfoot grass, but no control of summer grass. However, it must be applied carefully as turfgrass species vary in their tolerance of diclofop-methyl. Only chlorthal is registered for pre-emergence control of summer grass and crowsfoot grass in turf. Reports from greenkeepers are variable regarding its efficacy, (G. Beehag, pers. comm., 1986).

METHODS

The site chosen to conduct this trial was a couchgrass, *Cyndon dactylon* L. Pers. x *C. transvaalensis* (Burtt-Davy), football oval with a history of severe infestation by summer grass and crowsfoot grass. At the time of spraying, the turf was severely worn following its use throughout the winter for football and had only just commenced growth following winter dormancy. Pendimethalin at 1.0, 1.5 and 2.0 kg a.i. ha^{-1}, prodiamine at 0.38, 0.5 and 0.75 kg a.i. ha^{-1}, benfluralin at 1.4 kg a.i. ha^{-1}, butamifos at 5.0 kg a.i. ha^{-1}, oxadiazon at 6.0 kg a.i. ha^{-1}, atrazine at 1.75 kg a.i. ha^{-1} and chlorthal at 7.5 kg a.i. ha^{-1} were applied at 6500 L ha^{-1}, to give soil incorporation to 2 cm depth. The trial design was a randomized complete block with four replications. Weed densities were assessed by counting the number of squares in a 1x2 m grid (140 squares) containing each species, this procedure was repeated twice in each plot. Data were statistically analysed following square root (X+0.5) transformation. The phytotoxicity of the herbicides on the couch was assessed visually.

RESULTS AND DISCUSSION

Results are presented in Tables 1 and 2.

Table 1. Average of the sum of two grid counts for summer grass (occupied grids/280 squares).

Herbicide	Rate (kg ha^{-1})	Assessment date[a] 30.10.86	27.11.86		22.1.87	
Pendimethalin	1.0	0	4	a	4	a
Pendimethalin	1.5	0	1	a	2	a
Pendimethalin	2.0	0	0	a	0	a
Prodiamine	0.38	0	0	a	2	a
Prodiamine	0.5	0	1	a	1	a
Prodiamine	0.75	0	2	a	1	a
Benfluralin	1.4	0	1	a	4	a
Butamifos	5.0	0	3	a	0	a
Oxadiazon	6.0	6	12	a	10	a
Atrazine	1.75	67	104	b	113	b
Chlorthal	7.5	0	1	a	2	a
Untreated		86	139	b	155	c

[a] Values followed by the same letter are not singificantly different using l.s.d. (P = 0.05).

Table 2. Average of the sum for two grid counts for crowsfoot grass (occupied girds/280 squares)

Herbicide	Rate (kg ha^{-1})	Assessment date[a] 30.10.86	27.11.86		22.1.87	
Pendimethalin	1.0	0	0	a	1	ab
Pendimethalin	1.5	0	0	a	0	a
Pendimethalin	2.0	0	0	a	0	a
Prodiamine	0.38	0	0	a	1	ab
Prodiamine	0.5	0	6	b	6	b
Prodiamine	0.75	0	5	a	3	ab
Benfluralin	1.4	0	1	ab	1	ab
Butamifos	5.0	0	2	ab	1	ab
Oxadiazon	6.0	0	2	ab	1	ab
Atrazine	1.75	0	0	b	1	ab
Chlorthal	7.5	0	4	ab	5	b
Untreated		61	58	c	62	c

[a] Values followed by the same letter are not significantly different using l.s.d. (P = 0.05).

Pendimethalin at 2.0 kg ha^{-1} slightly inhibited couch recovery for eight weeks after spraying, however, atrazine severely inhibited the recovery of couch for fourteen weeks. Atrazine inhibited the growth of couch stolons and hence, delayed the coverage of the bare ground. All other treatments delayed recovery of couch for two weeks. This trial provided useful information on the effect of herbicides on the growth inhibition of couch stolons. This is very important for weed control in areas where couch stolons have been recently sown, or on turf farms, where rapid recovery after cutting is an advantage. In these situations, exposed soil encourages weed growth.

All rates of all herbicides, except atrazine, gave satisfactory control of summer grass. The lowest rates of either pendimethalin or prodiamine should, therefore, be used to ensure safety on couch and because of the lower cost. The germination of ryegrass was not affected by any of the treatments listed in Table 1 when sown seven months after their application.

REFERENCES

1. James, R.M. 1981. Proc. 6th Aust. Weeds Conf. Broadbeach. 1, 209-214.