

SPECIFIC GUIDELINES FOR GROUP 9 HERBICIDES

GROUP	9	HERBICIDE
-------	---	-----------

Moderate resistance risk:

Globally, herbicide resistance to the Group 9 herbicide mode of action has been confirmed and documented in more than 30 weed species across more than 25 countries.

Resistance to Group 9 herbicides is significant given it is the most important and most widely used herbicide.

Group 9 resistance occurs in Australia in 20 weed species including more than 1,000 populations of annual ryegrass, more than 200 populations of awnless barnyard grass, brome grass, more than 50 populations of common sow thistle, 10 populations of feathertop Rhodes grass, one population each of capeweed and Patterson's curse, more than 100 populations of flax-leaf fleabane, liverseed grass, sweet summer grass, wild radish, wild oats and windmill grass.

The following factors are common to all cases of Group 9 resistance:

- Lack of rotation of other herbicide modes of action;
- A Group 9 herbicide has been used for 12 – 15 years or more; and
- There has been minimal or no soil disturbance following application.

Given the very important role of glyphosate in Australian farming systems, the Australian agricultural industry has developed strategies for sustainable use of glyphosate. For more information refer to the Australian Glyphosate Sustainability Working Group website <https://webarchive.nla.gov.au/awa/20200113011304/http://pandora.nla.gov.au/pan/179386/20200109-1842/glyphosateresistance.org.au/index.html>.

A number of these cases of resistance to glyphosate have occurred in horticultural (vines, tree crops & vegetables) and non-cropping situations (e.g. airstrips, railways, firebreaks, fencelines, roadsides, driveways, irrigation ditches, around sheds), with the balance occurring in no-till broadacre cropping systems.

To assist in delaying the onset of resistance, consider alternating Group 9 herbicides with herbicides from other modes of action, such as Group 22 (e.g. paraquat), Group 10 (e.g. glufosinate) or Group 34 (e.g. amitrole).

Given the demonstrated propensity of weeds to develop resistance to multiple herbicide classes,

Please note:

This strategy is a guide only and does not endorse particular products, groups of products or cultural methods in terms of their performance. Always follow the product label for specific use instructions. While all effort has been made with the information supplied in this document, no responsibility, actual or implied, is taken for the day to day accuracy of product or active constituent specific information. Readers should check with the Australian Pesticides and Veterinary Medicines Authority's product database for contemporary information on products and actives. The database can be sourced through www.apvma.gov.au. The information given in this strategy is provided in good faith and without any liability for loss or damage suffered as a result of its application and use. Advice given in this strategy is valid as at 30 June 2022. All previous versions of this strategy are now invalid.

Integrated Weed Management principles should be incorporated wherever possible to minimise the risk of selecting for glyphosate resistance. Strategies may include the use of cultivation, the double knock technique¹, strategic herbicide rotation, grazing, baling etc.

For further information in canola: <http://www.roundupreadycanola.com.au/prod/media/3672/rr-canola-technologies-rmp.pdf>

For further information in cotton: <http://www.cottoninfo.com.au/publications/herbicide-resistance-management-strategy> and http://www.bollgard3.com.au/prod/media/1708/m0074-weed-resistant-management-plan_v15.pdf

The above recommendations should be incorporated into an Integrated Weed Management (IWM) program. In all cases try to ensure surviving weeds from any treatment do not set and shed viable seed. Keep to integrated strategies mentioned in this brochure including cultural weed control techniques to reduce the weed seedbank. Make sure you mix and rotate herbicides from different mode of action groups. Always consult the product label prior to use.

Chemical family	Active constituent (first registered trade name)
GROUP 9	
Inhibition of 5-enolpyruvyl shikimate-3 phosphate synthase (EPSP inhibition)	
Glycines	glyphosate (Arsenal Xpress®*, Bantox*, Broadway®*, Firestorm®*, Illico®*, Resolva®*, Roundup®, Sandoban®*, Tough Roundup® Weedkiller*, Trounce®*, Yates Pathweeder®*)

* This product contains more than one active constituent

Notes:

- List of chemical families, approved active constituents and, in parenthesis, the trade name of the first registered product or successor. Refer to the APVMA website (www.apvma.gov.au) to obtain a complete list of registered products from the PUBCRIS database.

¹ The double knock technique is defined as using a full cut cultivation OR the full label rate of a paraquat-based product (Group 22) following the glyphosate (Group 9) knockdown application.

Please note:

This strategy is a guide only and does not endorse particular products, groups of products or cultural methods in terms of their performance. Always follow the product label for specific use instructions. While all effort has been made with the information supplied in this document, no responsibility, actual or implied, is taken for the day to day accuracy of product or active constituent specific information. Readers should check with the Australian Pesticides and Veterinary Medicines Authority's product database for contemporary information on products and actives. The database can be sourced through www.apvma.gov.au. The information given in this strategy is provided in good faith and without any liability for loss or damage suffered as a result of its application and use. Advice given in this strategy is valid as at 30 June 2022. All previous versions of this strategy are now invalid.

SPECIFIC GUIDELINES FOR GROUP 10 HERBICIDES

GROUP	10	HERBICIDE
-------	----	-----------

Moderate resistance risk:

Glufosinate-ammonium (Basta®, Liberty®) is the only Group 10 herbicide registered in Australia.

Resistance to Group 10 herbicides is rare, and currently there are no documented cases of resistant weeds in Australia. Group 10 resistance has been discovered in other countries for 2 weed species – crowsfoot grass (*Eleusine indica*) and Italian ryegrass (*Lolium perenne* ssp. multiflorum) – which demonstrates the potential for weeds to develop resistance to this mode of action.

The risk of resistance to glufosinate-ammonium will be highest in situations where there is a reliance on this herbicide alone for weed control. This includes situations where:

- other herbicides in the farming system, especially glyphosate, have developed resistance;
- weed escapes following application of glufosinate-ammonium are allowed to set and shed viable seed; and
- there is a lack of non-herbicide weed control methods used.

Weed control from glufosinate-ammonium is affected by climatic conditions (refer to the product label).

Horticulture

1. Rotate glufosinate-ammonium with other knockdown herbicides with a different mode of action, such as Group 22 (e.g. paraquat), Group 34 (e.g. amitrole) or Group 9 (e.g. glyphosate).
2. Where possible use residual herbicides (that are effective on the same weeds as glufosinate-ammonium) either alone or in mixture with glufosinate-ammonium.
3. Where possible use alternative modes of action to selectively control grass and broadleaf weeds.

Fallow

In high summer rainfall areas, weed control in fallow is heavily reliant on herbicides. Multiple sprays

Please note:

This strategy is a guide only and does not endorse particular products, groups of products or cultural methods in terms of their performance. Always follow the product label for specific use instructions. While all effort has been made with the information supplied in this document, no responsibility, actual or implied, is taken for the day to day accuracy of product or active constituent specific information. Readers should check with the Australian Pesticides and Veterinary Medicines Authority's product database for contemporary information on products and actives. The database can be sourced through www.apvma.gov.au. The information given in this strategy is provided in good faith and without any liability for loss or damage suffered as a result of its application and use. Advice given in this strategy is valid as at 30 June 2022. All previous versions of this strategy are now invalid.