

# RAGWORT FLEA BEETLE & HERBICIDES

## Is it possible to use the two together?

Ragwort flea beetles (see *Ragwort flea beetle*) are successfully controlling ragwort in many parts of New Zealand. To give this biological control agent the best possible chance of working effectively you should avoid exposing them to herbicides. However, there are some situations where this may not be practical:

- When the beetles have only recently been released and are restricted in number or distribution;
- When conditions prevail that favour ragwort growth and/or do not favour the beetles;
- When it is important to kill every plant — a result that is not usually achieved by biological control agents alone;
- When ragwort is growing among other weeds that need to be sprayed.

If you must spray, follow the instructions below to minimise damage to ragwort flea beetles.

## When should I spray?

Do not spray when the immobile eggs and larvae are the predominant life stages (usually from autumn through to early spring) as they cannot survive if their host plant dies. It is safer to spray when pupae are the predominant life stage (from mid-spring to early summer) because the soil offers them some protection and they hatch into mobile adults that can seek out healthy plants. You can also minimise



harmful effects by spraying during mid- to late summer when many adult beetles hide away and are less likely to come into contact with the spray. If possible, avoid spraying when most adults are active (early summer and autumn to midwinter). Be aware that the beetle's life cycle may vary slightly throughout the country and from year to year, depending on climatic conditions.

## What herbicides are safe to use?

Data indicate that field rates of clopyralid (Versatill®), glyphosate (e.g., Roundup®), MCPA, MCPB, thifensulfuron methyl (Harmony®), metsulfuron methyl (Escort®), 2,4-D + picloram (Tordon 50-D®), or 2,4-D + dicamba (Banvine®) are not lethal to adult beetles. However, these herbicides may cause sub-lethal effects and the last two may induce the beetles to waste their eggs by stimulating them to lay at a higher rate than usual on doomed plants. Sometimes exposure to herbicides may also cause beetles to lay fewer eggs overall.

We recommend for:

- spot spraying, use metsulfuron methyl (Escort®) because it does not appear to be toxic to the beetles and they are less likely to lay on sprayed plants.
- boundary spraying, use 2,4-D ester (e.g., Pasture-Kleen®) because although sprayed beetles may be killed, other beetles in the area will not be attracted to the sprayed plants and will not lay eggs on them.
- cleaning up other pasture weeds, use MCPB (which doesn't kill ragwort beyond the

seedling stage) as this may encourage the beetles to lay more eggs on ragwort plants in the short term. Spray in spring when few or no adult beetles are present.

**How else can I minimise harmful effects?**

Always use the lowest rates and apply the smallest quantities of herbicide possible. Avoid blanket spraying techniques and, wherever possible, spot-spray or wick-wipe plants.

**Table 1: The effect of herbicides for ragwort on ragwort flea beetles**

Herbicide	Toxic to beetles	Does spray encourage egg laying?	Comments
Clopyralid (Versatill®)	No	?	
MCPA amine	No	?	
Metsulfuron methyl (Escort®)	No	Probably not if unsprayed plants are available	Beetles lay fewer eggs. Recommended for spot- spraying.
2,4-D + picloram (Tordon 50-D®)	Unlikely	Yes	Beetles lay fewer eggs.
2,4-D + dicamba (Banvine®)	No	Yes	
2,4-D ester (e.g., Pasture-Kleen®)	Yes	No	Recommended for boundary spraying.

**Table 2: The effect of herbicides for other pasture weeds on ragwort flea beetles**

Herbicide	Toxic to beetles	Does spray encourage egg laying?	Comments
Glyphosphate (e.g., Roundup®)	No	?	Damages pasture.
MCPB	Unlikely	May boost egg laying on ragwort plants in the short term	Does not kill established ragwort plants. Use for other pasture weeds, especially thistles and buttercups.
Thifensulfuron methyl (Harmony®)	No	Probably not	Does not kill ragwort. Used mainly for docks and buttercups but may damage pasture.

*These recommendations are derived from research on the effects of the most commonly used herbicides and are not intended as an endorsement for any particular brand. The name or findings of Landcare Research may not be used for advertising or promotional purposes.*

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