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Aspects of the biology, taxonomy and control of *Calystegia silvatica*

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Abstract

Calystegia silvatica or great bindweed has recently become a problematic weed in riparian zones but the information available about the control of *C. silvatica* with herbicides is limited. The current study was undertaken to gain more information about aspects of the control of *C. silvatica* with herbicides and of the biology and taxonomy of *C. silvatica*.

In Experiment 1 a range of translocated herbicides were applied to established plants in the field. Herbicides were applied in autumn and it was found that none of the herbicides applied, at the rates they were applied at, controlled 100% of the *C. silvatica*. However triclopyr/picloram/aminopyralid and 2,4-D/dicamba showed significant control of *C. silvatica* spring regrowth. Aminopyralid alone and glyphosate also showed some long term control. Both metsulfuron and clopyralid showed poor control.

The same herbicides applied in the field were also applied in autumn to young *C. silvatica* grown in pots in a glasshouse. Fluroxypyr and 2,4-D (ester) were also tested. Herbicides were applied to either the upper portion or the lower portion of the plants to determine whether it matters if only part of the plant is treated when trying to avoid spraying nearby native plants in the field. As with the field trial, no plants were totally controlled. However triclopyr/picloram/aminopyralid, aminopyralid and 2,4-D/dicamba showed good control of *C. silvatica*. Clopyralid and fluroxypyr showed poor control. The effect of fluroxypyr on *C. silvatica* was previously unknown. For most of the herbicides there was no difference in the level of control between those herbicides applied to the upper portion compared with the lower portion. Control options for *C. silvatica* are discussed.

Seeds of *C. silvatica* were found to be quite large, potentially making them vulnerable to predation. There has also been uncertainty over the amount of seeds that *C. silvatica* can produce and it was found that *C. silvatica* has, on average, one viable seed per pod. Few seeds were found in the upper soil layer beneath dense *C. silvatica* stands but all were viable. From the germination studies it was gleaned that *C. silvatica* seeds need scarification and can germinate in temperatures from 5 – 25°C with few seeds emerging at 5°C and rapid germination when the seeds were kept at 20 and 25°C.

The plants used in the trials were identified as *Calystegia silvatica* subspecies *disjuncta* and it was found that *Calystegia silvatica* subspecies *disjuncta* is the most common form growing in the local area. A key for identifying the *Calystegia* species which could

potentially be in New Zealand was developed for this exercise, based on New Zealand and international references, and was also tested during this sampling.

KEYWORDS: *Calystegia silvatica*; great bindweed; aminopyralid; 2,4-D/dicamba; triclopyr/picloram/aminopyralid; metsulfuron; 2,4-D (ester); clopyralid; fluroxypyr; seeds; taxonomy; New Zealand.

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