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## **The efficacy of pre-emergence herbicides on problem weeds in woodland regeneration**

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### **Abstract**

Weeds germinating from seed are serious competitors for resources with young trees and can delay or prevent woodland establishment and regeneration. However, there is only limited information available on which pre-emergence herbicides are effective on problem weeds that commonly occur in these situations, in particular for perennial species germinating on fertile ex agricultural sites. Following previously reported glasshouse screening experiments for potentially useful herbicide treatments, ten residual herbicide treatments were tested on twelve problem weed species in the field.

The results showed considerable variations in the susceptibilities of weed species to the different herbicide treatments. The combination of atrazine plus cyanazine, included as a standard herbicide mix that is commonly used in forestry situations, was the most effective treatment overall, with most weed species appearing to be susceptible or moderately susceptible.

*Chamerion angustifolium* (rosebay willowherb) was the most sensitive species tested, being well controlled by the mixture of atrazine plus cyanazine, metazachlor, the higher doses of napropamide, and the mixture of metazachlor plus pendimethalin. *Cirsium arvense* (creeping thistle) was susceptible to isoxaben, and atrazine plus cyanazine. *Clematis vitalba* (old man's beard) was susceptible to isoxaben. *Senecio vulgaris* (groundsel) was well controlled by atrazine plus cyanazine, and metazachlor. *Ranunculus repens* (creeping buttercup) only appeared to be controlled by napropamide. *Rumex obtusifolius* (broadleaved dock) and *Urtica dioica* (common nettle) were susceptible to pendimethalin. *Rubus fruticosus* agg. (bramble), *Cirsium vulgare* (spear thistle), *Senecio jacobea* (common ragwort) and *Trifolium repens* (white clover) were only susceptible to the mixture of atrazine plus cyanazine. *Brassica napus* ssp. *oleifera* (volunteer oilseed rape) was not completely controlled by any of the treatments, although atrazine plus cyanazine did give significant growth reductions. A comparison of the susceptibility implied by existing literature, glasshouse pot experiments and the field trials reported here, shows the importance of confirming results obtained in pot trials with field testing and provides valuable

information on efficacy which will be useful in assisting herbicide selection in the future.

**Keywords:** Pre-emergence herbicides; Perennial weeds; Woodland establishment

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