CONTROL OF POA ANNUA IN FINE TURF USING ETHOFUMESATE

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Summary

The control of poa annua (*Poa annua*) infecting fine turf grass swards comprised largely of browntops (*Agrostis* spp), 'Pennncross' bent (*Agrostis* sp) and chewing's fescue (*Festuca rubra* ssp *commutata*) was achieved by sequential applications of sub-lethal doses of ethofumesate. Timing of sequential treatments at low doses did not appear critical for turf safety or weed control. Treatments with single higher doses controlled poa annua but appeared more damaging to desirable species.

INTRODUCTION

Poa annua has long been a major weed grass in fine turf swards growing in temperate zones. Several cultural methods are employed in an attempt to reduce poa annua populations and increase fine turf dominance. Of the chemical treatments commonly used in New Zealand, repeat application of lead arsenate appear to have been most successful in the past, but this is now unavailable. Chemicals which remove poa annua rapidly after treatment have met with disfavour from New Zealand greenkeepers, largely due to the unsightly and often unplayable condition of the resultant turf. This latter condition has often occurred when poa annua covers more than 30% of the ground before treatment. As it is often impossible in practice to determine the population density of poa annua before treatment, its gradual removal would seem more acceptable. Several trial reports from Europe indicated excellent control of poa annua following both pre- and post-emergence treatments of ethofumesate at 1-2 kg/ha. At these doses, however, some turf species were severely damaged and difficulties were experienced in re-establishing fine turf from seed. In New Zealand it was decided to test low doses of ethofumesate, at monthly intervals, in an attempt to reduce damage to both seedlings and established turf. The primary aim was the control of poa annua seedlings at/or soon after germination.

METHODS

Following preliminary field screening in 1975, two further screening trials were laid down on the Auckland Golf Club during 1976. Applications were made through a 2m boom, hand held and pressured by CO₂ through a back mounted spray tank. TeeJet 730308 fanspray nozzles spaced at 380 mm were operated at 200 kPa and 5 kmph to deliver 300 litres/ha. Treatments were applied to turf immediately following mowing to the normal height, in cool, fine conditions. Sequential treatments were applied one month apart from June through August. Sequential rates tested ranged from 0.125-0.25 kg/ha and 1.0 kg followed by 0.5 kg/ha. Single rates of 0.5 and 1.0 kg/ha were applied to check turf tolerance.

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TABLE 1: Poa annua control and turf selectivity — single treatments applied in the month indicated.

Timing	Untreated	June	June	July	July
kg/ha		0.5	1.0	0.5	1.0
% turf tolerance	100	100	90	100	90
% poa annua present (Dec. after treatment)	40	40	5	30	5

RESULTS AND DISCUSSION

Single applications (Table 1) showed established turf species tolerated up to 1 kg ethofumesate/ha, however, the rapid necrosis and death of poa annua and slight tip burning on turf species, occurring during the two months following treatment, was aesthetically unacceptable. Sequential applications of 0.125 kg/ha gave a maximum of 50% reduction in poa annua population, 6 months after initial treatment (Table 2). Even three sequential applications showed no adverse effects on the turf. By increasing the rate to 0.25 kg/ha poa annua control from three sequential applications improved to 87%, still maintaining turf tolerance 1.0 kg/ha plus 0.1 kg/ha resulted in temporary turf intolerance (Table 3). From this and more recent unpublished data, the optimum dose for sequential application appears to be about 0.25 kg/ha. The number and frequency of sequential treatments required for long term control is the subject of on-going research. Poa annua populations dropped further the following autumn without further treatment, presumably due to the competitive nature of the turf mat or reduced seed load. Single treatments at low rates were less effective as poa annua plants developed through the winter (Table 1). Germination of fine turf species undersown the following autumn in treated areas did not appear to be affected. Further investigations are necessary to determine accurately optimum dose rates and timing of sequential treatments and undersowing regimes to give best results.

TABLE 2: Poa annua control and turf selectivity — single and sequential treatments of ethofumesate at 0.125 kg/ha.

Timing	Untreated	June	June + July	June July Aug.	July + Aug.	Aug.
% turf tolerance	100	100	100	100	100	100
% poa annua present (Dec. after treatment)	40	40	40	20	40	40

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TABLE 3: Poa annua control and turf selectivity — single and sequential treatments of ethofumesate at 0.25 kg/ha.

Timing	Untreated	June	June + July	June July Aug.	July Aug.	Aug.	June at 1.0 + July 0.5
% turf tolerance	100	100	100	100	100	100	90
% poa annua present (Dec. after treatment)	40	40	10	5	10	40	0

CONCLUSION

Repeated monthly applications of low rates of ethofumesate appear to offer safe and aesthetically acceptable control of poa annua in fine turf.