

## The management of bent grass (*agrostis tenuis*) dominant pastures in Victoria using glyphosate

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Bent grass (*Agrostis tenuis*) is a rhizomatous perennial weed prevalent in low-fertility, poorly drained soils. Its distribution is largely restricted to areas with average annual rainfall in excess of 600mm (1). It is a very effective competitor which will smother more productive pasture species such as perennial ryegrass (*Lolium perenne*), phalaris (*Phalaris aquatica*) and clover (*Trifolium* spp.). It has been estimated that bent grass is present in about a quarter of Victorian pastures, and is the dominant species in about one-third of these (2), representing approximately 800,000 hectares. Recent results indicate that production from these pastures can be up to 50% less than pasture on the same soil without bent grass. It has proved extremely difficult to control by conventional cultivation methods (3).

Nine separate field experiments were established between 1978 and 1981 to examine the efficacy of glyphosate (360g L<sup>-1</sup> as Roundup(R)) for the control and management of bent grass swards. Glyphosate was found to be most effective when applied at rates between 0.72 and 1.08 kg ha<sup>-1</sup> (2.0 to 3.0 L ha<sup>-1</sup> Roundup(R)) in late spring or early summer during its most active period of growth. The rate response curve, generally sigmoidal in character, can be described by an equation of the form:

$$\% \text{ Control} = \frac{k \times (\text{Roundup}^{(R)} \text{ rate Lha}^{-1})^{2.2}}{0.9 + (\text{Roundup}^{(R)} \text{ rate Lha}^{-1})^{2.2}}$$

where  $k = 87.7$ .

In the limiting case,  $k$  corresponds to the maximum percentage stand reduction. Even 2.16 kg ha<sup>-1</sup> glyphosate (6.0 L ha<sup>-1</sup> Roundup(R)) does not appreciably improve control, reflecting the high regenerative capacity of bent grass from seed and rhizomes.

The best control has been achieved by a late spring application followed by summer cultivation and resowing of desirable pasture species in the autumn. The most suitable implements for cultivation have proven to be rotary power harrows, spring-tined cultivators (with close tyne spacing and narrow points) or new mouldboard ploughs. The power harrows and cultivators are used for shallow working on a level surface, while mouldboard ploughs are used on uneven paddocks.

Assessment of some sites two years after treatment has established that bent grass stand reduction is long term if the initial control is good and other pasture species are established.

1. Muir, B.C.M. 1971. In Pastures and fodder crops for the Ballarat District, Victorian Dept of Agriculture.
2. Seiffert, M.W. 1971. Ecology and Agronomy of Bent Grass, M.Ag.Sci. thesis - Melbourne University.
3. Boyd, M. 1976. Victorian Department of Agriculture, Research Training Report.