



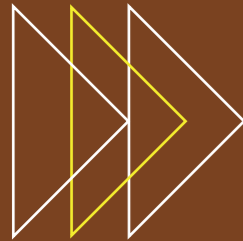
**Alion**<sup>®</sup>



# **ALION<sup>®</sup> 500 SC** HERBICIDE

*TECHNICAL GUIDE*

LONGER LASTING  
PRE-EMERGENT WEED  
CONTROL



**Alion® 500 SC Herbicide provides new herbicide technology for agriculture to deliver highly effective pre-emergent control on a wide range of grass and broadleaf weeds.**

Alion offers up to 10 months of pre-emergence weed control, simplifying weed control in almonds, grapes, citrus & agricultural fence lines, allowing more time to focus on other important management tasks.

## KEY ADVANTAGES

- ▶ Long-lasting weed control
- ▶ Controls a wide range of grass and broadleaf weeds
- ▶ Low dose rate
- ▶ Flexible application window
- ▶ Good margin of safety to trees

## AT A GLANCE

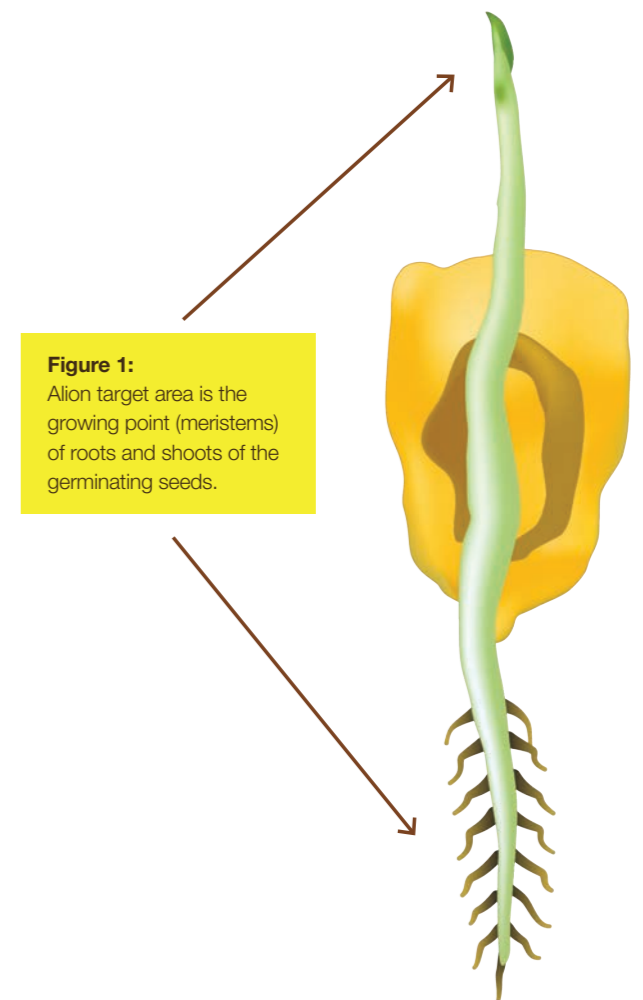
|  |   |
|--|---|
| <b>Active ingredient</b>               | Indaziflam 500 g/L  |
| <b>Brand name</b>                      | Alion® 500 SC Herbicide   |
| <b>Modes of action</b>                 | Alion is a Cellulose Biosynthesis Inhibitor (CBI)   |
| <b>Chemical class</b>                  | Alkylazines   |
| <b>Chemical group</b>                  | Group 29 (O)  |
| <b>Crops</b>                           | Almonds, citrus, grapes, agricultural fence lines   |
| <b>Use rate</b>                        | Almond and citrus orchards and grape vineyards: 50 – 150 mL/ha<br>Agricultural fence lines: 150 mL/ha   |
| <b>Weed spectrum</b>                   | Pre-emergence control of a wide range of annual grass and broadleaf weeds, including those resistant to glyphosate, glufosinate-ammonium and paraquat herbicides.           |
| <b>Withholding periods</b>             | Harvest: Almonds, citrus & grapes: Do not harvest for 14 days after application.<br>Grazing: Do not graze or cut for stock food for 7 days after application.               |
| <b>Re-cropping</b>                     | Re-cropping periods apply for Alion. Refer to the label for further information.  |
| <b>Compatibility</b>                   | Glyphosate, glufosinate-ammonium & paraquat. For more information, contact your advisor or Bayer representative.  |
| <b>Export Slaughter Interval (ESI)</b> | 3 days. Livestock that has grazed on treated areas should be placed on clean feed for 3 days prior to slaughter. Contact your Bayer representative for further information. |
| <b>Formulation</b>                     | Suspension concentrate (SC)   |
| <b>Pack size</b>                       | 1 L   |

## ACTIVE INGREDIENT AND MODE OF ACTION

Indaziflam, the active ingredient in Alion, is classed as a Cellulose Biosynthesis Inhibitor (CBI). By inhibiting crystalline cellulose deposition, Alion inhibits the formation of new plant cell walls in the growing point (meristem) of the roots and shoots (Figure 1) shortly after the germination phase of seeds and prior to weed emergence.

As a result, forming roots and stems is impossible, preventing weeds from emerging.

Failure of emergence is the most common symptom of target weed exposure to indaziflam, however other symptoms are possible. These symptoms include short, swollen coleoptiles in grass weeds and swollen hypocotyls in broadleaf weeds. These effects lead to stunted, deformed plants that are controlled shortly after emergence.



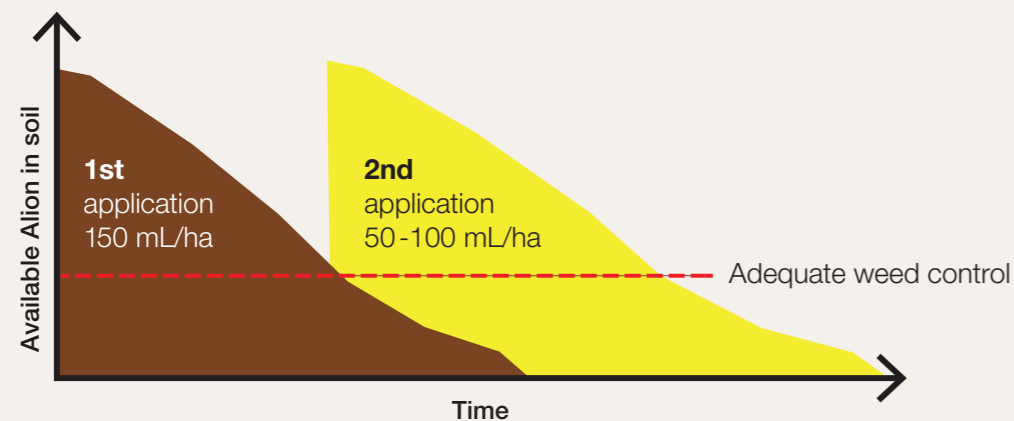
**Figure 1:**  
Alion target area is the growing point (meristems) of roots and shoots of the germinating seeds.



## PRODUCT RATE SELECTION ALMOND AND CITRUS ORCHARDS AND VINEYARDS

- Alion has a rate range of 50 - 150 mL/ha.
- Use higher rate of 150 mL/ha sprayed area (or 100 mL/ha broadcast application) in the first season of use.
- Maintain high rate (150 mL/ha) in subsequent years if weed pressure is high and/or extended residual control is required.
- Use a lower rate (e.g. 50 – 100 mL/ha) in subsequent years if weed pressure is low and/or shorter residual control is required. Do not exceed 100 mL/ha if applying as a broadcast application over the total orchard/vineyard area (Figure 2).

**Figure 2:** Recommended rate selections to provide adequate weed control over time for almond and citrus orchards and vineyards (if weed pressure is low).



## PRODUCT RATE SELECTION AGRICULTURAL FENCE LINES

- Alion has a rate of 150 mL/ha for application to fence lines.
- Do not exceed 150 mL/ha (sprayed area) in any 6-month period.



## APPLICATION

- Apply in a mix with a knockdown herbicide if weeds are present. Alion does NOT provide control of weeds already emerged at the time of application.
- Apply in a uniform broadcast or band to the target area.
- Avoid cultivation or other methods of soil disturbance after application.
- Spray water volume - 150 - 400 L/ha.
- Use COARSE droplet-producing nozzle tips.
- Do not apply if heavy rains or storms are forecast within 3 days.

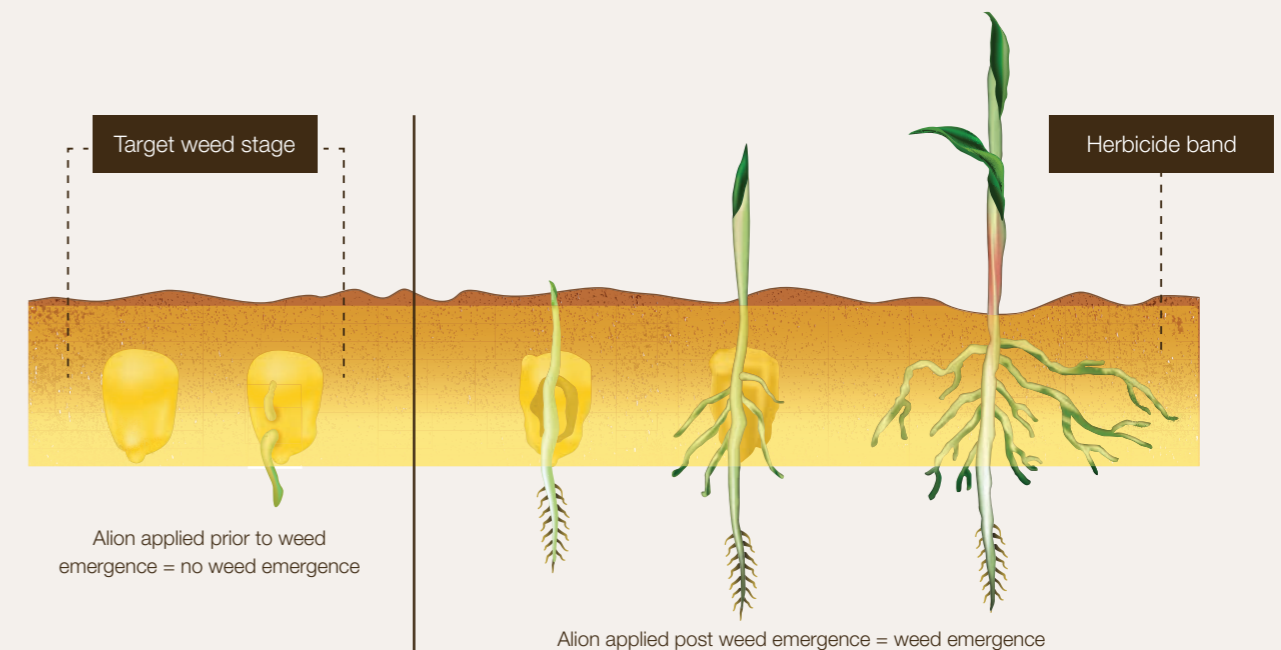


## INCORPORATION

**Moisture is required to incorporate Alion into the soil and facilitate uptake by germinating seeds.**

- For the best results, an incorporation of rainfall (at least 6 mm) is required as soon as possible after application (Figure 3).
- Dry soil conditions following application may result in reduced weed control.
- Alion can offer a level of control of surface-germinating weed seeds when applied to moist soil.
- Alion can sit on soil surface for up to 4 weeks without incorporation by rainfall or irrigation before a level of efficacy reduction is noticed.
- Under-canopy or overhead irrigation is also suitable for incorporation.

**Figure 3.** When incorporated into the soil Alion forms a band of activity.



### MOISTURE AT APPLICATION



**Dry soil** – no follow-up rainfall.  
**Moist soil** – no follow-up rainfall before weeds germinate.



**Dry soil** – rainfall or suitable irrigation within 4 weeks.  
**Moist soil** – follow-up rainfall before weeds germinate.



## MIXING GUIDELINES

Always follow the correct mixing order when mixing Alion with other herbicides. Using the correct mixing order ensures that the mixed solution is homogenous and each product in the mix can perform to its

potential. When mixing Alion with soluble concentrate (SL) knockdown products e.g. glyphosate, paraquat or glufosinate-ammonium, always add Alion to the tank before the knockdown product.



| STEPS | FORMULATION / ADDITIVE             | INSTRUCTIONS   |
|-------|------------------------------------|--|
| 1     | Water                              | Half-to three-quarters fill the spray tank with water and maintain good agitation throughout the mixing process. Always use the cleanest water available, especially if glyphosate is to be included in the spray mixture.   |
| 2     | Conditioners                       | Use these products to ameliorate water hardness, pH or aid in compatibility.   |
| 3     | Dry products (WG, WP)              | Add to the tank gradually, allowing at least 10 minutes for thorough dispersal.  |
| 4     | Suspension concentrates (SC)       | Shake drums thoroughly prior to adding and rinse drums into the tank. <b>Add Alion as the final SC product.</b>  |
| 5     | Emulsifiable concentrates (EC)     | Allow at least 10 minutes for thorough mixing.   |
| 6     | Soluble concentrates (SL) (Part A) | Non-glyphosate-based SL products.  |
| 7     | Water                              | Fill to approx. 95% of desired final volume.   |
| 8     | Soluble concentrates (SL) (Part B) | Add glyphosate-based SL products.  |
| 9     | Adjuvants                          | Add non-water conditioning adjuvants and spray oils or other adjuvants last. Add water to 100% of desired volume. Do not allow mixtures to stand unagitated. Mixtures should not be left standing in the spray tank over night or if the spraying operation cannot be completed for other reasons. |

**Always add Alion to the spray tank and agitate well before adding knockdown products such as Roundup UltraMAX, paraquat or glufosinate-ammonium.**

- When there are multiple products mixed in batching units using low water volumes, compatibility may be reduced.
- When using spray marker dyes, ensure label directions are followed for correct step to add to spray mix.
- When using cold water a longer dispersion/mixing time may be required for some formulations.
- Apply spray mixtures promptly and don't allow to stand unagitated for long periods.
- If unsure of compatibility, conduct a jar test with the same field ratios and concentrations of planned mixture utilising the same water source.

## CROP SAFETY

Apply in orchards and vineyards where trees and vines have been established for a **minimum of three years** after transplanting and are exhibiting normal growth and good vigour.

The application of Alion in sandy soils or soils that have open channels or cracks on the soil surface may allow for downward movement of the product into the root zone and cause crop damage. Avoid use in intensively draining soils (stony or gravelly with large pores or very sandy soil with low organic matter and clay content) or cracked clay soils, where rapid movement to plant roots may take place.

Do not apply on soil with gravel content greater than 20%.

Do not apply in vineyards grown on soil classified as sand (>85% sand).

Do not apply to soils that have open channels or cracks in the soil surface, or heavily composted soils where tree roots have grown close to the surface or into the composted area (direct contact with the crop roots must be avoided).

Do not apply in flood-irrigated orchards or vineyards.

Do not apply where trees or vines are stressed (exhibit low vigour or poor health).

Do not apply to trunks unless fully callused or protected with a physical barrier (some overspray onto mature brown bark is acceptable).

Avoid contact with green bark, foliage and fruit.

**Individual replants:** Individual trees and grapevines may be planted anytime following an application of Alion, if the treated soil is removed from the transplant hole and soil that has not received any application of Alion within the last 12 months is used around the roots of the new transplant.

**Re-cropping statement:** Alion is intended for use in perennial almond and citrus orchards and vineyards. Do not rotate with annual crops or crops not listed on this label within 24 months after the last application. Planting earlier than this time may result in crop injury or death.

**Caution:** Due to the length of residual control and breadth of weed control, areas treated with Alion may be susceptible to wind and water erosion depending on local soil and weather conditions.

## BUFFER ZONES

| Application rate   | Boom height above the target canopy | Mandatory downwind buffer zones |                       |                  |                  |                 |
|--------------------|-------------------------------------|---------------------------------|-----------------------|------------------|------------------|-----------------|
|                    |                                     | Bystander areas                 | Natural aquatic areas | Pollinator areas | Vegetation areas | Livestock areas |
| 150 mL/ha or lower | 0.5 m or lower                      | 0 m                             | 30 m                  | 0 m              | 55 m             | 0 m             |

## STATEMENT ON EXPORT CROPS

Refer to [crop.bayer.com.au/alion](http://crop.bayer.com.au/alion) for full export statement.

## TOXICITY TO NON-TARGET ORGANISMS

|  |   |
|--|---|
| <b>Earthworms</b>                      | Acute toxicity (14 day) = LC <sup>50</sup> >1000 mg a.i./kg soil (dry weight).  |
| <b>Soil microorganisms</b>             | No impact on carbon and nitrogen transformation when applied to soil at label rates = minimal impact on soil microorganisms |
| <b>Bees and other arthropods</b>       | Indaziflam is not classified as toxic to bees or other arthropod species.   |
| <b>Marine algae and aquatic plants</b> | Indaziflam is very toxic to some marine algae and aquatic plants.   |

## RESISTANCE MANAGEMENT

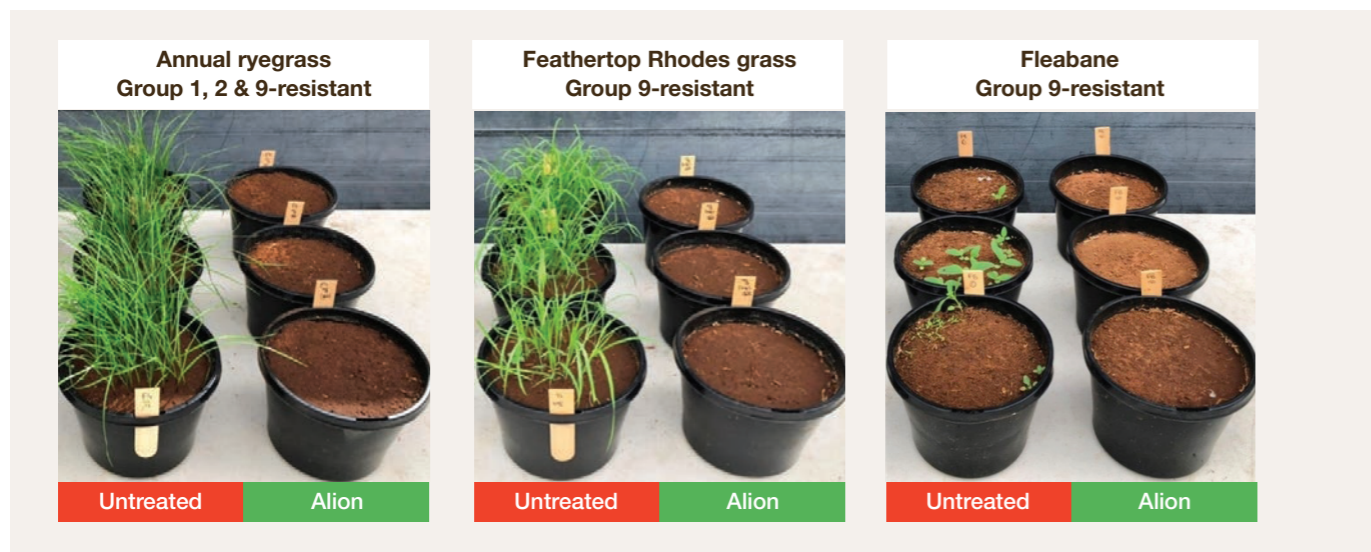
Alion 500 SC Herbicide is a member of the alkylazine group of herbicides and has the inhibitor of cell wall (cellulose) synthesis mode of action. For weed resistance management Alion is a Group 29 herbicide. Some naturally occurring weed biotypes resistant to Alion, and other Group 29 herbicides, may exist through normal genetic variability in any weed population. These resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly.

These resistant weeds will not be controlled by Alion or other Group 29 herbicides. DO NOT rely exclusively on Alion for weed control. Use as part of an integrated weed management program involving herbicides with other modes of action and non-chemical methods of control. Since occurrence of resistant weeds is difficult to detect prior to use, Bayer CropScience Pty Ltd accepts no liability for any losses that may result from the failure of Alion to control resistant weeds.

## EFFICACY ON HERBICIDE-RESISTANT BIOTYPES

In pot study trials conducted by Plant Science Consulting in 2022. Alion showed excellent efficacy on Group 1, 2 & 9-resistant annual ryegrass, Group 9-resistant feathertop

Rhodes grass and Group 9-resistant fleabane. Note experimental conditions may not always reflect field conditions.



## WEED SPECTRUM

| Common name  | Scientific name  |
|--|--|
| Amaranth   | <i>Amaranthus</i> spp.   |
| Annual ryegrass  | <i>Lolium rigidum</i>  |
| Asthma weed  | <i>Euphorbia hirta</i> , <i>Euphorbia hyssopifolia</i>           |
| Awnless barnyard grass, barnyard grass, cockspur grass | <i>Echinochloa</i> spp.  |
| Barley grass   | <i>Hordeum leporinum</i>   |
| Billygoat weed, blue billygoat weed                    | <i>Ageratum houstonianum</i> , <i>Ageratum conyzoides</i>        |
| Bindii   | <i>Soliva sessilis</i>   |
| Birdsfoot trefoil                                      | <i>Lotus corniculatus</i>  |
| Black pigweed  | <i>Trianthema portulacastrum</i>                                 |
| Blackberry nightshade, glossy nightshade               | <i>Solanum nigrum</i> , <i>Solanum americanum</i>                |
| Bristle mallow   | <i>Modiola caroliniana</i>                                       |
| Brome grass, soft brome                                | <i>Bromus</i> spp.   |
| Burr medic   | <i>Medicago polymorpha</i>                                       |
| Caltrop  | <i>Tribulus terrestris</i>                                       |
| Canadian fleabane, fleabane                            | <i>Conyza</i> spp., <i>Erigeron</i> spp.                         |
| Capeweed   | <i>Arctotheca calendula</i>                                      |
| Catsear, flatweed, dandelion                           | <i>Hypochaeris radicata</i> , <i>Taraxicum officinale</i>        |
| Chickweed  | <i>Stellaria media</i>   |
| Clammy goosefoot                                       | <i>Dysphania pumilio</i>   |
| Clover, white clover                                   | <i>Trifolium</i> spp.  |
| Cobbler's pegs, blackjack                              | <i>Bidens pilosa</i>   |
| Common sida  | <i>Sida rhombifolia</i>  |
| Cress weed   | <i>Rorippa</i> spp.  |
| Crowsfoot grass, wiregrass                             | <i>Eleusine indica</i>   |
| Cudweed  | <i>Gnaphalium</i> spp., <i>Gamochaeta</i> spp.                   |
| Curly dock   | <i>Rumex crispus</i>   |
| Deadly nightshade                                      | <i>Atropa belladonna</i>   |
| Dwarf jo-jo  | <i>Soliva anthemifolia</i>                                       |
| Fat hen  | <i>Chenopodium album</i>   |
| Feathertop Rhodes grass                                | <i>Chloris virgata</i>   |
| Guinea grass   | <i>Megathyrsus maximus</i>                                       |
| Hairy panic, panic grass                               | <i>Panicum effusum</i>   |
| Heliotrope, clasping heliotrope                        | <i>Heliotropium amplexicaule</i> , <i>Heliotropium europaeum</i> |
| Indian hedge mustard                                   | <i>Sisymbrium orientale</i>                                      |

| Common name  | Scientific name                                       |
|--|---|
| Jersey cudweed   | <i>Helichrysum luteoalbum</i>                         |
| Knobby club rush   | <i>Ficinia nodosa</i>                                 |
| Lovegrass  | <i>Eragrostis</i> spp.                                |
| Marshmallow, mallow, cheese weed                                   | <i>Malva</i> spp.                                     |
| Morning glory  | <i>Ipomoea</i> spp.                                   |
| Mossman river grass  | <i>Cenchrus echinatus</i>                             |
| Pale pigeon grass  | <i>Setaria pumila</i>                                 |
| Panic veldt grass  | <i>Ehrharta erecta</i>                                |
| Paspalum   | <i>Paspalum dilatatum</i>                             |
| Paterson's curse   | <i>Echium plantagineum</i>                            |
| Plantain   | <i>Plantago</i> spp.                                  |
| Purslane, pink purslane, pigweed                                   | <i>Portulaca oleracea</i> , <i>Portulaca pilosa</i>   |
| Scotch thistle   | <i>Onopordum acanthium</i>                            |
| Silvergrass  | <i>Vulpia bromoides</i>                               |
| Silvery hair grass   | <i>Aira cupaniana</i>                                 |
| Sorrel   | <i>Rumex acetosella</i>                               |
| Sowthistle, milk thistle   | <i>Sonchus oleraceus</i>                              |
| Spear thistle  | <i>Cirsium vulgare</i>                                |
| Speedwell  | <i>Veronica persica</i>                               |
| Storksbill, blue storksbill  | <i>Erodium cicutarium</i> , <i>Erodium cicutarium</i> |
| Summer grass, crabgrass, tropical finger grass, hairy finger grass | <i>Digitaria</i> spp.                                 |
| Sweet signal grass   | <i>Moorochloa eruciformis</i>                         |
| Sweet vernal grass   | <i>Anthoxanthum odoratum</i>                          |
| Tall sedge   | <i>Carex appressa</i>                                 |
| Thickhead  | <i>Crassocephalum crepidioides</i>                    |
| Toad rush  | <i>Juncus bufonius</i>                                |
| Vasey grass  | <i>Paspalum urvillei</i>                              |
| White eye  | <i>Richardia brasiliensis</i>                         |
| Wild oats  | <i>Avena fatua</i>                                    |
| Wild radish  | <i>Raphanus raphanistrum</i>                          |
| Wild turnip  | <i>Brassica rapa</i>                                  |
| Windmill grass   | <i>Chloris truncata</i>                               |
| Winter grass   | <i>Poa annua</i>                                      |
| Wireweed, knotgrass, knotweed                                      | <i>Polygonum aviculare</i>                            |
| Yorkshire fog, fog grass   | <i>Holcus lanatus</i>                                 |

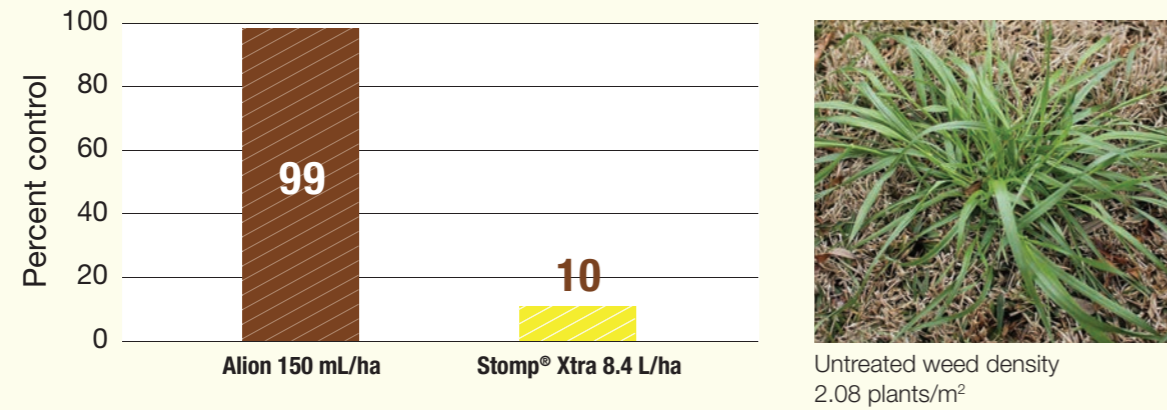




## TRIAL DATA

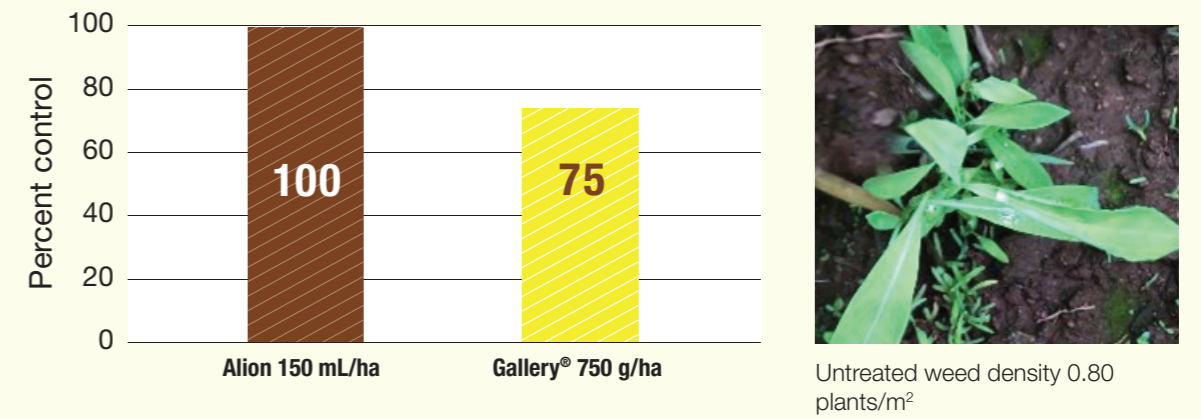
### Annual ryegrass (*Lolium rigidum*) control

Percent control of annual ryegrass at 215 days after application in citrus orchard 22VE61



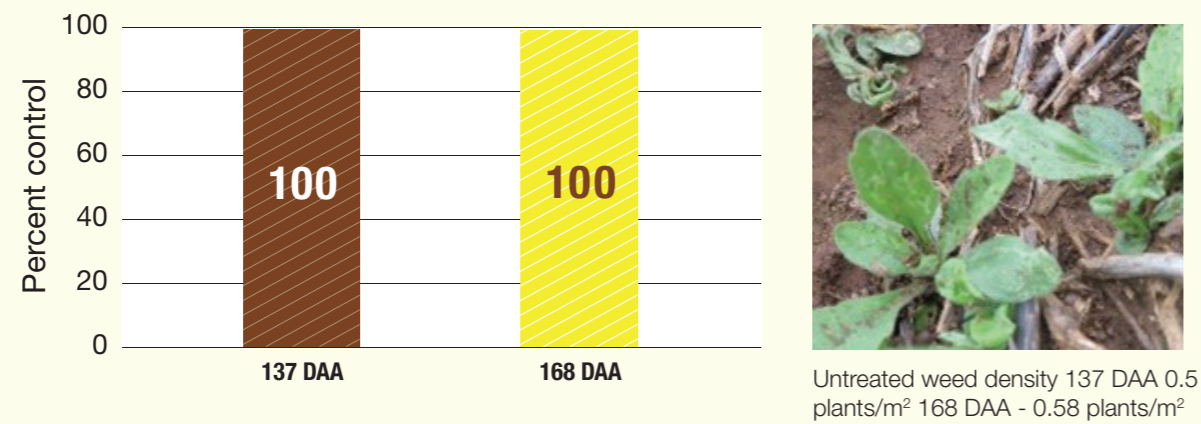
### Wireweed (*Polygonum aviculare*) control

Percent control of wireweed at 129 days after application in vineyards 11WB11



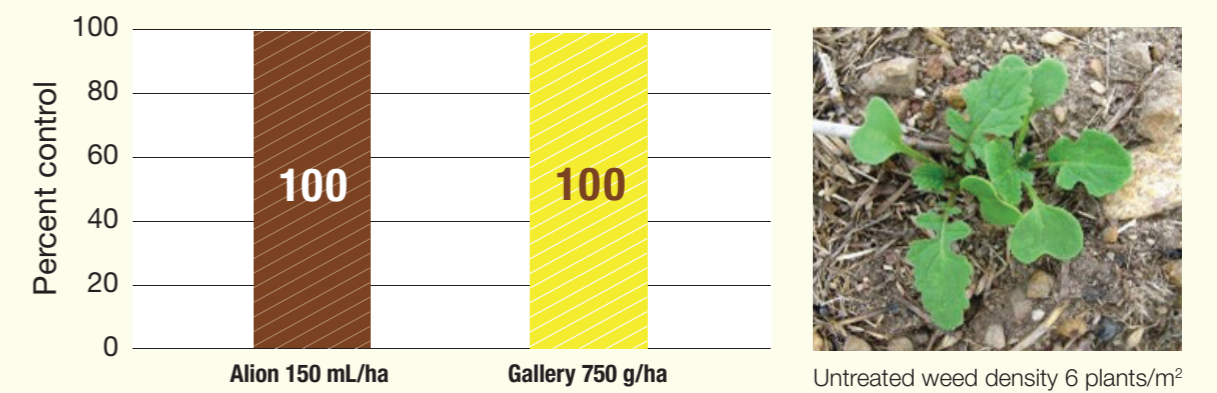
### Fleabane (*Erigeron bonariensis*) control

Percent control of fleabane at 137 and 168 days after application by Alion applied at 150 mL/ha in almond orchard 11VE08



### Wild radish (*Raphanus raphanistrum*) control

Percent (%) control of wild radish at 129 DAA in vineyard 11WB11



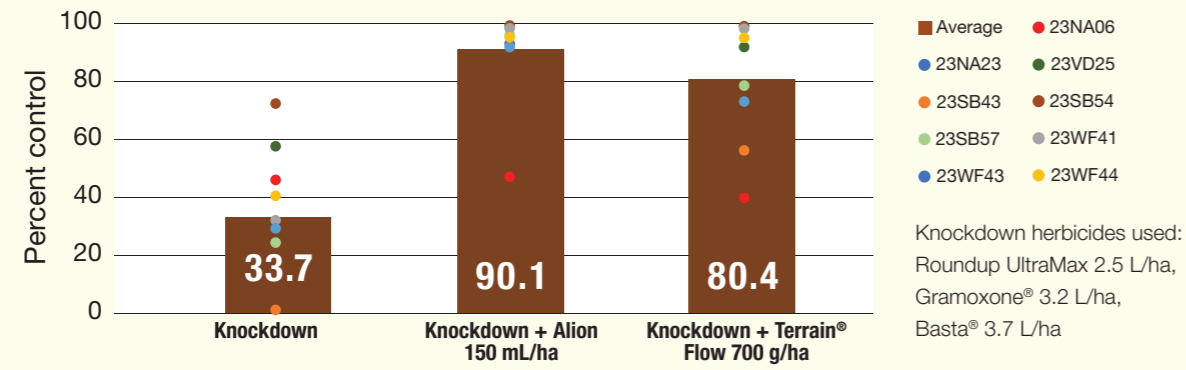




# TRIAL DATA

## Fence lines annual ryegrass (*Lolium rigidum*) control

Percent (%) control of annual ryegrass in fence line situations across nine trial sites at final assessment timing (105 - 189 DAA)



## Citrus orchard demonstration trial – Bundaberg region, 2024

Photos taken 165 DAA



Untreated



Roundup UltraMAX 2.5 L/ha  
Alion 150 mL/ha

## Fence line demonstration trial - Kybybolite SA, 2024

Photos taken 335 DAA - 22SB14



Untreated



Roundup UltraMAX 2.5 L/ha  
Alion 150 mL/ha

## Vineyard demonstration trial - WA 2024

Photos taken 299 DAA



Alion 150 mL/ha +  
glyphosate 450 2 L/ha



Rifle® 440 8 L/ha +  
glyphosate 450 2 L/ha



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## GET IN TOUCH AND KEEP INFORMED

If you'd like more information on Alion, visit [crop.bayer.com.au/alion](http://crop.bayer.com.au/alion), or contact one of the following Territory Business Managers:

|                       | Territory Business Manager | Location   | Mobile     | Technical Services Agronomist | Mobile     |
|-----------------------|----------------------------|--|------------|-------------------------------|------------|
| <b>Broadacre WA</b>   | Courtney Humphrey          | Geraldton & Midwest                                | 0476496073 | Matt Willis (WA)              | 0438516011 |
|                       | Mitchell Gill              | Midlands & Wheatbelt                               | 0457669684 |                               |            |
|                       | Glen Bradley               | Avon Valley & Central Wheatbelt                    | 0427265056 |                               |            |
|                       | Tim Sippe                  | Esperance & Lakes District                         | 0439265318 | James Lydon (WA)              | 0457407933 |
|                       | Mitchell Tuffley           | Great Southern                                     | 0418344859 |                               |            |
| <b>Broadacre SA</b>   | Cristina Vanstone          | Yorke Peninsula & Mid North                        | 0473929524 | Tim Murphy (SA)               | 0408772405 |
|                       | Craig Jackson              | Southeast SA, SA Mallee & Murraylands              | 0419423340 |                               |            |
|                       | Natasha O'Brien            | Eyre Peninsula                                     | 0428262623 |                               |            |
| <b>Broadacre East</b> | Wes Amor                   | Northeast VIC                                      | 0438019355 | Paul Tyson (VIC)              | 0475521660 |
|                       | Seamus McKinley            | VIC Mallee & Southwest Riverina                    | 0427330684 |                               |            |
|                       | Andrew Powell              | Western VIC  | 0419310938 |                               |            |
|                       | Ross Henley                | NSW Southwest Slopes/Eastern Riverina              | 0428033396 |                               |            |
|                       | Kyleigh Turner             | MIA/Western Riverina                               | 0409349878 |                               |            |
|                       | Jon Bennett                | Dubbo/Central West NSW                             | 0409490923 |                               |            |
| <b>Horticulture</b>   | Darren Alexander           | South Australia and Sydney Basin                   | 0447761366 | Troy Mulcahy (VIC)            | 0400020455 |
|                       | Alistar Beyer              | Southern VIC and Tasmania                          | 0447250734 |                               |            |
|                       | Ian Cook                   | Western Australia                                  | 0428430826 |                               |            |
|                       | Aedan Gorman               | Northern VIC, Southern NSW and Riverina            | 0438331184 | Nicholas Matthews (QLD)       | 0428736660 |
|                       | Tony Fitzgerald            | Far North Queensland                               | 0418226529 |                               |            |
|                       | David Higgins              | Burdekin and Bowen                                 | 0477675084 | Annie Challenor (NSW/QLD)     | 0407093547 |
|                       | Lore Saupp-Saunders        | Central Queensland                                 | 0400560234 |                               |            |
|                       | Josh Squibb                | South East Queensland and Northern New South Wales | 0427138874 |                               |            |
|                       | Damien Odgers              | Business Development Manager - Horticulture        | 0429425742 |                               |            |

This document is intended as a guide only. Always refer to label for directions for use and more information.

The information and recommendations set out in this brochure are based on tests and data believed to be reliable at the time of publication. Results may vary, as the use and application of the products is beyond our control and may be subject to climatic, geographical or biological variables, and/or developed resistance. Any product referred to in this brochure must be used strictly as directed, and in accordance with all instructions appearing on the label for that product and in other applicable reference material. So far as it is lawfully able to do so, Bayer CropScience Pty Ltd accepts no liability or responsibility for loss or damage arising from failure to follow such directions and instructions. © 2024 Bayer Group.

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