

General principles for Good Management Practices



Glyphosate

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What is glyphosate?

Glyphosate is a broad-spectrum herbicide commonly used by farmers, gardeners and land managers, in New Zealand and around the world. It is a valuable tool that can reduce the time, cost and environmental impact of weed management, whilst improving crop yields.

However, public concern about the potential negative impacts of glyphosate on the environment and on human health are increasing, and several countries have restricted or banned its use. Alongside this, there is growing evidence of some weed species developing glyphosate resistance.

Maintaining both glyphosate efficacy, and the social licence to use it, relies on appropriate and responsible use.

Glyphosate and crops

Always use glyphosate according to the product label and consider the use of alternative chemicals or weed management practices wherever possible.

- Controlling weeds before cultivation or crop establishment. ✓
- Controlling weeds on headlands and fence lines. ✓
- Controlling weeds close to harvest – check your crop contract. ?
- Should not be used as a pre-harvest desiccant. ✗

Making sure it works

To get the best possible glyphosate efficacy:



Do

- Know your water and address pH or hardness issues if required.
- Apply recommended rates for species present.
- Use with a surfactant.
- Check spray equipment has the right nozzle and operates at the right pressure



Don't

- Apply immediately after heavy grazing (less leaf to intercept glyphosate).
- Graze treated paddocks for at least three days (to allow translocation).
- Spray plants that are covered in dirt.
- Apply just before rain (needs up to six hours to be rain-fast).

Making sure it works



Environmental factors

- At low humidity droplets dry quickly, reducing plant uptake.
- Best applied during daylight as photosynthesis aids glyphosate.
- Temperature can affect both absorption and translocation. Optimum air temperature 15 – 25°C

Water quality



- Glyphosate works best in acidic conditions. The ideal pH for a glyphosate + water solution is pH 4.0-5.0.
- Use clean water with no clay or organic matter as these can bind to the glyphosate molecules and reduce efficacy.
- Hard water reduces efficacy as calcium and magnesium bind to glyphosate molecules.

Biological factors



- Glyphosate is not as effective on stressed plants due to reduced translocation.
- Glyphosate is more effective on young, actively growing plants.
- Understand the biology of the target weeds, not all weeds respond the same way e.g.
 - Poor control of Californian thistle in early spring.

General principles for effective weed management

- 1 Understand the biology of the weeds present.
- 2 Use a range of approaches and focus on preventing weed seed production and reducing the number of weed seed in the soil seedbank.
- 3 Plant into weed-free paddocks and then keep fields as weed free as possible.
- 4 Plant weed-free crop seed.
- 5 Examine paddocks regularly and frequently.
- 6 Use multiple herbicide mechanisms of action (MOAs) that are effective against the most troublesome weeds or those most prone to herbicide resistance.
- 7 Apply the labelled herbicide rate at recommended weed sizes.
- 8 Emphasise cultural practices that suppress weeds by using crop competitiveness.
- 9 Use mechanical and biological management practices where appropriate.
- 10 Prevent within-paddock and paddock-to-paddock movement of weed seed or vegetative propagules.
- 11 Manage weed seed at harvest and after harvest to prevent a build-up of the weed seedbank.
- 12 Prevent an influx of weeds into the field by managing field borders.



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(Adapted from Norsworthy et al., 2019)