

## Seed-applied herbicides and antidotes for the establishment of lucerne and phalaris

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The establishment of both lucerne and phalaris on the Northern Tablelands of N.S.W. can be severely reduced by annual grassy weeds such as rat's tail fescue (*Vulpia myuros*) which germinates during autumn, the preferred time for sowing temperate species in this region. Populations of rat's tail fescue as high as 40,000 seedlings m<sup>-2</sup> have been observed in the field. Direct drilling of pastures precludes the use of pre-planting soil-incorporated herbicides and, thus, the possibility of incorporating herbicides in a seed coating applied to the sown species is attractive (1). A range of candidate herbicides was evaluated when applied as coatings to lucerne seed and the possibility of applying a herbicide antidote to the phalaris seed was also investigated.

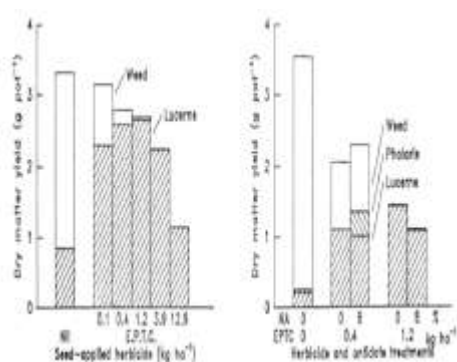
### Methods

A series of glasshouse trials was conducted to investigate: (i) the effect of a range of populations of rat's tail fescue (0,5,10,20,40, and 80 x 10<sup>3</sup> seeds m<sup>-2</sup>) on the early growth of lucerne and phalaris; (ii) 9 herbicides (each at 4 rates) applied to lucerne seed to control rat's tail fescue (which was sown at 40,000 seeds m<sup>-2</sup>); and (iii) 6 herbicide antidotes (each at 3 rates) applied to phalaris seed to protect the phalaris from herbicide damage (EPTC) whilst not protecting the rat's tail fescue (again sown at 40,000 m<sup>-2</sup>).

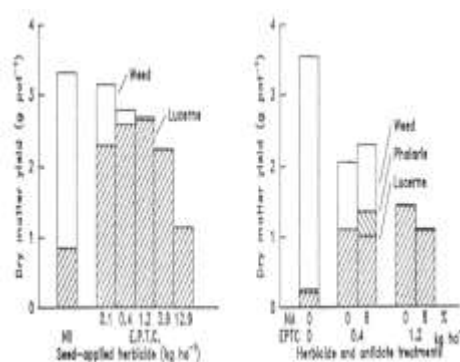
### Results and Discussion

In the first trial, the yields of both lucerne and phalaris were dramatically reduced by rat's tail fescue populations as low as 3900 m<sup>-2</sup> under both high and low fertility conditions. Of the nine seed-applied herbicides tested in the second trial, only EPTC was effective in both reducing the yield of rat's tail fescue and in increasing the yield of lucerne (Fig. 1).

**Fig. 1 Grassy weed control with seed-applied EPTC**



**Fig. 2 Effect of antidote on EPTC damage to phalaris**



Of the antidotes tested, naphthalic anhydride (N.A.) (applied to phalaris seed at 8% w/w) was the most effective in protecting the phalaris from EPTC damage (Fig. 2). This protection permitted a phalaris yield seven times that of the control at a herbicide application of 0.4 kg EPTC ha<sup>-1</sup> but the protection at 1.2 kg EPTC ha<sup>-1</sup> was negligible. Field studies are needed to confirm the efficacy of seed-applied herbicides and antidotes and to examine any effects of sowing method on their efficacy.

