

Managing Glyphosate-Resistant Annual Ryegrass in Vineyards

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DISAPPOINTING vineyard weed control is a major concern for many wine-grape growers, and is linked to a growing incidence of glyphosate resistance – especially in annual ryegrass.

University of Adelaide weed management experts Dr Peter Boutsalis and associate professor Christopher Preston have confirmed glyphosate-resistant ryegrass in 17 vineyards in South Australia and West Australia.

Resistance is believed to be even more widespread in South Australia's major grape-growing regions, including Clare Valley, McLaren Vale, Coonawarra, and the Barossa Valley. Margaret River, Great Southern and Manjimup in WA also have their share of glyphosate resistance.

Under-vine weed control in vineyards across Australia has depended heavily on glyphosate herbicides, which, until recently, have provided excellent and cost-efficient weed control. However, increasing numbers of growers are finding that glyphosate no longer effectively controls annual ryegrass.

All cases of glyphosate-resistant weeds confirmed to date share three common factors:

- Intensive (year to year) use of glyphosate
- Lack of rotation with other herbicide modes of action
- Little or no tillage following glyphosate application, and a lack of other non-herbicide management practices.

How resistance develops

A small number of weed plants may be naturally resistant to a herbicide, surviving an application, and setting seed. With repeated use of the same herbicide, susceptible plants are killed but resistant plants continue to survive and become an increasing proportion of the weed population.

Signs of glyphosate resistance?

Growers will notice that a scattering of single plants or patches of plants will have survived a glyphosate application. Resistant plants might initially appear to be affected by the spray, but recover after a few weeks. Early and rapid control of these patches will prevent them from setting seed and spreading the resistance problem further.



The Barossa Valley trial site, in a vineyard with a high incidence of glyphosate-resistant ryegrass.

If you suspect herbicide-resistance, testing of surviving weeds is advised.

Mode of action matters

Australia was the first country to classify herbicides in groups, according to their mode of action (indicated by a letter code on the product label), and to reflect the resistance risk. Glyphosate is represented in Group M.

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Key aspects of an effective strategy to control resistant ryegrass are:

- to use other herbicide options, and to rotate herbicides from different mode-of-action groups
- to minimise the potential of resistant annual ryegrass to set seed.

Rotating herbicides with different modes of action is also the key to preventing or minimising the development of herbicide resistance in the first place.

Alternating the use of glyphosate (Group M) with different herbicide groups is widely recommended to preserve its usefulness for controlling vineyard weeds.



Poor control of glyphosate-resistance annual ryegrass after a glyphosate application

Successful control of herbicide-resistant ryegrass

In 2010, herbicide options for controlling glyphosate-resistant ryegrass were investigated in trials in Barossa Valley and Coonawarra vineyards.

Research and development officer Gereon Schnippenkoetter said the results were heartening, even at the Barossa Valley site where the incidence of resistance was considered particularly high.



Good control of glyphosate-resistant ryegrass provided by Alliance (4L/ha) followed by an application of Stomp 440 (9L/ha) plus Shirquat (2L/ha).

“The objective of the trials was to investigate herbicides with different modes of action to glyphosate (Group M). Herbicides included in the trials were registered herbicides such as Alliance (Group L & Q), Shirquat (Group L) and Stomp (Group D), either alone or in combination.

“Effective control of glyphosate-resistant annual ryegrass was obtained with Alliance, and with a combination of Shirquat plus Stomp.

“Stomp provided effective pre-emergent control of resistant ryegrass, with continued control for 3 to 4 months after application.

“Control of other key vineyard weeds was assessed at the same time, with Alliance providing good control of capeweed, prickly lettuce, sowthistle and medic, as well as resistant ryegrass.”

Mr Schnippenkoetter recommended a higher spray volume (250L/ha and above) for effective control of annual ryegrass. Nozzles delivering medium spray quality droplets are also recommended.

Another trial in the Riverland region of South Australia confirmed effective control of feathertop Rhodes grass with a pre-emergent application of Stomp.

Further evaluation of herbicide options and their effectiveness in vineyards is planned for this winter and early spring.

For more information about the identification and management of resistant annual ryegrass, visit these websites:

- www.glyphosateresistance.org.au
- www.croplifeaustralia.org.au

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