Onion

Strategic Agrichemical Review Process (SARP)

January 2025

Hort Innovation
Project – MT23001

Hort Innovation Project Number:
MT23001 – Strategic Agrichemical Review Process (SARP) - Updates

SARP Service Provider:
AGK Services

Purpose of the report:
This report was funded by Hort Innovation to investigate the pest problem, agrichemical usage and pest management alternatives for the onion industry across Australia. The information in this report will assist the industry with its agrichemical selection and usage into the future.

Date of report:
January 2025

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Communications Manager
Hort Innovation
Level 7, 141 Walker Street
North Sydney NSW 2060
Australia
Email: communications@horticulture.com.au
Phone: 02 8295 2300

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1. Summary

The strategic levy investment project Strategic Agrichemical Review Process (SARP) - Updates (MT23001) is part of the Hort Innovation Onion Fund. A Strategic Agrichemical Review Process (SARP), through the process of a desktop audit and industry liaison; Assesses the importance of the diseases, insects and weeds (plant pests) that can affect a horticultural industry;

(i) Assesses the importance of the diseases, insects and weeds (plant pests) that can affect a horticultural industry;
(ii) Evaluates the availability and effectiveness of fungicides, insecticides and herbicides (pesticides) to control the plant pests;
(iii) Determines any gaps in the pest control strategy and
(iv) Identifies suitable new or alternatives pesticides to address the gaps.

Alternative pesticides should ideally be selected for benefits of:

- Integrated Pest Management (IPM) compatibility
- Improved scope for resistance management
- Sound biological profile
- Residue and trade acceptance domestically and for export

The results of this process will provide the Onion Industry with sound pesticide usage for the future that the industry can pursue for registration with the manufacturer, or minor-use permits with the Australian Pesticide and Veterinary Medicines Authority (APVMA).

1.1 Diseases

The high priority diseases are:

Disease	Priority
Downy Mildew (*Peronospora destructor*)	H
Bacterial Soft Rot (*Dickeya chrysanthem* and *Pectobacterium carotovorum*)	H

1.2 Insects and other pests

The high priority insects and other pests are:

Insects and Other Pests	Priority
Onion Thrips (*Thrips tabaci*)	H
Plague Thrips (*Thrips imaginis*)	H
Western Flower Thrips (*Frankliniella occidentalis*)	H
Cutworms (*Agrotis* spp.)	H
Onion Maggot (*Delia platura*)	H

1.3 Weeds

The high priority weeds are:

Weeds	Priority
Wireweed (*Polygonum aviculare*)	H
Annual Ryegrass (*Lolium rigidum*)	H
Flaxleaf Fleabane (*Conyza bonariensis*)	H

1.4 Plant Growth Regulators

There were no high priority plant growth regulator issues identified but the moderate priority issues are:

PGR Issue	Priority
Improve storage life	M
Inhibit sprouting	M

2. The Australian Onion Industry

Onions are grown in most Australian states, with the majority of production occurring in South Australia and Tasmania. Processed onions are typically dried and preserved. Australia is a net exporter of fresh onions. For the year ending June 2023, Australia exported 36,299 tonnes of fresh onions, representing 14% of total production. The remainder is consumed in the domestic market, with 77% going to fresh supply and 9% into processing.

Production for the year ending June 2023 was 255,159 tonnes. The value of production was worth $332.7 million, with the wholesale value of fresh supply worth $362.5 million. Production and revenue are reasonably stable from year to year.

The major varieties of onions grown in Australia are brown onions (79%), red onions (19%), white onions (1%) and shallots/spring onions (<1%). The production window allows for supply to the domestic market on a year-round basis.

Fresh Onion Seasonality by State[1]

State	22/23 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
South Australia	121,476												
Tasmania	56,831												
Queensland	31,237												
Western Australia	24,421												
Victoria	15,969												
New South Wales	5,225												
Availability Legend			High			Medium			Low			None	

Australia is a net exporter of fresh onions, typically between 35,000-50,000 tonnes per year. Major export destinations are Thailand (28%), Malaysia (11%), UAE (9%), Spain (9%) and Netherlands (7%).

[1] Hort Innovation (2024). Australian Horticulture Statistics Handbook 2022/23. [online] Available at: https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/australian-horticulture-statistics-handbook/

3. Introduction

3.1 Background

Growers of some horticultural crops suffer from a lack of legal access to crop protection products (pesticides). The problem may be that whilst a relatively small crop area is valuable in an agricultural sense, it may not be of sufficient size for Agrichemical companies to justify the expense of registering a product use on that crop. Alternately, the disease, pest, or weed problem may be regional or spasmodic, making Agrichemical companies unwilling to bear the initial high cost of registering suitable pesticides.

Growers may face severe losses from diseases, pests and weeds due to a lack of registered or approved (via a permit) chemical control tools.

Environmental concerns, consumer demands, and public opinion are also significant influences in the marketplace related to pest management practices. Industry IPM practitioners must strive to implement best management practices and tools to incorporate a pest management regime where strategies work in harmony with each other to achieve the desired effects while posing the least risks.

In combination with cultural practices, pesticides are important tools in onion production and respective IPM programs. They control the various diseases, insects and weeds that affect the crop and can cause severe economic loss in modern high intensity growing operations. Pesticides are utilised during establishment and development, and to maximise quality and customer appeal.

As a consequence of the issues facing the onion industry regarding pesticide access, Hort Innovation has undertaken the current project to update the Strategic Agrichemical Review Process (SARP) for onion.

The SARP process identifies diseases, insect pests and weeds of major concern to the onion industry. Against these threats, available registered or permitted pesticides are evaluated for overall suitability in terms of IPM, resistance, efficacy, trade, human safety and environmental issues. Where tools are unavailable or unsuitable the process aims to identify potential future solutions. Potential new risks to the industry are also identified.

The results will provide the onion industry with a clear outlook of gaps in existing pest control options. This report is not a comprehensive assessment of ALL pests and control methods used in onion but attempts to prioritise the major problems.

Exotic plant pests, not present in Australia, are not addressed in this document. Biosecurity plans have been developed for the Onion Industry in consultation with industry, government and scientists. The Biosecurity Plan outlines key threats to the industry, risk mitigation plans, identification and categorisation of exotic pests and contingency plans. High priority exotic pests have been assessed based on their potential to enter, establish, and spread in Australia (e.g. environmental factors, host range, vectors) and the cost to industry of control measures. More information is available at this link[2].

[2] https://www.planthealthaustralia.com.au/industries/

3.2 Minor use permits and registration

From a pesticide access perspective, the APVMA classifies onions as a major crop. They fit within the APVMA Crop Group 009: Bulb vegetables and the subgroup 009A: Bulb onions. Access to minor use permits can be achieved as long as a reasonable justification is provided in accordance with the APVMA's minor use guidance[3]. Possible justification for future permit applications could be based on:

- New disease, insect or weed identified as a cropping issue
- No pesticide approved for the problem
- Insufficient options for resistance management
- Current pesticides ineffective due to resistance
- Trade risk - current pesticides unsuitable where crop commodities will be exported
- IPM, environment or OH&S issues
- Loss of pesticides due to removal from market or chemical review restrictions
- Opportunity to extrapolate a use pattern when a new, effective pesticide is registered in another crop
- Alternate pesticide has overseas registration or minor use permit
- Market failure – insufficient return on investment for registrant.

With each of these options, sound, scientific argument is required to justify any new permit applications. Another option for the onion industry is for manufacturers to register new pesticides uses in the crop.

3.3 Methods

The current version of the Onion Strategic Agrichemical Review Process (SARP) was conducted by desktop audit and included an online industry survey. The process included gathering, collating and confirming information. The steps in the process were:

Process of Review	Activity / Date
Industry survey	Preparation and circulation of online industry survey to update priority pests and identify priority control gaps. Survey released: 6 November 2023 Survey closed: 30 June 2024
SARP data updated via a desktop audit	Updated registrations and permits Updated MRL tables Updated available and potential pesticides against low, moderate and high priority pests, including an assessment of their suitability Included information on regulatory risks from MT20007
Captured industry input	Collated and analysed survey results Consolidated and incorporated industry needs and insights

[3] https://apvma.gov.au/node/10931

3.4 Results and discussions

3.4.1 Detail

Results and discussions are presented in the body of this document.

3.4.2 Appendices

Refer to additional information in the appendices:

Appendix 1. Products available for disease control in onion
Appendix 2. Products available for control of insects and other pests in onion
Appendix 3. Products available for weed control in onion
Appendix 4. Plant Growth Regulators available in onion
Appendix 5. Current permits for use in onion
Appendix 6. Onion Maximum Residue Limits (MRLs)
Appendix 7. Onion regulatory risk assessment

4. Diseases, pests and weeds of Onion

Resistance management: To manage the risk of resistance development, integrated disease/pest/weed management (IDM/IPM/IWM) strategies should be adopted. The general principle is to integrate diverse chemical and non-chemical strategies; maximise efficacy; not rely on singular tools and rotate between different modes of action. It is always essential to follow all the label instructions. Specific resistance management strategies may apply. These can be found, along with other useful information, on the CropLife Australia website[4].

Information on regulatory risk derived from project MT20007 (Chapter 4) - Regulatory support and coordination (Appendix 7) has been incorporated. Some of the suggested options have no overseas MRLs (see Appendix 6). If treated fruit is to be exported nil residues at harvest would be needed for these options. While care has been taken to ensure the accuracy of the information provided in this document the APVMA registered label and where relevant the APVMA approved permit must always be followed.

[4] https://www.croplife.org.au/resources/programs/resistance-management/

4.1 Diseases of Onion

4.1.1 Disease priorities

Disease	Priority
Downy Mildew (*Peronospora destructor*)	H
Bacterial Soft Rot (*Dickeya chrysanthem* and *Pectobacterium carotovorum*)	H
Botrytis Neck & Bulb Rot (*Botrytis allii*, *B. aclada*)	M
Pink Root (*Phoma terrestris*)	M
White Rot (*Sclerotium cepivorum*)	M
Basal Rot (*Fusarium oxysporum*)	M
Damping-Off (*Fusarium* spp., *Pythium* spp., *Rhizoctonia solani*)	M
Onion Stunt Syndrome (*Rhizoctonia* complex)	L
Black Mould (*Aspergillus niger*)	L
Purple Blotch (*Alternaria porri*)	L
Sclerotinia Rot (*Sclerotinia* spp.)	L
Onion Smut (*Urocystis colchici*)	L

Downy Mildew and Bacterial Soft Rot were identified as high priority diseases of onions. Disease control is a major focus for onion crops. It is recommended that an Integrated Disease Management Strategy is implemented, including a range of cultural practices to support fungicides, and potentially reduce the reliance on fungicides for disease control.

Cultural controls include:

- Biosecurity measures to prevent importing infections from other farms.
- Promoting good drainage and avoid waterlogging through irrigation.
- Farm hygiene – remove dead plant material that could contain disease inoculum.
- Avoid crop stress through good nutrition and water management.

Regular use of protectant fungicides is usually required for control of in-crop diseases as well as preventing infections that can manifest post-harvest. In controlling fungal and bacterial diseases, the industry should be mindful of resistance management. In addition to cultural controls, it is important to include a range of fungicide groups in a foliar spray program, including the use of protectant fungicides. Fungicide programs should be planned at the start of the season to ensure that effective disease control is achieved in conjunction with appropriate product rotation.

CropLife Australia have a resistance management strategy specifically related to the control of Downy Mildew[5] in onions, and users must refer to this before using any product.

[5] https://www.croplife.org.au/resources/programs/resistance-management/onion-downy-mildew-3/

4.1.2 Available and potential products for priority diseases

TABLE KEY: Note that blank fields in the table indicate no information has been provided.

Availability		Regulatory risk (refer to Appendix 7)	
A	Available via either registration or permit approval	R1	Short-term: Critical concern over retaining access
P	Potential - a possible candidate to pursue for registration or permit	R2	Medium-term: Maintaining access of significant concern
P-A	Potential, already approved in the crop for another use	R3	Long-term: Potential issues associated with use - Monitoring required

Withholding Period (WHP) – Number of days from last treatment to harvest (H) or Grazing (G)			
Harvest	H	Not Required when used as directed	NR
Grazing	G	No Grazing Permitted	NG

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Downy Mildew (*Peronospora destructor*) **Priority: High**							
Rated as a high priority in NSW, QLD, SA, TAS & VIC. The disease is favoured by mild temperatures and sustained periods of high humidity. Onions plants are weakened by Downy Mildew, but seldom killed. A planned fungicide program is required to manage the disease, but cultural control such as crop rotation, maintaining good drainage and irrigation practices will assist in reducing the impact of Downy Mildew.							
Azoxystrobin + Oxathiapiprolin (Orondis Flexi) Syngenta	11+49	Protectant & Curative	NR NG	A	ALL	Registered in bulb vegetables for control of **Downy Mildew** (*Pseudoperonospora destructor*) and suppression of White Rot (*Sclerotium cepivorum*). Apply as a foliar spray at first signs of disease or before when conditions are favourable to disease development. Use a retreatment interval of 7-14 days. Maximum of 3 applications per crop, with no more than 2 consecutive applications.	-
Chlorothalonil (Bravo)	M5	Protectant	14	A	ALL	Registered in onions (excluding spring onions) for control of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray at first sign of disease or if conditions indicate likely incidence of disease. Repeat using a 14 day retreatment interval. Maximum number of treatments per crop not specified.	R3
Copper	M1	Protectant	1	A	ALL	Registered in onions for control of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray at first sign of disease. Repeat using a 10 day retreatment interval. Maximum number of treatments per crop not specified.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Dimethomorph (Acrobat)	40	Protectant	7	A	ALL	Registered in onions for control of **Downy Mildew** (*Pseudoperonospora destructor*) and Leaf Blight. Apply as a foliar spray when conditions favour disease development but before disease is evident. Apply 2 consecutive applications using a 7-10 day retreatment interval, then change to a fungicide from a different chemical group. Maximum of 4 applications per crop.	-
Dimethomorph + Ametoctradin (Zampro) BASF	40+45	Protectant	7	A	ALL	Registered in bulb vegetables for control of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray when conditions favour disease development but before disease is evident. Use a retreatment interval of 7-14 days. Maximum of 2 applications per crop.	-
Hydrogen Peroxide + Peroxyacetic Acid (Peratec Plus)	M	Protectant	1	A	ALL	Registered in allium vegetables for control of Neck & Bulb Rot (*Botrytis* spp.) and **Downy Mildew** (*Peronospora* spp.) Apply as a foliar spray as part of a disease management strategy to maintain low disease pressure. Apply 2 consecutive sprays using a retreatment interval of 5-7 days. Maximum of 4 applications per crop.	-
Mancozeb	M3	Protectant	7	A	ALL	Registered in onions for control of **Downy Mildew** and Purple Blotch. Apply as a foliar spray when disease symptoms first appear, and repeat using a 7-10 day retreatment interval. Maximum number of applications per crop not specified.	R2
Mancozeb + Dimethomorph (Acrobat WDG)	M3+40	Protectant	7	A	ALL	Registered in onions for control of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray when conditions favour disease development but before disease is evident. Apply 2 consecutive applications using a 7-10 day retreatment interval, then change to a fungicide from a different chemical group. Maximum of 4 applications per crop.	R2
Mancozeb + Metalaxyl-M (Ridomil Gold MZ)	M3+4	Protectant	7	A	ALL	Registered in onions for control of **Downy Mildew**. Apply as a foliar spray when conditions favour disease development but before disease is evident. Apply 2 consecutive applications using a 7-10 day retreatment interval, then change to a fungicide from a different chemical group. Maximum of 4 applications per crop.	R2

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Mandestrobin (Intuity) Sumitomo	11	Protectant & Curative	30 G:7	A	ALL	Registered in bulb onions for control of White Rot (*Sclerotium cepivorum*) and suppression of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray with the first application prior to disease development approximately 6 weeks after planting. Apply 2 consecutive applications at a retreatment interval of 30 days, then change to a fungicide with an alternate mode of action. Maximum of 3 applications per crop.	-
Metiram (Polyram)	M3	Protectant	7	A	ALL	Registered in bulb onions for control of **Downy Mildew** and Purple Blotch. Apply as a foliar spray when disease symptoms first appear and repeat using a retreatment interval of 7-10 days. Maximum number of applications not specified.	R2
Oxathiapiprolin (Zorvec Enicade) Corteva	49	Protectant	10 NG	A	ALL	Registered in bulb vegetables / onions for control of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray when conditions favour disease development but before the disease is evident. Apply up to 2 consecutive applications using a retreatment interval of 10-14 days. Maximum of 2 applications per crop.	-
Oxathiapiprolin + Mancozeb (Zorvec Enibel) Corteva	49+M3	Protectant	10 NG	A	ALL	Registered in bulb vegetables / onions for control of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray when conditions favour disease development but before the disease is evident. Apply up to 2 consecutive applications using a retreatment interval of 7-14 days. Maximum of 2 applications per crop.	R2
Phosphorous Acid PER13698	P07	Protectant & Curative	1	A	ALL (excl. VIC)	Permitted in bulb vegetables for suppression of **Downy Mildew** (*Peronospora* spp.) Apply as a foliar spray when conditions favour disease development. Retreatment interval and maximum number of applications per crop not specified.	-
Propamocarb Hydrochloride + Fluopicolide (Infinito) Bayer	28+43	Protectant	7	A	ALL	Registered in bulb vegetables for control of **Downy Mildew** (*Pseudoperonospora destructor*). Apply as a foliar spray, commencing when conditions favour disease development. Repeat using a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Propineb (Antracol)	M3	Protectant	7	A	ALL	Registered in onions for control of **Downy Mildew**. Apply as a foliar spray when conditions favour disease development. Repeat using a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	R2
Propineb + Oxadixyl (Rebound)	M3+4	Protectant	14	A	ALL	Registered in onions for control of **Downy Mildew**. Apply as a foliar spray when conditions favour disease and apply a sequence of 2 applications using a retreatment interval of 7-10 days. Maximum number of applications not specified.	R2
Zineb	M3	Protectant	7	A	ALL	Registered in onions for control of **Downy Mildew**, Purple Blotch and Blue Mould. Apply as a foliar spray when conditions favour disease development. Repeat using a retreatment interval of 7-10 days. Maximum number of applications per season not specified.	R2
Acibenzolar-S-Methyl (Actigard Plant Activator) Syngenta	P01	Protectant		P		Registered in tomatoes for the suppression of Bacterial Speck, Bacterial Spot, Bacterial Canker and Powdery Mildew. US registration for control of **Downy Mildew** in brassica leafy vegetables and leafy vegetables, and suppression of **Downy Mildew** in cucurbits and bulb onions.	-
Cyazofamid (Ranman) ISK/UPL	21	Curative / Protectant		P		Registered for control of **Downy Mildew** in brassica vegetables, brassica leafy vegetables, poppies, nursery stock and basil.	-
Fluoxapiprolin (Xivana Prime 20SC) Bayer	49	Protectant & Curative		P		Registered for control of **Downy Mildew** in grapevines.	-
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. US registration for suppression of **Downy Mildew** in bulb vegetables, cucurbits and leafy vegetables.	**-**
Mandipropamid (Revus) Syngenta	40	Curative / Protectant		P		Registered for control of **Downy Mildew** in grapes, lettuce, leafy vegetables and oilseed poppies.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Protectant	NR	P		Registered for control of Grey Mould, Hull Rot and Powdery Mildew in almonds, apples, berries and grapes. US registration for control of **Downy Mildew** in ornamentals.	-
Bacterial Soft Rot (*Dickeya chrysanthem* and *Pectobacterium carotovorum*) **Priority: High**							
Rated as a high priority in SA & TAS, as a moderate priority in NSW & VIC, and as a low priority in QLD. Bacterial Soft Rot infections will usually manifest after harvest. Infections mainly occur in mature bulbs, resulting in a watery, foul-smelling liquid that can be squeezed from the neck of diseased bulbs. The use of overhead irrigation should be avoided. Harvest management techniques are critical to the prevention of spread and infection post-harvest, such as making sure that the tops and necks are thoroughly dried out before being stored and using sanitisers to treat harvest and storage equipment.							
Chlorine	-	Sanitiser	NR	A	ALL	Registered as a sanitiser for post-harvest control of bacteria and fungi. Spray prepared solution onto produce and equipment.	-
Iodine	-	Sanitiser	NR	A	ALL	Registered in onions as a post-harvest treatment for control of bacteria and fungi. Dip the fruit for a minimum of 1 minute.	-
Peroxyacetic Acid	-	Sanitiser	NR	A	ALL	Registered as a post-harvest treatment for bacteria. Post-harvest spray or dip. Ensure a minimum of 45 seconds contact time.	-
Copper	M1	Protectant	1	P-A	ALL	Registered in onions for control of Downy Mildew (*Pseudoperonospora destructor*). Registered for control of bacterial diseases in apricots, cherries, mangoes, beans, capsicums, celery, cucurbits, lettuce, peas and tomatoes.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM01	Biological	NR	P		Registered in grapes, strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of bacterial diseases in fruiting vegetables, leafy vegetables, stone fruit and root & tuber vegetables.	-
Bacillus amyloliquefaciens strain QST 713 (Serenade Opti) Bayer	BM 01	Biological / Protectant	NR	P		Registered in grapevines and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of Bacterial Spot and in avocado and other tropical fruits (excluding banana) for control of Anthracnose and suppression of Stem End Rot. US registration for control of bacterial diseases in fruiting vegetables, root, tuber & corm vegetables and stone fruit.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Botrytis Neck & Bulb Rot (*Botrytis allii*, *B. aclada*) **Priority: Moderate**							
Rated as a high priority in NSW, and as a moderate priority in QLD, SA, TAS & VIC. Botrytis occurs primarily on stored onions, with the tissue becoming soft and spongy as infection moves into the bulb. Control measures include use of disease-free planting seed, crop rotation, fungicides in crop, and avoiding mechanical damage at harvest. The effect on stored onions can be devastating as it can spread within storage bins and causes major marketability issues. Post-harvest storage conditions are critical and keeping bins in cool, low humidity conditions will help to reduce disease spread in stored onions.							
Boscalid (Filan)	7	Protectant	NR	A	ALL	Registered in onions for control of **Neck Rot** (*Botrytis allii*). Apply as a foliar spray between flag leaf and 5 true leaf stage, when conditions favour disease development. Do not apply later than 10 days after the commencement of bulbing. Use a retreatment interval of 7-10 days. Maximum of 2 applications per crop.	-
Fludioxonil + Cyprodinil (Switch)	12+9	Protectant	7	A	ALL	Registered in onions for control of **Neck Rot** (*Botrytis allii*). Apply as a foliar spray prior to or at onset of disease. Use a retreatment interval of 7-10 days. Maximum of 2 applications per crop.	R3
Fluxapyroxad (Systiva) PER94835	7	Protectant / Seed Treatment	NR	A	ALL	Permitted in bulb onion as a seed treatment for control of **Neck Rot** (*Botrytis allii*). Apply to planting seed using an applicator designed for liquid seed treatments.	-
Hydrogen Peroxide + Peroxyacetic Acid (Peratec Plus)	M	Protectant	1	A	ALL	Registered in allium vegetables for control of **Neck & Bulb Rot** (*Botrytis* spp.) and Downy Mildew (*Peronospora* spp.) Apply as a foliar spray as part of a disease management strategy to maintain low disease pressure. Apply 2 consecutive sprays using a retreatment interval of 5-7 days. Maximum of 4 applications per crop.	-
Iprodione (Rovral) + Chlorothalonil (Bravo) PER94740	2+M5	Protectant	NR	A	ALL	Permitted in onion for control of **Neck Rot** (*Botrytis allii*). Apply together as a foliar spray either between flag leaf and 5-true leaf stage or at the commencement of bulbing (no later than 10 days after commencement of bulbing). Use a retreatment interval of 7-10 days. Maximum of 2 applications per crop.	R3
Penthiopyrad (Fontelis) Corteva	7	Protectant	3 NG	A	ALL	Registered in onions for control of **Botrytis Blight & Neck Rot** (*Botrytis* spp.) Purple Blotch (*Alternaria porri*). Apply as a foliar spray, starting prior to disease development and continue using a retreatment interval of 7-10 days. Maximum of 3 applications per season, with no more than 2 consecutive applications.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	P		Registered for control of **Botrytis** and in grapes, berries and fruiting vegetables.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM01	Biological	NR	P		Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of **Grey Mould** (*Botrytis cinerea*).	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM01	Biological	NR	P		Registered in strawberries for control of **Botrytis** (*Botrytis cinerea*).	-
BLAD (Problad Plus)	BM 01	Biological	NR	P		Registered for control of **Botrytis** in wine & tables grapes and berries & other small fruits.	**-**
Eugenol + Geraniol + Thymol (Novellus) Eden Research PLC	1	Protectant & Curative		P		Registered for control of **Botrytis** in grapes.	-
Fenhexamid (Teldor)	17	Protectant		P		Registered for control of **Botrytis** in grapevines, strawberries, peppers, cucumber, lettuce, rubus berries, snow peas, sugar snap peas and tree nursery stock.	-
Fenpyrazamine (Prolectus) Sumitomo	17	Protectant & Curative		P		Registered for control of **Botrytis** in grapes.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative		P		Registered for control of **Botrytis** in citrus, grapevines, strawberries, macadamias and pistachios.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant & Curative		P		Registered for control of **Botrytis** in berries.	-
Ipflufenoquin (Migiwa Kinoprol) AgNova	52	Protectant		P		Registered for control of **Botrytis** in strawberries and wine grapes.	-
Isofetamid (Kenja) ISK / AgNova	7	Protectant & Curative		P		Registered for control of **Botrytis** in berries.	-
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Protectant	NR	P		Registered for control of **Botrytis** in almonds, berries and grapes.	**-**
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative		P		Registered for control of **Botrytis** in berries, strawberries, grapes, lettuce, leafy vegetables and potato.	R3
Pink Root (*Phoma terrestris*) **Priority: Moderate**							
Rated as a high priority in NSW, QLD & VIC, and as a moderate priority in SA & VIC. Pink Root causes roots to disintegrate and results in undersized bulbs in susceptible varieties. Resistant varieties are the most effective management technique, although maintaining good soil drainage, healthy plants through optimum nutrition, and crop rotation and good irrigation management all play a part in reducing the spread of infections.							
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fludioxonil + Cyprodinil (Switch)	12+9	Protectant	7	P-A	ALL	Registered in onions for control of Neck Rot (*Botrytis allii*). Registered for control of ***Phoma* sp.** in pyrethrum.	R3
Fludioxonil + Sedaxane (Vibrance Premium) Syngenta	12+7	Protectant / Seed Treatment		P		Registered for control of ***Phoma* sp.** in potatoes.	R3
White Rot (*Sclerotium cepivorum*) **Priority: Moderate**							
Rated as a high priority in TAS, as a moderate priority in QLD, and as a low priority in NSW, SA & VIC. White Rot attacks the roots which leads to collapse of foliage and the development of a soft rot in bulbs. Favoured by moist soil and air temperatures of 14-18^{o}C. Control options are limited but ensuring that disease free seed is used, crop rotation and good irrigation management will reduce the incidence of White Rot.							
Azoxystrobin + Oxathiapiprolin (Orondis Flexi) Syngenta	11+49	Protectant & Curative	NR NG	A	ALL	Registered in bulb vegetables for control of Downy Mildew (*Pseudoperonospora destructor*) and suppression of **White Rot** (*Sclerotium cepivorum*). Apply as a foliar spray at first signs of disease or before when conditions are favourable to disease development. Use a retreatment interval of 7-14 days. Maximum of 3 applications per crop, with no more than 2 consecutive applications.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	7	A	ALL	Registered in bulb vegetables for suppression of **White Rot** (*Sclerotium cepivorum*). Apply as a foliar spray when crop is at the 1 leaf stage. Application should be followed with an irrigation or rainfall sufficient to drench the treatment into the soil. Apply a second application using a retreatment interval of 21-28 days. Maximum of 2 applications per crop.	R3
Mandestrobin (Intuity) Sumitomo	11	Protectant & Curative	30 G:7	A	ALL	Registered in bulb onions for control of **White Rot** (*Sclerotium cepivorum*) and suppression of Downy Mildew (*Pseudoperonospora destructor*). Apply as a foliar spray with the first application prior to disease development approximately 6 weeks after planting. Apply 2 consecutive applications at a retreatment interval of 30 days, then change to a fungicide with an alternate mode of action. Maximum of 3 applications per crop.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Procymidone (Sumisclex)	2	Protectant	28	A	ALL	Registered in onions for control of **White Rot** (*Sclerotium cepivorum*). Apply as a seed treatment in conjunction with an in-furrow application at planting. May also be applied as a soil surface application after planting.	R2
Tebuconazole	3	Protectant & Curative	NR	A	TAS	Registered in onions for control of **White Root Rot**. Apply to lime super which is applied at planting, either mixed in the seed box or placed in different boxes and sown down the same tube.	R3
Triadimenol	3	Protectant & Curative	28	A	ALL	Registered in onions for control of **White Rot**. Apply as a foliar spray at 6-8 weeks after planting. Use a retreatment interval of 21-28 days, to apply a further 2 applications.	R3
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	44	Biological Fungicide	NR	P-A	ALL	Registered in vegetable crops for application to soil to improve bioavailability of soil resources to horticultural crops. Provides suppression of soil-borne diseases such as Black Scurf in potatoes and Pineapple Disease in sugarcane and is also registered for control of Yellow Sigatoka in bananas as a foliar spray.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM01	Biological	NR	P		Registered in grapes, strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for **White Rot** in bulb vegetables.	-
Bacillus amyloliquefaciens strain QST 713 (Serenade Opti) Bayer	BM 01	Biological / Protectant	NR	P		Registered in grapevines and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of Bacterial Spot and in avocado and other tropical fruits (excluding banana) for control of Anthracnose and suppression of Stem End Rot. US registration for control of **White Rot** in bulb vegetables.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Basal Rot (*Fusarium oxysporum*) **Priority: Moderate**							
Rated as a moderate priority in NSW, SA & TAS, and as a low priority in QLD & VIC. Soil borne disease that infects the roots and also causes yellowing and necrosis of above-ground plant parts and can lead to storage rots in bulbs. Disease is favoured by warm soil temperatures. Management techniques include use of resistant varieties, crop rotation, protection of plants from mechanical damage and storing bulbs at 4°C to minimise post-harvest losses.							
Chloropicrin + 1,3-Dichloropropene	8B	Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphylans, Wireworms, soil borne diseases (including *Fusarium* and *Verticillium* wilts, *Rhizoctonia, Pythium*) and suppression of weeds. Restricted chemical. ***For use by professional and registered fumigators only.***	-
Streptomyces lydicus WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	A	ALL	Registered in vegetables for control of ***Fusarium***, *Rhizoctonia* and *Pythium*. Apply as a seed treatment.	-
Thiabendazole	1	Protectant / Post-Harvest	NR	A	ALL	Registered in bulbs, corms as a post-harvest treatment for control of **Fusarium Basal Rot** and Penicillium Blue Mould. Dip for 15-30 minutes within 24 hours of digging. After treatment, dry bulbs in a shaded and well ventilated area.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM01	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Damping-Off (*Fusarium* spp., *Pythium* spp., *Rhizoctonia solani*) **Priority: Moderate**							
Rated as a moderate priority in NSW, QLD, SA & TAS, and as a low priority in VIC. Damping Off causes water-soaked lesions on the lower stems of 1-2 leaf seedlings and a watery rot on the roots. Disease is favoured by moist soil conditions and soil temperatures below 18^{o}C. Management options are limited but seed treatments should assist with control, and general farm hygiene and good irrigation management will assist in reducing incidence of Damping Off.							
Chloropicrin + 1,3-Dichloropropene	8B	Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphylans, Wireworms, soil borne diseases (including *Fusarium* and *Verticillium* wilts, *Rhizoctonia, Pythium*) and suppression of weeds. Restricted chemical. ***For use by professional and registered fumigators only.***	-
Streptomyces lydicus WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	A	ALL	Registered in vegetables for control of ***Fusarium***, *Rhizoctonia* and *Pythium*. Apply as a seed treatment.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Onion Stunt Syndrome (*Rhizoctonia* complex) **Priority: Low**							
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Onion Stunt Syndrome occurs in fields which are rotated with cereal crops. Above ground symptoms vary from obvious patches of severely stunted plants to widespread, less noticeable symptoms that still reduce bulb size and yield. Roots have spear tips and sunken cortex. May occur in tandem with other root diseases such as pink root and root lesion nematode. Is worse in coarse sandy soils and is favoured by temperatures of 10-15^{o}C.							
Chloropicrin + 1,3-Dichloropropene	8B	Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphylans, Wireworms, soil borne diseases (including *Fusarium* and *Verticillium* wilts, *Rhizoctonia, Pythium*) and suppression of weeds. Restricted chemical. ***For use by professional and registered fumigators only.***	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Streptomyces lydicus WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	A	ALL	Registered in vegetables for control of *Fusarium*, ***Rhizoctonia*** and *Pythium*. Apply as a seed treatment.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM01	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Tolclofos-Methyl (Rizolex) Sumitomo	13	Protectant		P		Registered for control of ***Rhizoctonia* spp.** as an in-furrow application in beetroot, cotton and potato.	-
Black Mould (*Aspergillus niger*) **Priority: Low**							
Rated as a moderate priority in QLD, SA & VIC, and as a low priority in NSW & TAS. Black Mould generally develops on the outer fleshy bulb scale of harvested bulbs. High temperatures and humidity promote infection post-harvest. Good post-harvest hygiene and treatments will assist in management of Black Mould.							
Fludioxonil + Cyprodinil (Switch)	12+9	Protectant	7	A	ALL	Registered in alliums including bulb onions, spring onions, shallots and garlic for suppression of **Black Mould** (*Aspergillus niger*) and Grey Mould (*Botrytis cinerea*). Apply as a foliar spray prior to or at onset of disease. Use a retreatment interval of 7-10 days. Maximum of 2 applications per crop.	R3
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM01	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Purple Blotch (*Alternaria porri*) **Priority: Low**							
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Infection starts as lesions on the above-ground plant parts but can spread to the bulbs causing a distinctive red colouring. Disease is favoured by high humidity. Regular fungicide program should provide protection Purple Blotch infections. The use of surface irrigation is recommended rather than sprinklers.							
Dimethomorph (Acrobat)	40	Protectant	7	A	QLD & NT	Registered in onions for control of **Purple Blotch** (*Alternaria porri*). Apply as a foliar spray when conditions favour disease development but before disease is evident. Apply 2 consecutive applications using a 7-10 day retreatment interval, then change to a fungicide from a different chemical group. Maximum of 4 applications per crop.	-
Mancozeb	M3	Protectant	7	A	ALL	Registered in onions for control of Downy Mildew and **Purple Blotch**. Apply as a foliar spray when disease symptoms first appear, and repeat using a 7-10 day retreatment interval. Maximum number of applications per crop not specified.	R2
Mancozeb + Dimethomorph (Acrobat WDG)	M3+40	Protectant	7	A	QLD & NT	Registered in onions for control of **Purple Blotch** (*Alternaria porri*). Apply as a foliar spray when conditions favour disease development but before disease is evident. Apply 2 consecutive applications using a 7-10 day retreatment interval, then change to a fungicide from a different chemical group. Maximum of 4 applications per crop.	R2
Mancozeb + Metalaxyl-M (Ridomil Gold MZ)	M3+4	Protectant	7	A	QLD	Registered in onions for control of **Purple Blotch**. Apply as a foliar spray when conditions favour disease development but before disease is evident. Apply 2 consecutive applications using a 7-10 day retreatment interval, then change to a fungicide from a different chemical group. Maximum of 4 applications per crop.	R2
Metiram (Polyram)	M3	Protectant	7	A	ALL	Registered in bulb onions for control of Downy Mildew and **Purple Blotch**. Apply as a foliar spray when disease symptoms first appear and repeat using a retreatment interval of 7-10 days. Maximum number of applications not specified.	R2
Penthiopyrad (Fontelis) Corteva	7	Protectant	3 NG	A	ALL	Registered in onions for control of Botrytis Blight & Neck Rot (*Botrytis* spp.) **Purple Blotch** (*Alternaria porri*). Apply as a foliar spray, starting prior to disease development and continue using a retreatment interval of 7-10 days. Maximum of 3 applications per season, with no more than 2 consecutive applications.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Zineb	M3	Protectant	7	A	ALL	Registered in onions for control of Downy Mildew, **Purple Blotch** and Blue Mould. Apply as a foliar spray when conditions favour disease development. Repeat using a retreatment interval of 7-10 days. Maximum number of applications per season not specified.	R2
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant		P		Registered for control of Powdery Mildew in cucurbits, Powdery Mildew and Target Spot in capsicum, chilli, eggplant, okra and tomato, Sclerotinia Rot in head lettuce and leaf lettuce, Grey Mould and Powdery Mildew in strawberry. Canadian registration for control of **Alternaria** in canola.	-
Sclerotinia Rot (*Sclerotinia* spp.) **Priority: Low**							
Rated as a moderate priority in NSW, and as a low priority in QLD, SA, TAS & VIC. Sclerotinia is a common disease with a wide host range. Onions generally exhibit minor symptoms and control is unwarranted.							
Azoxystrobin + Oxathiapiprolin (Orondis Flexi) Syngenta	11+49	Protectant & Curative	NR NG	P-A	ALL	Registered in bulb vegetables for control of Downy Mildew (*Pseudoperonospora destructor*) and suppression of White Rot (*Sclerotium cepivorum*). Registered for control of **Sclerotinia Rot** in brassicas, cucurbits, lettuce, endive and leafy vegetables.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Boscalid (Filan)	7	Protectant	NR	P-A	ALL	Registered in onions for control of Neck Rot (*Botrytis allii*). Registered for control of **Sclerotinia Rot** in brassica vegetables, leafy vegetables, legume vegetables and root & tuber vegetables.	-
Fludioxonil + Cyprodinil (Switch)	12+9	Protectant	7	P-A	ALL	Registered in onions for control of Neck Rot (*Botrytis allii*). Registered for control of **Sclerotinia Rot** in capsicum, leafy vegetables, lettuce and nursery stock.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	P		Registered for control of Botrytis and in grapes, berries and fruiting vegetables. Registered for control of **Sclerotinia** in fruiting vegetables.	-
Onion Smut (*Urocystis colchici*) **Priority: Low**							
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Onion Smut is a sporadic disease that can increase during cool, wet springs and only attacks the seedling stage of the crop. Impacts on yield are minor and management techniques include crop rotation, resistant varieties and use of good general farm hygiene.							
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	-

4.2 Insect and other pests of Onion

4.2.1 Insect and other pest priorities

Insects and Other Pests	Priority
Onion Thrips (*Thrips tabaci*)	H
Plague Thrips (*Thrips imaginis*)	H
Western Flower Thrips (*Frankliniella occidentalis*)	H
Cutworms (*Agrotis* spp.)	H
Onion Maggot (*Delia platura*)	H
Common Blossom Thrips (*Frankliniella schultzei*)	M
Whitefringed Weevil (*Naupactus leucoloma*)	M
Root-Knot Nematode (*Meloidogyne* spp.)	M
Stumpy Root Nematode (*Pratylenchus* spp.)	M
Native Budworm (*Helicoverpa punctigera*)	M
Cotton Bollworm (*Helicoverpa armigera*)	M
Redlegged Earth Mite (*Halotydeus destructor*)	L
Wireworm (*Heteroderes* spp.)	L
Jassids / Leafhoppers (Cicadellidae)	L
Rutherglen Bug (*Nysius vinitor*)	L
Strawberry Beetle (Coleoptera)	L
Onion Aphid (*Neotoxoptera formosana*)	L
Bulb Mites (*Rhizoglyphus callae*)	L
Dry Bulb Mite (*Aceria tulipae*)	L
Two Spotted Mite (*Tetranychus urticae*)	L

Onions are impacted by a wide variety of insect and other pests, with Onion Thrips, Plague Thrips, Western Flower Thrips, Cutworms and Onion Maggot rated as high priority pests. It is important to take an Integrated Pest Management (IPM) Approach to pest control in onions. The diversity of insects that will attack these crops mean that a planned, strategic approach is required. A range of control measures should be used, including cultural controls, biological controls and insecticides. Beneficial insects such as predators, parasitoids and pollinators should be encouraged and can be introduced artificially if required. Insecticide choice should be made with regard to preserving the beneficial insects that play an important role in the crop.

The diverse range of insect and mite pests in onion necessitates careful planning with resistance management. Growers should refer to resistance management strategies listed on the CropLife website[6] when planning their pest management programs.

[6] https://www.croplife.org.au/resources/programs/resistance-management/

4.2.2 Available and potential products for priority insects and other pests

TABLE KEY: Note that blank fields in the table indicate no information has been provided.

Availability		Regulatory risk (refer to Appendix 7)	
A	Available via either registration or permit approval	R1	Short-term: Critical concern over retaining access
P	Potential - a possible candidate to pursue for registration or permit	R2	Medium-term: Maintaining access of significant concern
P-A	Potential, already approved in the crop for another use	R3	Long-term: Potential issues associated with use - Monitoring required
Withholding Period (WHP) – Number of days from last treatment to harvest (H) or Grazing (G)			
Harvest	H	Not Required when used as directed	NR
Grazing	G	No Grazing Permitted	NG
IPM – indicative overall impact on beneficials (based on the Cotton Pest Management Guide 2019-20 and cotton use patterns)			
VL – Very low; L – Low; M – Moderate; H – High; VH – Very High; - not specified			

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Onion Thrips (*Thrips tabaci*) **Plague Thrips** (*Thrips imaginis*) **Western Flower Thrips** (*Frankliniella occidentalis*) **Priority: High**								
Onion Thrips are rated as a high priority in NSW, QLD, SA, TAS & VIC. Plague Thrips and Western Flower Thrips are rated as a high priority in NSW & VIC, and as a moderate priority in QLD, SA & TAS. Thrips feeding activity causes chlorosis and silvering of leaves and scarring of fruit. Onion Thrips are vectors for Tomato-Spotted Wilt Virus and Iris Yellow Spot Virus in onions. Control of thrips with insecticides is difficult and an integrated pest management approach should be used to ensure that crop damage is minimised on an ongoing basis.								
Alpha-Cypermethrin PER80282	3A	Contact	14	A	ALL (excl. VIC)	Permitted in onion for control of **Onion Thrips** (*Thrips tabaci*). Apply as a foliar spray while pests are active. Use a retreatment interval of 7-10 days. Maximum of 3 applications per crop.	VH Bee:H	R3
Cyantraniliprole (Benevia) FMC	28	Ingestion	7 NG	A	ALL	Registered in bulb vegetables for suppression of **Onion Thrips** (*Thrips tabaci*). Apply as a foliar spray to a newly developing infestation. Use a retreatment interval of 7 days. Maximum of 3 applications per crop.	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Diazinon PER13119	1B	Contact	14 G:14	A	TAS	Permitted in onions for control of **Onion Thrips** (*Thrips tabaci*). Apply as a foliar spray when thrips are in damaging numbers. Use a retreatment interval of 10 days. Maximum number of applications per crop not specified.	H Bee:H	R1
Dimethoate	1B	Contact	7	A	ALL	Registered in onions for control of Aphids, Jassids, Mites, Leafhoppers, Green Vegetable Bug, **Thrips** and Wingless Grasshopper. Apply as a foliar spray when pests appear. Retreatment interval and maximum number of applications not specified.	H Bee:H	R2
Ethyl Formate	8A	Contact / Fumigant	NR	A	ALL	Registered in onions for post-harvest control of **Onion Thrips** (*Thrips tabaci*)(adults only). Requires 6 hours of exposure in an enclosed chamber or box with a sealed plastic bag inside, at a temperature greater than 15 degrees Celsius. Users must be trained under a BOC approved training program.	-	-
Flonicamid (Mainman) UPL PER89185	29	Ingestion	1	A	ALL	Permitted in bulb vegetables (field grown only) for suppression of **Onion Thrips** (*Thrips tabaci*) and **Western Flower Thrips** (*Frankliniella occidentalis*). Apply as a foliar spray at first signs of infestation. Use a retreatment interval of 14 days. Maximum of 3 applications per crop.	M Bee:VL	-
Isocycloseram (Simodis) Syngenta	30	Ingestion	7 NG	A	ALL	Registered in bulb vegetables for suppression of **Onion Thrips** (*Thrips tabaci*) and **Plague Thrips** (*Thrips imaginis*). Apply as a foliar spray when spray thresholds are reached. Use a minimum retreatment interval of 7 days. Maximum of 2 applications per crop.	H Bee:VH	-
Lambda-Cyhalothrin (Karate Zeon)	3A	Contact	14	A	ALL	Registered in bulb onions for control of **Onion Thrips**. Apply as a foliar spray when thrips first appear. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	VH Bee:H	-
Malathion	1B	Contact	3	A	ALL	Registered in onions for control of **Onion Thrips** (*Thrips tabaci*). Apply as a foliar spray at first sign of infestation. Use a retreatment interval of 10 days. Maximum of 4 applications per crop.	H Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Petroleum Oil PER12221	-	Contact	1	A	ALL (excl. VIC)	Permitted in alliums for control of Aphids, Green Mirid, Green Vegetable Bug, Grey Cluster Bug, Leafhoppers, Mites, Rutherglen Bug and **Thrips**. Apply as a foliar spray when pest activity is evident. Retreatment interval and maximum number of applications per crop not specified.	L Bee:L	-
Phorate	1B	Contact	70 G:70	A	ALL	Registered in onions for control of Onion Maggot and **Thrips**. Apply granules as a band at sowing or to established plants in 5 cm band each side of growing crop. Incorporate into soil or apply when rains is expected or overhead irrigation can be made.	H Bee:H	R3
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in vegetables for control of Aphids, **Thrips**, Mealybug, Two-Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Retreatment interval and maximum number of treatments not specified.	L Bee:L	-
Spinetoram (Success Neo) Corteva	5	Ingestion	3	A	ALL	Registered in bulb vegetables for control of Western Flower Thrips and **Onion Thrips** (*Thrips tabaci*). Apply as a foliar spray when pests are present. Use a retreatment interval of 7 days. Maximum of 3 applications per season.	M Bee:H	-
Spirotetramat (Movento) Bayer	23	Ingestion	7	A	ALL	Registered in bulb onions for control of **Onion Thrips** (*Thrips tabaci*). Apply as a foliar spray when pest thresholds are reached. Use a minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	M Bee:VL	-
Acetamiprid + Pyriproxyfen (Trivor) Adama	4A+7C	Contact & Ingestion / IGR		P		Registered for control of Kellys Citrus Thrips in citrus.	M Bee:H	R2
Beauveria bassiana (Velifer) BASF	UN	Ingestion		P		Biological currently registered in protected vegetables and ornamentals, with activity on thrips.	L Bee:L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of various thrips in berries, citrus, fruiting vegetables and tropical & subtropical fruit.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cutworms (*Agrotis* spp.) **Priority: High**								
Rated as a high priority in TAS, as a moderate priority in NSW & QLD, and as a low priority in SA & VIC. Cutworms are a soil borne pest. The larvae are most active at night, when they will chew off seedlings at the base. They are most damaging when caterpillars transfer from summer and autumn weeds onto newly emerged seedlings. Natural predators and early control of summer and autumn weeds will help reduce larval survival prior to crop emergence. Specific control options are not available but Cutworms may be incidentally controlled with soil insecticides and fumgiants.								
Chlorantraniliprole (Acelepryn) Syngenta	28	Ingestion		P		Registered for control of **Black Cutworm** in turf.	L Bee:VL	-
Clothianidin + Imidacloprid (Poncho Plus Seed Treatment) BASF	4A	Contact & Ingestion		P		Registered for control of **Cutworms** as seed treatment in canola, forage brassicas, maize, sweet corn, sorghum, sunflower and pastures.	M Bee:M	R2
Cyantraniliprole + Thiamethoxam (Spinner) Syngenta	28+4A	Contact & Ingestion		P		Registered for control of **Black Cutworm** in turf.	M Bee:VH	R2
Indoxacarb (Provaunt) Syngenta	22A	Ingestion		P		Registered for control of **Black Cutworm** in turf.	L Bee:H	R3
Methomyl (Lannate)	1A	Contact		P		Registered for control of **Cutworms** in tobacco.	H Bee:H	R2
Trichlorfon	1B	Contact		P		Registered for control of **Cutworm** in cucurbits.	H Bee:H	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Onion Maggot (*Delia platura*) **Priority: High**								
Rated as a high priority in SA, as a moderate priority in NSW, and as a low priority in QLD, TAS & VIC. Onion Maggot larvae feed on roots, stem and the developing bulb. Feeding damage also encourages entry of soft rot pathogens. Direct application of insecticides to the root zone has been the most effective means for controlling maggot damage, although recent loss of chemistry has reduced the options available. Cultural measures such as crop rotation, ensuring vigorous early crop growth and minimising mechanical damage to onions should be used to support other controls.								
Phorate	1B	Contact	70 G:70	A	ALL	Registered in onions for control of Onion Maggot and **Thrips**. Apply granules as a band at sowing or to established plants in 5 cm band each side of growing crop. Incorporate into soil or apply when rain is expected or overhead irrigation can be made.	H Bee:H	R3
Broflanilide (Cimegra) BASF	30	Ingestion		P		Registered in brassica vegetables and Chinese cabbage for control of Diamondback Moth. US registration for control of soil pests as an in-furrow application in corn and tuberous & corm vegetables.	H Bee:VH	-
Common Blossom Thrips (*Frankliniella schultzei*) **Priority: Moderate**								
Rated as a high priority in VIC, as a moderate priority in NSW & SA, and as a low priority in QLD & TAS. Thrips feeding activity causes chlorosis and silvering of leaves and scarring of fruit. Control of thrips with insecticides is difficult and an integrated pest management approach should be used to ensure that crop damage is minimised on an ongoing basis.								
Dimethoate	1B	Contact	7	A	ALL	Registered in onions for control of Aphids, Jassids, Mites, Leafhoppers, Green Vegetable Bug, **Thrips** and Wingless Grasshopper. Apply as a foliar spray when pests appear. Retreatment interval and maximum number of applications not specified.	H Bee:H	R2
Petroleum Oil PER12221	-	Contact	1	A	ALL (excl. VIC)	Permitted in alliums for control of Aphids, Green Mirid, Green Vegetable Bug, Grey Cluster Bug, Leafhoppers, Mites, Rutherglen Bug and **Thrips**. Apply as a foliar spray when pest activity is evident. Retreatment interval and maximum number of applications per crop not specified.	L Bee:L	-
Phorate	1B	Contact	70 G:70	A	ALL	Registered in onions for control of Onion Maggot and **Thrips**. Apply granules as a band at sowing or to established plants in 5 cm band each side of growing crop. Incorporate into soil or apply when rains is expected or overhead irrigation can be made.	H Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in vegetables for control of Aphids, **Thrips**, Mealybug, Two-Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Retreatment interval and maximum number of treatments not specified.	L Bee:L	-
Cyantraniliprole (Benevia) FMC	28	Ingestion	7 NG	P-A	ALL	Registered in bulb vegetables for suppression of Onion Thrips (*Thrips tabaci*).	M Bee:VH	-
Flonicamid (Mainman) UPL PER89185	29	Ingestion	1	P-A	ALL	Permitted in bulb vegetables (field grown only) for suppression of Onion Thrips (*Thrips tabaci*) and Western Flower Thrips (*Frankliniella occidentalis*).	M Bee:VL	-
Isocycloseram (Simodis) Syngenta	30	Ingestion	7 NG	P-A	ALL	Registered in bulb vegetables for suppression of Onion Thrips (*Thrips tabaci*) and Plague Thrips (*Thrips imaginis*).	H Bee:VH	-
Lambda-Cyhalothrin (Karate Zeon)	3A	Contact	14	P-A	ALL	Registered in bulb onions for control of Onion Thrips.	VH Bee:H	-
Spinetoram (Success Neo) Corteva	5	Ingestion	3	P-A	ALL	Registered in bulb vegetables for control of Western Flower Thrips and Onion Thrips (*Thrips tabaci*).	M Bee:H	-
Spirotetramat (Movento) Bayer	23	Ingestion	7	P-A	ALL	Registered in bulb onions for control of Onion Thrips (*Thrips tabaci*).	M Bee:VL	-
Acetamiprid + Pyriproxyfen (Trivor) Adama	4A+7C	Contact & Ingestion / IGR		P		Registered for control of Kellys Citrus Thrips in citrus.	M Bee:H	R2
Beauveria bassiana (Velifer) BASF	UN	Ingestion		P		Biological currently registered in protected vegetables and ornamentals, with activity on thrips.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of various thrips in berries, citrus, fruiting vegetables and tropical & subtropical fruit.	L Bee:L	-
Whitefringed Weevil (*Naupactus leucoloma*) **Priority: Moderate**								
Rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Whitefringed Weevil is a soil-borne pest with the larvae doing most damage by feeding on the plant roots. Established plants can become stunted or show reduced vigour. Control measures are limited although insecticides applied for control of other soil-borne pests may provide incidental control.								
Bifenthrin (Talstar)	3A	Contact		P		Registered for control of Banana Weevil Borer in bananas, Vegetable Weevil in canola and Leafeating Weevil in citrus.	VH Bee:H	R3
Cadusafos (Rugby)	1B	Contact		P		Registered for control of Banana Weevil Borer in bananas.	H Bee:H	-
Indoxacarb (Avatar) FMC	22A	Ingestion		P		Registered for control of various weevil pests in asparagus, celery, pome fruit, stone fruit, strawberries, grapes and macadamias.	L Bee:H	R3
Spirotetramat + Imidacloprid (Movento Energy) Bayer	23+4A	Contact & Ingestion		P		Registered for control of Banana Rust Thrips and Banana Weevil Borer in bananas.	M Bee:M	R3
Tetraniliprole (Vayego Forte) Bayer	28	Ingestion	NR	A	ALL	Registered for control of Banana Weevil Borer in bananas.	L-M Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Root-Knot Nematode (*Meloidogyne* spp.) **Stumpy Root Nematode** (*Pratylenchus* spp.) **Priority: Moderate**								
Root-Knot Nematode is rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Stumpy Root Nematode is rated as a low priority in NSW, QLD, SA, TAS & VIC. Nematodes are soil-borne pests that feed on roots and reduce the efficiency of roots in foraging for water and nutrients. They can also cause direct feeding damage to bulbs. There are no nematicides registered for use in onions although pre-plant soil fumigation can be used. Cultural measures including destruction of crop residues and maintenance of a host-free fallow period.								
1,3-Dichloropropene	-	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes. Restricted chemical. ***For use by professional and registered fumigators only.***	-	-
Chloropicrin + 1,3-Dichloropropene	8B	Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphylans, Wireworms, soil borne diseases (including *Fusarium* and *Verticillium* wilts, *Rhizoctonia, Pythium*) and suppression of weeds. Restricted chemical. ***For use by professional and registered fumigators only.***	-	-
Abamectin (Tervigo) Syngenta	6	Contact		P		Registered for control of **Root Knot Nematode** in fruiting vegetables, cucurbits, potato and sweet potato.	M Bee:H	-
Cadusafos (Rugby)	1B	Contact		P		Registered for control of nematodes in bananas, citrus, ginger, sugar cane, tobacco and tomatoes.	H Bee:H	-
Cyclobutrifluram (Tymirium)	N-3	Contact		P		Nematicide in development from Syngenta.	-	-
Fenamiphos (Nemacur)	1B	Contact		P		Registered for control of Soil-Borne Plant Parasitic Nematodes in banana and aloe vera planting material.	H Bee:H	R3
Fluazaindolizine (Salibro Reklemel) Corteva	N-UN	Contact		P	ALL	Registered in for control of Nematodes in cucurbits, fruiting vegetables, root & tuber vegetables and sweet potato.	-	-
Fluensulfone (Nimitz) Adama	N-UN	Contact		P	ALL	Registered for control of **Root Knot Nematode** in cucurbits, fruiting vegetables, carrots, potato, sweet potato and sugarcane.	-	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Fluopyram (Velum Prime) Bayer	N-3	Contact		P		US registration for control of Nematodes in brassica leafy vegetables, bulb vegetables, cucurbits, fruiting vegetables, hops, legume vegetables, pome fruit, potato, sweet potato, small berries, sorghum, stone fruit, strawberries and other low-growing berries, sunflower, tobacco and tree nuts.	-	-
Oxamyl (Vydate) Corteva	1A	Contact		A		Registered for control of nematodes in bananas, capsicums, tomatoes and sweet potatoes.	H Bee:H	-
Terbufos (Counter)	1B	Contact	NR	A	ALL	Registered for control of nematodes in bananas.	H Bee:H	R3
Native Budworm (*Helicoverpa punctigera*) **Cotton Bollworm** (*Helicoverpa armigera*) **Priority: Moderate**								
Rated as a moderate priority in NSW, and as a low priority in QLD, SA, TAS & VIC. Onions are not a preferred host of these caterpillar pests. They can occasionally cause minor leaf feeding damage, providing an entry point for diseases such as Botrytis.								
Bacillus thuringiensis subsp Kurstaki Strain HD-1 (DiPel)	11	Biological / Ingestion	NR	A	ALL	Registered in vegetables for control of Armyworm (*Spodoptera* spp.), **Cotton Bollworm** (*Helicoverpa armigera*), **Native Budworm** (*Helicoverpa punctigera*), Cabbage Moth (*Plutella xylostella*), Cabbage White Butterfly (*Pieris rapae*), Green Looper (*Chrysodeixis eriosoma*), Light Brown Apple Moth (*Epiphyas postvittana*), Pear Looper (*Ectropis excursaria*), Soybean Looper (*Thysanoplusia orichalcea*), Vine Moth (*Phalaenoides glycinae*, *Agarista agricola*) and Tobacco Looper (*Chrysodeixis argentifera*). Time spraying to coincide with egg hatch. Treatments per season not limited.	VL Bee:VL	-
Cyantraniliprole (Benevia) FMC	28	Ingestion	7 NG	P-A	ALL	Registered in bulb vegetables for suppression of Onion Thrips (*Thrips tabaci*). Registered for control of **Cotton Bollworm** (*Helicoverpa armigera*), **Native Budworm** (*Helicoverpa punctigera*) in fruiting vegetables, cucurbits, potatoes and strawberries.	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Chlorantraniliprole (Coragen)	28	Ingestion		P		Registered for control of **Cotton Bollworm** (*Helicoverpa armigera*), **Native Budworm** (*Helicoverpa punctigera*) in brassica vegetables, brassica leafy vegetables, stalk & stem vegetables, leafy vegetables, lettuce, fruiting vegetables, cucurbits, legume vegetables, potatoes, strawberries and sweet corn.	L Bee:VL	-
Cyantraniliprole + Diafenthiuron (Minecto Forte) Syngenta	28+12A	Ingestion		P		Registered for control of **Cotton Bollworm** (*Helicoverpa armigera*) and **Native Budworm** (*Helicoverpa punctigera*) in cucurbits and fruiting vegetables.	M Bee:VH	-
Emamectin (Proclaim Opti) Syngenta	6	Ingestion		P		Registered for control of **Heliothis** (*Helicoverpa* spp.) in brassica vegetables, root & tuber vegetables (except potato), leafy vegetables, brassica leafy vegetables, sweet corn, strawberries, lettuce, cucurbits, legume vegetables and fruiting vegetables.	M Bee:H	-
Flubendiamide (Belt) Bayer	28	Ingestion		P		Registered for control of **Heliothis** (*Helicoverpa* spp.) in brassica vegetables, brassica leafy vegetables, chia, cucurbits, fruiting vegetables, herbs, leafy vegetables, root & tuber vegetables, stalk & stem vegetables and strawberry.	L-M Bee:L	-
Indoxacarb (Avatar eVo) FMC	22A	Ingestion		P		Registered for control of **Cotton Bollworm** (*Helicoverpa armigera*), **Native Budworm** (*Helicoverpa punctigera*) in brassica vegetables, leafy vegetables, fruiting vegetables, celery, cucurbits and sweet corn.	M Bee:H	R3
Methoxyfenozide (Prodigy) Corteva	18	Ingestion		P		Registered for control of various lepidopteran pests in pome fruit, blueberries, citrus, grapevines, kiwifruit, almonds, avocado, coffee, custard apple, eggplant, longan, lychee, peppers, okra, macadamia and tomatoes.	VL Bee:VL	-
Nuclear Polyhedrosis Virus (Vivus Max) AgBiTech	-	Biological / Ingestion	NR	P		Registered for control of **Corn Earworm** (*Helicoverpa armigera*) and **Native Budworm** (*Helicoverpa punctigera*) in potatoes, sweet corn, berryfruit, brassica vegetables, celery, cucurbits, fruiting vegetables, leafy vegetables, legume vegetables, ornamentals and pome fruit.	VL Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinosad (Entrust Organic) Corteva	5	Ingestion		P		Registered for control of **Helicoverpa** in brassica vegetables, cucurbits, culinary herbs, fruiting vegetables, leafy vegetables, legume vegetables, root & tuber vegetables, stalk & stem vegetables, sweet corn, berryfruit, citrus and pome fruit.	L Bee:L	-
Tebufenozide (Mimic) Corteva	18	Ingestion / IGR		P		Registered for control of various lepidopteran pests in apples, pears, citrus, grapevines, avocado, custard apple, kiwifruit, longan, lychee, macadamia and eucalyptus.	L Bee:L	-
Redlegged Earth Mite (*Halotydeus destructor*) **Priority: Low**								
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Can cause minor leaf feeding damage to newly emerged crops. It is important to control broadleaf weed hosts (e.g. capeweed) in the season prior to planting onions.								
Lambda-Cyhalothrin (Karate Zeon)	3A	Contact	14	P-A	ALL	Registered in bulb onions for control of Onion Thrips. Registered for control of Red Legged Earth Mite in barley, wheat, canola, pulses, lucerne and pastures.	VH Bee:H	-
Wireworm (*Heteroderes* spp.) **Priority: Low**								
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Wireworm larvae are soil-dwelling and will attack newly germinated seedlings by chewing the leaves and stems. This often leads to destruction of the whole plant.								
Chloropicrin + 1,3-Dichloropropene	8B	Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphylans, **Wireworms**, soil borne diseases (including *Fusarium* and *Verticillium* wilts, *Rhizoctonia, Pythium*) and suppression of weeds. Restricted chemical. ***For use by professional and registered fumigators only.***	-	-
Broflanilide (Cimegra) BASF	30	Ingestion		P		Registered in brassica vegetables and Chinese cabbage for control of Diamondback Moth. US registration for control of soil pests as an in-furrow application in corn and tuberous & corm vegetables.	H Bee:VH	-
Terbufos (Counter)	1B	Contact	NR	A	ALL	Registered for control of wireworm in maize, sorghum, sunflower and sweet corn.	H Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Jassids / Leafhoppers (Cicadellidae) **Priority: Low**								
Rated as a low priority in NSW, QLD, SA, TAS & VIC. An infrequent pest that rarely requires control measures in onions.								
Dimethoate	1B	Contact	7	A	ALL	Registered in onions for control of Aphids, **Jassids**, Mites, **Leafhoppers**, Green Vegetable Bug, Thrips and Wingless Grasshopper. Apply as a foliar spray when pests appear. Retreatment interval and maximum number of applications not specified.	H Bee:H	R2
Petroleum Oil PER12221	-	Contact	1	A	ALL (excl. VIC)	Permitted in alliums for control of Aphids, Green Mirid, Green Vegetable Bug, Grey Cluster Bug, **Leafhoppers**, Mites, Rutherglen Bug and Thrips. Apply as a foliar spray when pest activity is evident. Retreatment interval and maximum number of applications per crop not specified.	L Bee:L	-
Rutherglen Bug (*Nysius vinitor*) **Priority: Low**								
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Rutherglen Bug are a sporadic pest that can cause significant feeding damage to leaves if present in large numbers. They suck sap and deplete the crop of nutrients.								
Petroleum Oil PER12221	-	Contact	1	A	ALL (excl. VIC)	Permitted in alliums for control of Aphids, Green Mirid, Green Vegetable Bug, Grey Cluster Bug, Leafhoppers, Mites, **Rutherglen Bug** and Thrips. Apply as a foliar spray when pest activity is evident. Retreatment interval and maximum number of applications per crop not specified.	L Bee:L	-
Trichlorfon	1B	Contact	2	A	ALL	Registered in vegetables for control of Cabbage White Butterfly, Cabbage Moth, Green Vegetable Bug and **Rutherglen Bug**. Apply as a foliar spray when pests first appear. Retreatment interval and maximum number of applications per crop not specified.	H Bee:H	R2
Alpha-Cypermethrin PER80282	3A	Contact	14	P-A	ALL (excl. VIC)	Permitted in onion for control of Onion Thrips (*Thrips tabaci*). Registered for control of **Rutherglen Bug** (*Nysius vinitor*) in sunflowers.	VH Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dimethoate	1B	Contact	7	P-A	ALL	Registered in onions for control of Aphids, Jassids, Mites, Leafhoppers, Green Vegetable Bug, Thrips and Wingless Grasshopper. Registered for control of **Rutherglen Bug** in blackberries, raspberries, blueberries and ornamentals.	H Bee:H	R2
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion		P		Registered for control of **Rutherglen Bug** in cucurbits, fruiting vegetables, leafy vegetables, root & tuber vegetables, brassica vegetables, cane berries and strawberries.	M Bee:VH	-
Onion Aphid (*Neotoxoptera formosana*) **Priority: Low**								
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Onion Aphids do not generally cause economic damage in onions and control measures are not usually warranted.								
Dimethoate	1B	Contact	7	A	ALL	Registered in onions for control of **Aphids**, Jassids, Mites, Leafhoppers, Green Vegetable Bug, Thrips and Wingless Grasshopper. Apply as a foliar spray when pests appear. Retreatment interval and maximum number of applications not specified.	H Bee:H	R2
Petroleum Oil PER12221	-	Contact	1	A	ALL (excl. VIC)	Permitted in alliums for control of **Aphids**, Green Mirid, Green Vegetable Bug, Grey Cluster Bug, Leafhoppers, Mites, Rutherglen Bug and Thrips. Apply as a foliar spray when pest activity is evident. Retreatment interval and maximum number of applications per crop not specified.	L Bee:L	-
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in vegetables for control of **Aphids**, Thrips, Mealybug, Two-Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Retreatment interval and maximum number of treatments not specified.	L Bee:L	-
Cyantraniliprole (Benevia) FMC	28	Ingestion	7 NG	P-A	ALL	Registered in bulb vegetables for suppression of Onion Thrips (*Thrips tabaci*).	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spirotetramat (Movento) Bayer	23	Ingestion	7	P-A	ALL	Registered in bulb onions for control of Onion Thrips (*Thrips tabaci*). Registered for control of various aphids in green beans, green peas, brassica vegetables, brassica leafy vegetables, celery, rhubarb, cucurbits, eggplant, peppers, tomatoes, herbs, leafy vegetables, lettuce, chicory, endive, radicchio, potatoes, sweet corn, pome fruit and stone fruit.	M Bee:VL	-
Afidopyropen (Versys) BASF	9D	Ingestion		P		Registered for control of various aphids in sweet corn, rhubarb, artichokes, brassica vegetables, celery, cucurbits, fruiting vegetables, strawberry, leafy vegetables, brassica leafy vegetables, parsley, potato, sweet potato, ginger and ornamentals.	L Bee:L	-
Beauveria bassiana (Velifer) BASF	UN	Biological		P		Registered for suppression of various aphids in protected vegetables and ornamentals.	L Bee:L	-
Dimpropyridaz (Efficon) BASF	36	Ingestion		P		Registered for control of various aphids in cucurbits, brassica vegetables, leafy vegetables and brassica leafy vegetables.	M Bee:L	-
Flonicamid (Mainman) UPL	29	Ingestion		P		Registered for control of various aphids in apples, cucurbits, potatoes, strawberries and nursery stock.	M Bee:VL	-
Pirimicarb (Aphidex)	1A	Contact		P		Registered for control of various aphids in apples, citrus, stone fruit, blueberries, pepinos, strawberries, artichokes, asparagus, beans, brassica vegetables, brassica leafy vegetables, celeriac, celery, cucurbits, fruiting vegetables, kiwano, leafy vegetables, leeks, lettuce, okra, peas, potatoes, radishes, shallots, sweet corn, swedes, turnips, ornamentals and almonds.	VL Bee:VL	R3
Pymetrozine (Chess)	9B	Contact & Ingestion		P		Registered for control of various aphids in brassica vegetables, tomatoes, eggplants, capsicums, sweet corn, lettuce, endive, chicory, radicchio, leafy vegetables, cucurbits, potatoes, stone fruit, almonds, pistachios, beetroot, celery, cut flowers and nursery stock.	L Bee:VL	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion		P		Registered for control of various aphids in cucurbits, fruiting vegetables, sweet corn, leafy vegetables, root & tuber vegetables, brassica vegetables, cane berries, strawberries, pome fruit, stone fruit, tree nuts, nursery stock and herbs.	M Bee:VH	-
Bulb Mites (*Rhizoglyphus callae*) **Dry Bulb Mite** (*Aceria tulipae*) **Two Spotted Mite** (*Tetranychus urticae*) **Priority: Low**								
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Bulb Mites and Dry Bulb Mites can feed on the bulb's scales with the damage caused providing entry points for soil-borne disease. Two-Spotted Mite causes minor and infrequent damage to the aerial parts of the plant.								
Dimethoate	1B	Contact	7	A	ALL	Registered in onions for control of Aphids, Jassids, **Mites**, Leafhoppers, Green Vegetable Bug, Thrips and Wingless Grasshopper. Apply as a foliar spray when pests appear. Retreatment interval and maximum number of applications not specified.	H Bee:H	R2
Petroleum Oil PER12221	-	Contact	1	A	ALL (excl. VIC)	Permitted in alliums for control of Aphids, Green Mirid, Green Vegetable Bug, Grey Cluster Bug, Leafhoppers, **Mites**, Rutherglen Bug and Thrips. Apply as a foliar spray when pest activity is evident. Retreatment interval and maximum number of applications per crop not specified.	L Bee:L	-
Isocycloseram (Simodis) Syngenta	30	Ingestion	7 NG	P-A	ALL	Registered in bulb vegetables for suppression of Onion Thrips (*Thrips tabaci*) and Plague Thrips (*Thrips imaginis*). Registered for control of **Two Spotted Mite** in cucurbits and fruiting vegetables.	H Bee:VH	-
Acequinocyl (Kanemite) UPL	20B	Contact & Ingestion		P		Registered for control of **Two-Spotted Mite** in pome fruit and stone fruit.	L Bee:L	-
Bifenazate (Acramite)	20D	Contact & Ingestion		P		Registered for control of **Two-Spotted Mite** (*Tetranychus urticae*) in apples, pears, apricots, nectarines, peaches, plums, almonds, fruiting vegetables, cucurbits, papaya and strawberries.	L Bee:H	-
Cyflumetofen (Danisaraba) BASF	25A	Contact		P		Registered for control of **Two Spotted Mite** (*Tetranychus urticae*) in pome fruit, almond, citrus, grapes, strawberries, fruiting vegetables and ornamentals.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Etoxazole (Paramite) Sumitomo	10B	IGR / Contact		P		Registered for control of **Two-Spotted Mite** (*Tetranychus urticae*) in pome fruit, stone fruit (except cherries), almonds, table grapes, wine grapes, tomatoes and capsicum.	L Bee:VL	-
Fenbutatin Oxide (Torque) BASF	12B	Contact		P		Registered for control of **Two Spotted Mite** in apples, pears, peaches, nectarines, hops, bananas, strawberries and ornamentals.	L Bee:L	R3
Hexythiazox (Calibre)	10A	IGR / Contact		P		Registered for control of **Two-Spotted Mite** (*Tetranychus urticae*) in apples, pears, stone fruit, strawberries and ornamentals.	L Bee:L	-
Magnesium Hydroxide (Magnera) UPL	-	Contact		P		Registered for suppression of **Two-Spotted Mite** in cucurbits and tomatoes.	L Bee:L	-
Spiromesifen (Interrupt) Bayer	23	Ingestion		P		Registered for control of **Two Spotted Mite** in pome fruit and stone fruit.	M Bee:VL	-

4.3 Weeds of Onion

4.3.1 Weed priorities

Weeds	Priority
Wireweed (*Polygonum aviculare*)	H
Annual Ryegrass (*Lolium rigidum*)	H
Flaxleaf Fleabane (*Conyza bonariensis*)	H
Fat-Hen (*Chenopodium album*)	M
Fumitories (*Fumaria* spp.)	M
Self-Sown Potato (*Solanum tuberosum*)	M
Nutgrass (*Cyperus rotundus*)	M
Marshmallow (*Malva parviflora*)	M
Wild Radish (*Raphanus raphanistrum*)	M
Brome Grass (*Bromus* spp.)	M
Sowthistle (*Sonchus oleraceus*)	M
Slender Celery (*Apium leptophyllum*)	L
Capeweed (*Arctotheca calendula*)	L
Clover (*Trifolium* spp.)	L
Mexican Poppy (*Argemone ochroleuca*)	L
Groundsel (*Senecio* spp.)	L
Silverleaf Nightshade (*Solanum elaeagnifolium*)	L
Blackberry Nightshade (*Solanum nigrum*)	L
Chickweed (*Stellaria media*)	L
Pigweed (*Portulaca* spp.)	L
Black Bindweed (*Polygonum convolvulus*)	L
Shepherd's Purse (*Capsella bursa-pastoris*)	L
Caltrop (*Tribulus terrestris*)	L
Wild Carrot (*Cotula australis*)	L
Green Amaranth (*Amaranthus viridis*)	L
Paspalum (*Paspalum dilatatum*)	L
Burr Chervil (*Anthriscus caucalis*)	L
Turnip Weed (*Rapistrum rugosum*)	L
Wild Turnip (*Brassica tournefortii*)	L
Wild Oats (*Avena fatua*)	L
Potato Weed (*Galinsoga pawiflora*)	L
Hemlock (*Conium maclatum*)	L
Dandelion (*Taraxacum officinale*)	L
Couch Grass (*Cynodon dactylon*)	L
Burr Medic (*Medicago polymorpha*)	L
Lesser Swinecress (*Coronopus didymus*)	L

Weed priorities can vary substantially between regions, and weed management generally is guided more by cultural methods than by specific problem weed species. An integrated weed management program should be used to reduce the need for herbicides in crops. Our industry consultation identified Wireweed, Annual Ryegrass and Flaxleaf Fleabane as high

priorities. These are invasive species which are difficult to kill and must be managed using a sustained management program incorporating multiple control measures.

The risk of herbicide resistance should also be considered in devising a weed management program. Specific resistance management strategies for high resistance risk (1 and 2) and moderate resistance risk (3, 4, 6, 9, 10, 12, 13, 14, 15, 18, 19, 22, 23, 27, 29, 30 and 31) herbicide modes of action are available on the CropLife Australia webpage[7].

[7] https://www.croplife.org.au/resources/programs/resistance-management/

4.3.2 Available and potential products for weed control

TABLE KEY: Note that blank fields in the table indicate no information has been provided.

Availability			
A	Available via either registration or permit approval		
P	Potential – a possible candidate to pursue for registration or permit		
P-A	Potential, already approved in the crop for another use		
Resistance risk		**Regulatory risk (refer to Appendix 7)**	
		R1	Short-term: Critical concern over retaining access
**	Moderate resistance risk	R2	Medium-term: Maintaining access of significant concern
***	High resistance risk	R3	Long-term: Potential issues associated with use - Monitoring required
Withholding Period (WHP) – Number of days from last treatment to harvest (H) or Grazing (G)			
Harvest	H	Not Required when used as directed	NR
Grazing	G	No Grazing Permitted	NG

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Wireweed (*Polygonum aviculare*) **Priority: High**							
Rated as a high priority in QLD, SA, TAS & VIC, and as a moderate priority in NSW. Wireweed grows rapidly in the warmer months and is difficult to control with herbicides. Application timing is critical to ensure small weeds are targeted.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Wireweed** (*Polygonum aviculare*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Ethofumesate (Tramat)	15**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Wireweed**. Apply after 2 leaf stage of crop.	91	A	TAS	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Ethofumesate (Tramat) PER84808	15**	Bulb Onions	Permitted in onions for control of various grass and broadleaf weeds, including **Wireweed**. Apply after 2 leaf stage of crop. Maximum of 1 application per crop.	70	A	ALL	-
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Wireweed**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Wireweed**. Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including **Wireweed**. Best results are achieved with an application at the hook leaf stage, followed by a second application when crop is at 1.5 to 2.5 true leaf stage. Multiple treatments may be applied provided total dose does not exceed 2 L/ha in one season.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Pendimethalin (Stomp)	3**	Onions	Registered in onions for control of **Hogweed** (*Polygonum aviculare*). Apply either as a post-plant / pre-emergence application or post-emergence application. Check label for specific details as they vary between states and soil types.	NR	A	ALL (excl. QLD)	-
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including Annual Ryegrass. Registered for control of **Wireweed** in transplanted broccoli, cabbage and cauliflower.	NR	P-A	ALL	R3
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Wireweed** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Annual Ryegrass (*Lolium rigidum*) **Priority: High**							
Rated as a high priority in NSW, SA, TAS & VIC, and as a moderate priority in QLD. The most serious grass weed of southern Australia with distribution that is gradually extending north. Populations are prone to herbicide resistance so integrated weed management and rotation of herbicide modes of action are important aspects of a long-term control strategy.							
Clethodim (Select)	1***	Onions	Registered in onions for control of various grass weeds, including **Annual Ryegrass** (*Lolium rigidum*). Apply as a post-emergence application onto emerged weeds.	14	A	ALL	R3
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of **Annual Ryegrass** (*Lolium rigidum*). Apply post-emergence between 2 and 4 leaf crop stages. Maximum of 1 application per crop.	NR NG	A	ALL (excl. VIC)	-
Fluazifop-P (Fusilade)	1***	Onions	Registered in onions for control of various grass weeds, including **Annual Ryegrass**. Apply as a post-emergence application onto emerged weeds.	35	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Quizalofop-P-Ethyl	1***	Onions	Registered in onions for control of various grass weeds, including **Annual Ryegrass** (*Lolium rigidum*). Apply as a post-emergence application onto emerged weeds.	126	A	ALL	-
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including Fumitory. Registered for control of grass and broadleaf weeds, including **Annual Ryegrass** in fallow, Brassica vegetables and fruit and nut trees.	NR NG	P-A	ALL	-
Amitrole	34**		Registered for control of **Annual Ryegrass** in fallow and potatoes.		P		-
Napropamide (Devrinol)	0**		Registered for control of **Annual Ryegrass** in almonds, grapevines, stone fruit, tomatoes and canola.		P		-
Nonanoic Acid (Beloukha)	-		Registered for control of **Annual Ryegrass** in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Annual Ryegrass** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
Saflufenacil (Sharpen) BASF	14**		Registered for control of grass and broadleaf weeds, including **Annual Ryegrass** in fallow, lucerne and citrus, pome fruit and almonds.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Flax-leaf Fleabane (*Conyza bonariensis*) **Priority: High**							
Rated as a high priority in NSW, SA & VIC, and as a low priority in QLD & TAS. Flaxleaf Fleabane is a widespread weed that is difficult to control with herbicides. It seeds prolifically and can germinate year-round. Weed control should be targeted at small, actively growing weeds and usually multiple applications will be required. A combination of residual and knockdown herbicides should form part of an integrated approach to managing Flaxleaf Fleabane.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **Flaxleaf Fleabane**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Amitrole	34**		Registered for control of **Fleabane** in fallow and pine plantations.		P		-
Flumioxazin (Chateau) Sumitomo	14**		Registered for control of **Flaxleaf Fleabane** in grapes, pome fruit, stone fruit, citrus, nut trees, olives, avocados and berries.		P		-
Saflufenacil (Sharpen) BASF	14**		Registered for control of **Flaxleaf Fleabane** in citrus, pome fruit & almonds.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Fat Hen (*Chenopodium album*) **Priority: Moderate**							
Rated as a high priority in QLD & VIC, as a moderate priority in SA & TAS, and as a low priority in NSW. Fast-growing, annual broadleaf weed that germinates from spring to autumn. Herbicide control can be difficult and targeting weeds at early growth stages is critical.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Fat Hen** (*Chenopodium album*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Ethofumesate (Tramat)	15**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Fat Hen**. Apply after 2 leaf stage of crop.	91	A	TAS	-
Ethofumesate (Tramat) PER84808	15**	Bulb Onions	Permitted in onions for control of various grass and broadleaf weeds, including **Fat Hen**. Apply after 2 leaf stage of crop. Maximum of 1 application per crop.	70	A	ALL	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Fat Hen**. Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Fat Hen**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Fat Hen**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **Fat Hen**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Aclonifen (Emerger) Bayer	32**	Pre-Emergence	Bayer is expected to seek registration for pre-emergent control of grass and broadleaf weeds in various vegetable crops. Registered in Europe for use in potatoes, legume vegetables and cereals. **Fat Hen** is listed as susceptible.		P		-
Clomazone	13**	Pre-Emergence Weed Control	Registered for control of various broadleaf weeds, including **Fat Hen** in cucumber, pumpkins, kabocha, squash, rockmelons, watermelon, zucchini, green beans, navy bean and poppies.		P		-
Norflurazon (Zoliar) AgNova	12**		Registered for suppression of **Fat Hen** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Fumitories (*Fumaria* spp.) **Priority: Moderate**							
Rated as a moderate priority in QLD, TAS & VIC, and as a low priority in NSW & SA. Fumitory is an aggressive and competitive weed which develops a highly persistent seed bank. Requires ongoing management using an Integrated Weed Management approach.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Fumitories** (*Fumaria* spp.) Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Ethofumesate (Tramat)	15**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Fumitory**. Apply after 2 leaf stage of crop.	91	A	TAS	-
Ethofumesate (Tramat) PER84808	15**	Bulb Onions	Permitted in onions for control of various grass and broadleaf weeds, including **Fumitory**. Apply after 2 leaf stage of crop. Maximum of 1 application per crop.	70	A	ALL	-
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Fumitories**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Fumitories** (*Fumaria* spp.) Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Fumitory**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including **Fumitory**. Best results are achieved with an application at the hook leaf stage, followed by a second application when crop is at 1.5 to 2.5 true leaf stage. Multiple treatments may be applied provided total dose does not exceed 2 L/ha in one season.	NR NG	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of Annual Ryegrass (*Lolium rigidum*). Registered for control of grass and broadleaf weeds, including **Fumitory** in sweet corn, beans, peas, pumpkins and kabocha.	NR NG	P-A	ALL (excl. VIC)	-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Self-Sown Potato (*Solanum tuberosum*) **Priority: Moderate**							
Rated as a high priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Volunteer potato plants are difficult to control as they germinate from tubers that remain in the soil after the previous crop. Multiple herbicide applications will be required to keep populations in check.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Volunteer Potato**. Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Volunteer Potatoes**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including **Volunteer Potato**. Best results are achieved with an application at the hook leaf stage, followed by a second application when crop is at 1.5 to 2.5 true leaf stage. Multiple treatments may be applied provided total dose does not exceed 2 L/ha in one season.	NR NG	A	ALL	-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Nutgrass (*Cyperus rotundus*) **Priority: Moderate**							
Rated as a high priority in QLD & VIC, as a moderate priority in TAS, and as a low priority in NSW & SA. Nutgrass prefers damp, water-logged soils but the nuts can survive for years underground during dry times. Herbicide options are limited and unreliable. Improve soil drainage if possible.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass, broadleaf weeds and **Nutgrass**. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Cyhalofop-Butyl + Florpyrauxifen-Benzyl (Agixa Rinskor) Corteva	1*** + 4**		Registered for control of **Nutgrass** in rice.		P		-
Halosulfuron-Methyl (Sempra)	2***		Registered for control of **Nutgrass** in turf and sugarcane.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Nutgrass** in asparagus.		P		-
Marshmallow (*Malva parviflora*) **Priority: Moderate**							
Rated as a high priority in SA & VIC, as a moderate priority in QLD & TAS, and as a low priority in NSW. Marshmallow is adapted to a wide variety of environments and highly competitive weed. Control with knockdown herbicides can be unreliable.							
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Marshmallow**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Marshmallow** (*Malva parviflora*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Small Flowered Mallow**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including Fumitory. Registered for control of grass and broadleaf weeds, including **Marshmallow** in fallow, Brassica vegetables and fruit and nut trees.	NR NG	P-A	ALL	-
Flumioxazin (Chateau) Sumitomo	14**		Registered for control of **Marshmallow** in grapes, pome fruit, stone fruit, citrus, nut trees, olives, avocados and berries.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Wild Radish (*Raphanus raphanistrum*) **Priority: Moderate**							
Rated as a high priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Wild Radish populations are prone to herbicide resistance so integrated weed management and rotation of herbicide modes of action are important aspects of a long-term control strategy.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Wild Radish** (*Raphanus raphanistrum*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Wild Radish**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Wild Radish** (*Raphanus raphanistrum*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Wild Radish**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Wild Radish**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including Fumitory. Registered for control of grass and broadleaf weeds, including **Wild Radish** in fallow, Brassica vegetables and fruit and nut trees.	NR NG	P-A	ALL	-
Flumioxazin (Chateau) Sumitomo	14**		Registered for control of **Wild Radish** in grapes, pome fruit, stone fruit, citrus, nut trees, olives, avocados and berries.		P		-
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Wild Radish** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Brome Grass (*Bromus* spp.) **Priority: Moderate**							
Rated as a high priority in VIC, as a moderate priority in NSW, SA & TAS, and as a low priority in QLD. Brome Grass is an aggressive perennial grass weed that seeds prolifically and readily develops herbicide resistance. An integrated weed management program is vital as use of herbicides alone for controlling Brome Grass will be unsustainable.							
Clethodim (Select)	1***	Onions	Registered in onions for control of various grass weeds, including **Brome Grass** (*Bromus diandrus*). Apply as a post-emergence application onto emerged weeds.	14	A	ALL	R3
Fluazifop-P (Fusilade)	1***	Onions	Registered in onions for control of various grass weeds, including **Brome Grass**. Apply as a post-emergence application onto emerged weeds.	35	A	ALL	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Quizalofop-P-Ethyl	1***	Onions	Registered in onions for control of various grass weeds, including **Brome Grasses** (*Bromus* spp.). Apply as a post-emergence application onto emerged weeds.	126	A	ALL	-
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Brome Grass** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Sowthistle (*Sonchus oleraceus*) **Priority: Moderate**							
Rated as a moderate priority in NSW, QLD, TAS & VIC, and as a low priority in SA. Sowthistle is prolific and widespread in all regions and it is also prone to development of herbicide resistance.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Sowthistle** (*Sonchus oleraceus*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Cyanazine (Bladex)	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Sowthistle** (*Sonchus oleraceus*). Apply after the second leaf is fully expanded and the third true leaf has emerged but not after the first signs of bulbing.	NR	A	TAS	R3
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Sowthistle**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Sowthistle** (*Sonchus oleraceus*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Sowthistle**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Sowthistle**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including **Milk Thistle**. Best results are achieved with an application at the hook leaf stage, followed by a second application when crop is at 1.5 to 2.5 true leaf stage. Multiple treatments may be applied provided total dose does not exceed 2 L/ha in one season.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **Milk Thistle**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of Annual Ryegrass (*Lolium rigidum*). Registered for control of grass and broadleaf weeds, including **Sowthistle** in sweet corn, beans, peas, pumpkins and kabocha.	NR NG	P-A	ALL (excl. VIC)	-
Amitrole	34**		Registered for control of **Sowthistle** in fallow.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Isoxaben (Gallery) Corteva	29**		Registered for control of **Sowthistle** in non-crop, forests, fencelines, tree fruit & nut orchards, vineyards, nursery & amenity tree plantings.		P		-
Napropamide (Devrinol)	0**		Registered for control of **Sowthistle** in almonds, grapevines, stone fruit, tomatoes and canola.		P		-
Nonanoic Acid (Beloukha)	-		Registered for control of **Sowthistle** in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		-
Norflurazon (Zoliar) Agnova	12**		Registered for control of grass and broadleaf weeds including **Sowthistle** in citrus, grapes, almonds, stone & pome fruits.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Slender Celery (*Apium leptophyllum*) **Priority: Low**							
Rated as a high priority in QLD, and as a low priority in NSW, SA, TAS & VIC. Slender Celery is a widespread annual broadleaf. Herbicide options are limited.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Slender Celery** (*Apium leptophyllum*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Capeweed (*Arctotheca calendula*) **Priority: Low**							
Rated as a high priority in VIC, as a moderate priority in SA & TAS, and as a low priority in NSW & QLD. Annual broadleaf weed that germinates in the cooler months and is widespread in temperate regions. Capeweed seeds and grows prolifically and is difficult to control with knockdown herbicides.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Capeweed** (*Arctotheca calendula*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Capeweed** (*Arctotheca calendula*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Capeweed**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Capeweed**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including Fumitory. Registered for control of grass and broadleaf weeds, including **Capeweed** in fallow, Brassica vegetables and fruit and nut trees.	NR NG	P-A	ALL	-
Norflurazon (Zoliar) Agnova	12**		Registered for control of grass and broadleaf weeds including **Capeweed** in citrus, grapes, almonds, stone & pome fruits.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Clover (*Trifolium* spp.) **Priority: Low**							
Rated as a moderate priority in QLD, TAS & VIC, and as a low priority in NSW & SA. Aggressive winter-growing weed that is difficult to control with herbicides in-crop.							
Cyanazine (Bladex)	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Clovers** (*Trifolium* spp.) Apply after the second leaf is fully expanded and the third true leaf has emerged but not after the first signs of bulbing.	NR	A	TAS	R3
Ethofumesate (Tramat)	15**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Clovers**. Apply after 2 leaf stage of crop.	91	A	TAS	-
Ethofumesate (Tramat) PER84808	15**	Bulb Onions	Permitted in onions for control of various grass and broadleaf weeds, including **Clovers**. Apply after 2 leaf stage of crop. Maximum of 1 application per crop.	70	A	ALL	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Clover**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **White Clover**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of Annual Ryegrass (*Lolium rigidum*). Registered for control of grass and broadleaf weeds, including **Clover** in sweet corn, beans, peas, pumpkins and kabocha.	NR NG	P-A	ALL (excl. VIC)	-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Mexican Poppy (*Argemone ochroleuca*) **Priority: Low**							
Rated as a moderate priority in QLD, and as a low priority in NSW, SA, TAS & VIC. Mexican Poppy is a broadleaf annual weed that is difficult to control with herbicides. It seeds prolifically and will germinate over an extended period of the year.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Groundsel (*Senecio* spp.) **Priority: Low**							
Rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Groundsel is a widespread, annual broadleaf that is difficult to control with herbicides.							
Bentazone (Basagran) PER14773	6**	Onions	Permitted in onions for control of various broadleaf weeds, including **Groundsel** (*Senecio* spp.) Apply after crop has 3 leaves, are waxy and healthy, and when weeds are seedlings. Apply as either a single application or split application. In either situation, do not exceed a cumulative total of 3 L/ha of product per crop.	56	A	ALL (excl. VIC)	-
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Common Groundsel** (*Senecio vulgaris*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including **Groundsel**. Best results are achieved with an application at the hook leaf stage, followed by a second application when crop is at 1.5 to 2.5 true leaf stage. Multiple treatments may be applied provided total dose does not exceed 2 L/ha in one season.	NR NG	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Silverleaf Nightshade (*Solanum elaeagnifolium*) **Blackberry Nightshade** (*Solanum nigrum*) **Priority: Low**							
Silverleaf Nightshade is rated as a high priority in NSW, as a moderate priority in TAS & VIC, and as a low priority in QLD & SA. Blackberry Nightshade is rated as a moderate priority in QLD, TAS & VIC, and as a low priority in NSW & SA. Competitive weeds that are widespread in all regions. Herbicide control is effective but requires timely application and avoidance of seed set over several years to bring the soil seed bank down.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Blackberry Nightshade** (*Solanum nigrum*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Cyanazine (Bladex)	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Blackberry Nightshade** (*Solanum nigrum*). Apply after the second leaf is fully expanded and the third true leaf has emerged but not after the first signs of bulbing.	NR	A	TAS	R3
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Blackberry Nightshade**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including **Blackberry Nightshade**. Best results are achieved with an application at the hook leaf stage, followed by a second application when crop is at 1.5 to 2.5 true leaf stage. Multiple treatments may be applied provided total dose does not exceed 2 L/ha in one season.	NR NG	A	ALL	-
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of Annual Ryegrass (*Lolium rigidum*). Registered for control of grass and broadleaf weeds, including **Blackberry Nightshade** in sweet corn, beans, peas, pumpkins and kabocha.	NR NG	P-A	ALL (excl. VIC)	-
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including Threeflower Nightshade (*Solanum triflorum*).	NR	P-A	ALL	R3
Aclonifen (Emerger) Bayer	32**	Pre-Emergence	Bayer is expected to seek registration for pre-emergent control of grass and broadleaf weeds in various vegetable crops. Registered in Europe for use in potatoes, legume vegetables and cereals. **Blackberry Nightshade** is listed as moderately susceptible at a high rate.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Chickweed (*Stellaria media*) **Priority: Low**							
Rated as a moderate priority in QLD, TAS & VIC, and as a low priority in NSW & SA. Low growing, winter annual weed that can continue growing all through summer. Targeting weed control prior to their flowering is critical.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Chickweed** (*Stellaria media*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Chickweed** (*Stellaria media*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Chickweed**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Chickweed**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **Chickweed**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including Fumitory. Registered for control of grass and broadleaf weeds, including **Chickweed** in fallow, Brassica vegetables and fruit and nut trees.	NR NG	P-A	ALL	-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Pigweed (*Portulaca* spp.) **Priority: Low**							
Rated as a high priority in VIC, as a moderate priority in NSW, and as a low priority in QLD, SA & TAS. Summer growing broadleaf weed that competes aggressively in-crop and can be difficult to control with herbicides.							
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Pigweed**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Pigweed** (*Portulaca oleracea*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Pigweed**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of Annual Ryegrass (*Lolium rigidum*). Registered for control of grass and broadleaf weeds, including **Pigweed** in sweet corn, beans, peas, pumpkins and kabocha.	NR NG	P-A	ALL (excl. VIC)	-
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including Annual Ryegrass. Registered for control of **Pigweed** in transplanted broccoli, cabbage and cauliflower.	NR	P-A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Clomazone	13**	Pre-Emergence Weed Control	Registered for control of various broadleaf weeds, including **Pigweed** in cucumber, pumpkins, kabocha, squash, rockmelons, watermelon, zucchini, green beans, navy bean and poppies.		P		-
Norflurazon (Zoliar) AgNova	12**	Pre-Emergence Weed Control	Registered for control of **Pigweed** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Black Bindweed (*Polygonum convolvulus*) **Priority: Low**							
Rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Annual broadleaf weed that can germinate in a wide range of conditions. Herbicide control is effective but will require ongoing management.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Black Bindweed** / Climbing Buckwheat (*Fallopia convolvulus*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Cyanazine (Bladex)	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Black Bindweed** (*Polygonum convolvulus*). Apply after the second leaf is fully expanded and the third true leaf has emerged but not after the first signs of bulbing.	NR	A	TAS	R3
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Black Bindweed**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Black Bindweed** (*Polygonum convolvulus*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Black Bindweed**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Shepherd's Purse (*Capsella bursa-pastoris*) **Priority: Low**							
Rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Shepherd's Purse is an erect, annual broadleaf which is adapted to a wide range of environments. Herbicide options are limited.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Shepherds Purse** (*Capsella bursa-pastoris*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Shepherd's Purse**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Shepherds Purse** (*Capsella bursa-pastoris*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Shepherds Purse**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Shepherds Purse**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **Shepherds Purse**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of Annual Ryegrass (*Lolium rigidum*). Registered for control of grass and broadleaf weeds, including **Shepherd's Purse** in sweet corn, beans, peas, pumpkins and kabocha.	NR NG	P-A	ALL (excl. VIC)	-
Norflurazon (Zoliar)	12**		Registered for control of grass and broadleaf weeds, including **Shepherd's Purse** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Caltrop (*Tribulus terrestris*) **Priority: Low**							
Rated as a high priority in VIC, as a moderate priority in NSW, and as a low priority in QLD, SA & TAS. Caltrop is an annual, summer-growing broadleaf that grows as a vine and has sharp spines on the fruiting structures. Established plants develop a strong taproot making herbicide control difficult.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Norflurazon (Zoliar)	12**		Registered for control of grass and broadleaf weeds, including **Caltrop** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Wild Carrot (*Cotula australis*) **Priority: Low**							
Rated as a moderate priority in QLD & TAS, and as a low priority in NSW, SA & VIC. Widespread annual broadleaf weed that can be controlled effectively with herbicides, in conjunction with prevention of seed set to reduce populations over time.							
Bentazone (Basagran) PER14773	6**	Onions	Permitted in onions for control of various broadleaf weeds, including **Wild Carrot** (*Cotula australis*). Apply after crop has 3 leaves, are waxy and healthy, and when weeds are seedlings. Apply as either a single application or split application. In either situation, do not exceed a cumulative total of 3 L/ha of product per crop.	56	A	ALL (excl. VIC)	-
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Birds Eye / Carrot Weed** (*Cotula australis*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Green Amaranth (*Amaranthus viridis*) **Priority: Low**							
Rated as a moderate priority in TAS & VIC, and as a low priority in NSW, QLD & SA. Green Amaranth is a short-lived, summer-growing annual broadleaf weed that is a prolific seed producer.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Green Amaranth** (*Amaranthus viridis*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Green Amaranth**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Green Amaranth** (*Amaranthus viridis*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Dimethenamid-P (Outlook) PER89991	15**	Onions	Permitted in onions for suppression of Annual Ryegrass (*Lolium rigidum*). Registered for control of grass and broadleaf weeds, including **Amaranth** in sweet corn, beans, peas, pumpkins and kabocha.	NR NG	P-A	ALL (excl. VIC)	-
Clomazone	13**	Pre-Emergence Weed Control	Registered for control of various broadleaf weeds, including suppression of **Amaranth** in cucumber, pumpkins, kabocha, squash, rockmelons, watermelon, zucchini, green beans, navy bean and poppies.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Paspalum (*Paspalum dilatatum*) **Priority: Low**							
Rated as a high priority in NSW, as a moderate priority in VIC, and as a low priority in QLD, SA & TAS. Paspalum is a perennial grass weeds that forms clumps that are tough to control. They are aggressive and fast-growing and ongoing control measures are required to keep them in check. Spot spraying can be effective, but it is important to target newly germinated weeds to achieve effective control.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Haloxyfop (Verdict) PER84734	1***	Bulb Onions	Permitted in onions for control of Storksbill (*Erodium botrys* & *E. moschatum*), Australian Millet (*Panicum decompositum*), Green Panic (*Panicum maximum var. trichoglume),* Mossman River Grass (*Cenchrus echinatus*) and Prairie Grass (*Bromus catharticus*). Registered for control of **Paspalum** in orchard, vine & plantation crops, forestry and pyrethrum.	28	P-A	ALL (excl. VIC)	-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Burr Chervil (*Anthriscus caucalis*) **Priority: Low**							
Rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Widespread annual broadleaf weed that can be controlled effectively with herbicides, in conjunction with prevention of seed set to reduce populations over time.							
Bentazone (Basagran) PER14773	6**	Onions	Permitted in onions for control of various broadleaf weeds, including **Burr Chervil** (*Anthriscus caucalis*). Apply after crop has 3 leaves, are waxy and healthy, and when weeds are seedlings. Apply as either a single application or split application. In either situation, do not exceed a cumulative total of 3 L/ha of product per crop.	56	A	ALL (excl. VIC)	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Turnip Weed (*Rapistrum rugosum*) **Wild Turnip** (*Brassica tournefortii*) **Priority: Low**							
Turnip Weed is rated as a low priority in NSW, QLD, SA, TAS & VIC. Wild Turnip is rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Winter-growing, broadleaf weeds that compete aggressively and run to seed quickly. Targeting early growth stages is critical.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Turnip Weed** (*Rapistrum rugosum*) and **Wild Turnip** (*Brassica tournefortii*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Cyanazine (Bladex)	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Wild Turnip** *(Brassica tournefortii*). Apply after the second leaf is fully expanded and the third true leaf has emerged but not after the first signs of bulbing.	NR	A	TAS	R3
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Permitted in bulb onions for control of various broadleaf weeds, including **Turnip Weed** and **Wild Turnip**. Apply between 1 and 5 true leaf stages. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	NR	A	TAS	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Turnip Weed** (*Rapistrum rugosum*) and **Wild Turnip** (*Brassica tournefortii*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Wild Turnip**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Wild Turnip**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Norflurazon (Zoliar)	12**		Registered for control of grass and broadleaf weeds, including **Wild Turnip** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Wild Oats (*Avena fatua*) **Priority: Low**							
Rated as a moderate priority in NSW, QLD & VIC, and as a low priority in SA & TAS. Wild Oats are a widespread annual grass weed that seed prolifically. Prone to herbicide resistance, a planned strategic approach to reducing populations over time is required.							
Clethodim (Select)	1***	Onions	Registered in onions for control of various grass weeds, including **Wild Oats** (*Avena* spp.) Apply as a post-emergence application onto emerged weeds.	14	A	ALL	R3
Fluazifop-P (Fusilade)	1***	Onions	Registered in onions for control of various grass weeds, including **Wild Oats**. Apply as a post-emergence application onto emerged weeds.	35	A	ALL	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Quizalofop-P-Ethyl	1***	Onions	Registered in onions for control of various grass weeds, including **Wild Oats** (*Avena* spp.) Apply as a post-emergence application onto emerged weeds.	126	A	ALL	-
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Potato Weed (*Galinsoga pawiflora*) **Priority: Low**							
Rated as a low priority in NSW, QLD, SA, TAS & VIC. Widespread annual broadleaf weed that competes aggressively. It can be controlled by herbicides but ongoing management is critical as seed can survive long periods under ground.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Potato Weed** (*Galinsoga parviflora*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Potato Weed**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Oxyfluorfen (Goal)	14**	Onions / Seeded	Registered in onions for control of various broadleaf weeds, including **Potato Weed**. Best results are achieved with an application at the hook leaf stage, followed by a second application when crop is at 1.5 to 2.5 true leaf stage. Multiple treatments may be applied provided total dose does not exceed 2 L/ha in one season.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Registered in onions (direct seeded) for control of various grass and broadleaf weeds, including **Potato Weed**. Apply as a surface spray immediately after seeding. Must be incorporated by rainfall or irrigation as soon as possible.	NR	A	ALL	R3
Clomazone	13**	Pre-Emergence Weed Control	Registered for control of various broadleaf weeds, including **Potato Weed** in cucumber, pumpkins, kabocha, squash, rockmelons, watermelon, zucchini, green beans, navy bean and poppies.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Hemlock (*Conium maclatum*) **Priority: Low**							
Rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Hemlock is a short-lived annual broadleaf that is widespread in distribution. Herbicide control is effective if targeted against young, active-growing plants.							
Bentazone (Basagran) PER14773	6**	Onions	Permitted in onions for control of various broadleaf weeds, including **Hemlock / Carrot Fern** (*Conium maculatum*). Apply after crop has 3 leaves, are waxy and healthy, and when weeds are seedlings. Apply as either a single application or split application. In either situation, do not exceed a cumulative total of 3 L/ha of product per crop.	56	A	ALL (excl. VIC)	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Dandelion (*Taraxacum officinale*) **Priority: Low**							
Rated as a moderate priority in SA & VIC, and as a low priority in NSW, QLD & TAS. Dandelions are an annual broadleaf weed that can grow year-round in most regions. They are prolific and very hardy weeds that will require sustained control measures to eradicate.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Dandelion** (*Taraxacum officinale*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Couch Grass (*Cynodon dactylon*) **Priority: Low**							
Rated as a moderate priority in SA & VIC, and as a low priority in NSW, QLD & TAS. Couch Grass is a widespread, perennial weed that grows year-round in most areas. Herbicide control is effective provided it is targeted to young, actively growing weeds. Multiple applications are usually required.							
Fluazifop-P (Fusilade)	1***	Onions	Registered in onions for control of various grass weeds, including **Couch Grass** seedlings. Apply as a post-emergence application onto emerged weeds.	35	A	ALL	-
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Burr Medic (*Medicago polymorpha*) **Priority: Low**							
Rated as a moderate priority in QLD, and as a low priority in NSW, SA, TAS & VIC. Burr Medic is a low-growing annual broadleaf weed that can germinate in a broad range of conditions. The prickly fruiting bodies are a nuisance for workers in the field.							
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Burr Medic** (*Medicago polymorpha*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Medics**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Lesser Swinecress (*Coronopus didymus*) **Priority: Low**							
Rated as a moderate priority in TAS, and as a low priority in NSW, QLD, SA & VIC. Broadleaf weed that can be perennial and grows most actively in the warmer months. Can be controlled with herbicides if targeted to young, actively growing weeds.							
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Registered in bulb onions for control of various broadleaf weeds, including **Lesser Swinecress** (*Coronopus didymus*). Apply when weeds are up to the 4 leaf stage or when plants are not more than 35mm in diameter. Maximum of 2 applications per crop. If using 2 applications, apply the first post-sowing pre-emergence and the second post-emergence. Post emergence application must not be prior to 2 leaf or later than 4 leaf crop stage.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Onions / Post-Plant, Pre-Emergence Application	Registered in onions for control of grass and broadleaf weeds. Apply as a post-plant, pre-emergence application at least 7 days before crop is due to emerge.	NR	A	TAS	R3
Ioxynil (Totril)	6**	Onions	Registered in onions for control of various broadleaf weeds, including **Lesser Swinecress** (*Coronopus didymus*). Apply between the 3 and 8 leaf stage of the crop.	NR	A	ALL	R3
Linuron	5**	Onions	Registered in onions for control of various broadleaf weeds, including **Lesser Swinecress**. Apply when onions are 15cm or more in height, with at least 3 leaves.	NR	A	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Registered in onions for control of various grass and broadleaf weeds, including **Lesser Swinecress**. Apply post-emergence, at or after 1 leaf stage in cooler areas and after 2nd leaf is obvious in warmer regions.	49	A	ALL	R3
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply pre-plant or as an inter-row directed or shielded spray. Avoid spray contact with any part of the crop. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Registered in vegetables for control of annual grass and broadleaf weeds. Apply prior to crop emergence. NOTE: This use pattern is not supported under the draft APVMA review pending a final regulatory decision in 2025.	NR G:1	A	ALL	R1
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

4.4 Plant Growth Regulators in Onions

4.4.1 Plant Growth Regulator Priorities

Priority
Moderate
Improve storage life
Inhibit sprouting
Low
Increase bulb size
Initiation of bulbing
Promote crop evenness

Plant Growth Regulators (PGR) do not play a significant role in the management of onions. There were no high priority issues nominated for PGRs. Issues identified as moderate priority are improving storage life and inhibiting sprouting. There is only one PGR currently available for use in onions, Maleic Hydrazide which is used for the inhibition of sprouting.

4.4.2 Available and Potential Plant Growth Regulators

TABLE KEY: Note that blank fields in the table indicate no information has been provided.

Availability		Regulatory risk (refer to Appendix 7)	
A	Available via either registration or permit approval	R1	Short-term: Critical concern over retaining access
P	Potential - a possible candidate to pursue for registration or permit	R2	Medium-term: Maintaining access of significant concern
P-A	Potential, already approved in the crop for another use	R3	Long-term: Potential issues associated with use - Monitoring required

Withholding Period (WHP) – Number of days from last treatment to harvest (H) or Grazing (G)			
Harvest	H	Not Required when used as directed	NR
Grazing	G	No Grazing Permitted	NG

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use	WHP (days)	Availability	States	Regulatory risk
Inhibit Sprouting **Priority: Moderate**							
Rated as a high priority in SA, and as a low priority in NSW, QLD, TAS & VIC. Post-harvest sprouting will reduce shelf-life and marketability of onions.							
Maleic Hydrazide	Plant Growth Regulator	Onion	Registered in onions to **inhibit sprouting** of bulbs. Spray when onion bulbs are fully mature and have 5-6 green leaves and their necks are soft enough for the lops to fall if they have not already done so. Apply when 50% of the tops have fallen, but while all the tops are still green.	NR	A	TAS, NSW, ACT, VIC, SA & WA	-

5. References

5.1 Information:

AgChem Access Priority Access Forum	https://www.agrifutures.com.au/national-rural-issues/agvet-chemicals/
Australian Pesticide and Veterinary Medicines Authority	www.apvma.gov.au
APVMA Chemical review	https://apvma.gov.au/chemicals-and-products/chemical-review/listing
APVMA MRLs	www.legislation.gov.au/F2023L01350/latest/text
APVMA Permit search	Agricultural And Veterinary Permits Search - portal.apvma.gov.au
APVMA Product search	Public Chemical Registration Information System Search - portal.apvma.gov.au
Codex MRL database	http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/
Cotton Pest Management Guide 2023-24	https://www.cottoninfo.com.au/publications/cotton-pest-management-guide
CropLife Australia	https://www.croplife.org.au/
Hort Innovation	www.horticulture.com.au

5.2 Abbreviations and Definitions:

APVMA	Australian Pesticides and Veterinary Medicines Authority
IPM	Integrated pest management
LOQ	Limit of quantification
MRL	Maximum residue limit (mg/kg or ppm)
Pesticides	Plant protection products (fungicide, insecticide, herbicide, nematicides, rodenticides, etc.).
Plant pests	Diseases, insects, nematodes, rodents, viruses, weeds, etc.
SARP	Strategic Agrichemical Review Process
TBC	To be confirmed
WHP	Withholding Period

5.3 Acknowledgements:

Thanks go to the many industry people who contributed information and collaborated on the review of this report.

6. Appendices

Appendix 1. Products available for disease control in onion
Appendix 2. Products available for control of insects and other pests in onion
Appendix 3. Products available for weed control in onion
Appendix 4. Plant Growth Regulators available in onion
Appendix 5. Current permits for use in onion
Appendix 6. Onion Maximum Residue Limits (MRLs)
Appendix 7. Onion regulatory risk assessment

Appendix 1. Products available for disease control in onions

Active Ingredient (Trade Name)	Chemical Group	Situation	Diseases / Comments	States	WHP Days	Regulatory Risk
Azoxystrobin + Oxathiapiprolin (Orondis Flexi) Syngenta	11+49	Bulb Vegetables	Downy Mildew (*Pseudoperonospora destructor*) Suppression of: White Rot (*Sclerotium cepivorum*)	ALL	NR NG	-
Boscalid (Filan)	7	Onions	Neck Rot (*Botrytis allii*)	ALL	NR	-
Bromo Chloro Dimethyl Hydatoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	External Rot Causing Organisms	ALL	NR	-
Chlorine	-	Sanitiser / Post-Harvest Treatment	Bacteria and Fungi	ALL	NR	-
Chloropicrin + 1,3-Dichloropropene	8B	Soil Fumigant	Soil-borne diseases (including *Fusarium* & *Verticillium* Wilts, *Rhizoctonia*, *Pythium*)	ALL	NR	-
Chlorothalonil (Bravo)	M5	Onions / Excluding Spring Onions	Downy Mildew (*Pseudoperonospora destructor*)	ALL	14	R3
Copper	M1	Onions	Downy Mildew (*Pseudoperonospora destructor*)	ALL	1	-
Dimethomorph (Acrobat)	40	Onions	Downy Mildew (*Pseudoperonospora destructor*) Leaf Blight	ALL	7	-
			Purple Blotch (*Alternaria porri*)	QLD & NT		
Dimethomorph + Ametoctradin (Zampro) BASF	40+45	Bulb Vegetables	Downy Mildew (*Pseudoperonospora destructor*)	ALL	7	-

Active Ingredient (Trade Name)	Chemical Group	Situation	Diseases / Comments	States	WHP Days	Regulatory Risk
Fludioxonil + Cyprodinil (Switch)	12+9	Onions	Neck Rot (*Botrytis allii*)	ALL	7	R3
		Alliums / Including Bulb Onions, Spring Onions, Shallots & Garlic	Suppression of: Black Mould (*Aspergillus niger*) Grey Mould (*Botrytis cinerea*)			
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Bulb Vegetables	Suppression of: White Rot (*Sclerotium cepivorum*)	ALL	7	R3
Fluxapyroxad (Systiva) PER94835	7	Bulb Onion / Seed Treatment	Neck Rot (*Botrytis allii*)	ALL	NR	-
Hydrogen Peroxide + Peroxyacetic Acid (Peratec Plus)	M	Allium Vegetables	Neck & Bulb Rot (*Botrytis* spp.) Downy Mildew (*Peronospora* spp.)	ALL	1	-
Iodine	-	Sanitiser / Onions	Bacteria & Fungi	ALL	NR	-
Iprodione (Rovral) + Chlorothalonil (Bravo) PER94740	2+M5	Onion	Neck Rot (*Botrytis allii*)	ALL	NR	R3
Mancozeb	M3	Onions	Downy Mildew Purple Blotch	ALL	7	R2
Mancozeb + Dimethomorph (Acrobat WDG)	M3+40	Onions	Downy Mildew (*Pseudoperonospora destructor*)	ALL	7	R2
			Purple Blotch (*Alternaria porri*)	QLD & NT		
Mancozeb + Metalaxyl-M (Ridomil Gold MZ)	M3+4	Onions	Downy Mildew	ALL	7	R2
			Purple Blotch	QLD		

Active Ingredient (Trade Name)	Chemical Group	Situation	Diseases / Comments	States	WHP Days	Regulatory Risk
Mandestrobin (Intuity) Sumitomo	11	Bulb Onions	White Rot (*Sclerotium cepivorum*) Suppression of: Downy Mildew (*Pseudoperonospora destructor*)	ALL	30 G:7	-
Metiram (Polyram)	M3	Bulb Onions	Downy Mildew Purple Blotch	ALL	7	R2
Oxathiapiprolin (Zorvec Enicade) Corteva	49	Bulb Vegetables / Onions	Downy Mildew (*Pseudoperonospora destructor*)	ALL	10 NG	-
Oxathiapiprolin + Mancozeb (Zorvec Enibel) Corteva	49+M3	Bulb Vegetables / Onions	Downy Mildew (*Pseudoperonospora destructor*)	ALL	10 NG	R2
Penthiopyrad (Fontelis) Corteva	7	Onions	Botrytis Blight & Neck Rot (*Botrytis* spp.) Purple Blotch (*Alternaria porri*)	ALL	3 NG	-
Peroxyacetic Acid	-	Sanitiser / Post-Harvest Treatment	Bacteria	ALL	NR	-
Phosphorous Acid PER13698	P07	Bulb Vegetables	Suppression of: Downy Mildew (*Peronospora* spp.)	ALL (excl. VIC)	1	-
Procymidone (Sumisclex)	2	Onions	White Rot (*Sclerotium cepivorum*)	ALL	28	R2
Propamocarb Hydrochloride + Fluopicolide (Infinito) Bayer	28+43	Bulb Vegetables	Downy Mildew (*Pseudoperonospora destructor*)	ALL	7	-
Propineb (Antracol)	M3	Onions	Downy Mildew	ALL	7	R2
Propineb + Oxadixyl (Rebound)	M3+4	Onions	Downy Mildew	ALL	14	R2

Active Ingredient (Trade Name)	Chemical Group	Situation	Diseases / Comments	States	WHP Days	Regulatory Risk
Streptomyces lydicus WYEC108 (Actinovate) Novozymes Bioag	BM 02	Vegetables / Seed Treatment	*Fusarium*, *Rhizoctonia*, *Pythium*	ALL	NR	-
Sulfur	M2	Vegetables / Except Rockmelons	Powdery Mildew (*Sphaerotheca* spp.) Rust (*Uromyces* spp.)	QLD	NR	-
Tebuconazole	3	Onions	White Root Rot	TAS	NR	R3
Thiabendazole	1	Bulbs, Corms	Fusarium Basal Rot Penicillium Blue Mould	ALL	NR	-
Triadimenol	3	Onions	White Rot	ALL	28	R3
Zineb	M3	Onions	Downy Mildew Purple Blotch Blue Mould	ALL	7	R2

Appendix 2. Products available for control of insects and other pests in onions

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory Risk
1,3-Dichloropropene	-	Soil Fumigant	Plant parasitic nematodes	ALL	NR	-
Alpha-Cypermethrin PER80282	3A	Onion	Onion Thrips (*Thrips tabaci*)	ALL (excl. VIC)	14	R3
Bacillus thuringiensis subsp Kurstaki Strain HD-1 (DiPel)	11	Vegetables	Armyworm (*Spodoptera* spp.) Cotton Bollworm (*Helicoverpa armigera*) Native Budworm (*Helicoverpa punctigera*) Cabbage Moth (*Plutella xylostella*) Cabbage White Butterfly (*Pieris rapae*) Green Looper (*Chrysodeixis eriosoma*) Light Brown Apple Moth (*Epiphyas postvittana*) Pear Looper (*Ectropis excursaria*) Soybean Looper (*Thysanoplusia orichalcea*) Vine Moth (*Phalaenoides glycinae*, *Agarista agricola*) Tobacco Looper (*Chrysodeixis argentifera*)	ALL	NR	-
Chloropicrin + 1,3-Dichloropropene	-	Soil Fumigant	Plant Parasitic Nematodes Symphylans Wireworms	ALL	NR	-
Cyantraniliprole (Benevia) FMC	28	Bulb Vegetables	Suppression of: Onion Thrips (*Thrips tabaci*)	ALL	7 NG	-
Diazinon PER13119	1B	Onions	Onion Thrips	TAS	14 G:14	R1

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory Risk
Dimethoate	1B	Onions	Aphids Jassids Mites Leafhoppers, Green Vegetable Bug Thrips Wingless Grasshopper	ALL	7	R2
Ethyl Formate	8A	Onion / Post-Harvest Fumigant	Onion Thrips (*Thrips tabaci*)	ALL	NR	-
Flonicamid (Mainman) UPL PER89185	29	Bulb Vegetables / Field Grown Only	Suppression of: Onion Thrips (*Thrips tabaci*) Western Flower Thrips (*Frankliniella occidentalis*)	ALL	1	-
Isocycloseram (Simodis) Syngenta	30	Bulb Vegetables	Suppression of: Onion Thrips (*Thrips tabaci*) Plague Thrips (*Thrips imaginis*)	ALL	7 NG	-
Lambda-Cyhalothrin (Karate Zeon)	3A	Bulb Onions	Onion Thrips	ALL	14	-
Malathion	1B	Onions	Onion Thrips (*Thrips tabaci*)	ALL	3	R3
Metaldehyde	-	Horticultural Crops	Snails & Slugs	ALL	7	-
Petroleum Oil PER12221	-	Alliums	Aphids Green Mirid Green Vegetable Bug Grey Cluster Bug Leafhoppers Mites Rutherglen Bug Thrips	ALL (excl. VIC)	1	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory Risk
Phorate	1B	Onions	Onion Maggot Thrips	ALL	70 G:70	R3
Potassium Salts of Fatty Acid (Natrasoap)	-	Vegetables	Aphids Thrips Mealybug Two-Spotted Mite Spider Mite Whitefly	ALL	NR	-
Propargite	12C	Vegetables	Two-Spotted Mite	ALL	7	R3
Pyriproxyfen (Distance Ant Bait) Sumitomo	7C	Ant Bait	Invasive and Nuisance Ants	ALL	NR	-
Spinetoram (Success Neo) Corteva	5	Bulb Vegetables	Western Flower Thrips Onion Thrips (*Thrips tabaci*)	ALL	3	-
Spinosad (Naturalure) Corteva	5	Tree, Fruit, Nut, Vine & Vegetable Crops / Fruit Fly Bait	Queensland Fruit Fly (*Bactrocera tryoni*) Mediterranean Fruit Fly (*Ceratitis capitata*)	ALL	NR	-
Spirotetramat (Movento) Bayer	23	Bulb Onions	Onion Thrips (*Thrips tabaci*)	ALL	7	-
Trichlorfon	1B	Vegetables	Cabbage White Butterfly Cabbage Moth Green Vegetable Bug Rutherglen Bug	ALL	2	R2

Appendix 3. Products available for weed control in onions

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory Risk
Asulam	18**	Onions	Docks (*Rumex* spp.)	NR G:21	TAS	-
Bentazone (Basagran) PER14773	6**	Onions	Broadleaf Weeds including Wild Carrot (*Cotula australis*), White Thistle (Asteraceae), Erodium (*Erodium* spp.), Field Madder (*Sherardia arvensis*), Hemlock / Carrot Fern (*Conium maculatum*), Volunteer Dill (*Anethum graveolens*), Burr Chervil (*Anthriscus caucalis*), Groundsel (*Senecio* spp.), Crowsfoot Grass (*Eleusine indica*)	56	ALL (excl. VIC)	-
Bromoxynil (Maya) Nufarm	6**	Bulb Onions	Amsinckia (*Amsinckia* spp.), Bellvine (*Ipomea plebeia*), Birds Eye / Carrot Weed (*Cotula australis*), Black Bindweed / Climbing Buckwheat (*Fallopia convolvulus*), Blackberry Nightshade (*Solanum nigrum*), Capeweed (*Arctotheca calendula*), Chamomile (*Matricaria matricarioides*), Chickweed (*Stellaria media*), Common Peppercress (*Lepidium africanum*), Common Groundsel (*Senecio vulgaris*), Sowthistle (*Sonchus oleraceus*), Corn Gromwell (*Buglossoides arvensis*), Cowvine (*Ipomea lonchophylla*), Fat Hen (*Chenopodium album*), Field Madder (*Sherardia arvensis*), Fireweed (*Senecio madagascariensis*), Green Amaranth (*Amaranthus viridis*), Lesser Swinecress (*Coronopus didymus*), Mountain Sorrel (*Oxalis acetosella*), Pheasants Eye (*Adonis macrocarpa*), Purple Calandrinia (*Calandrinia menziesii*), Redshank (*Persicaria maculosa*), Saffron Thistle (*Carthamus lanatus*), Shepherds Purse (*Capsella bursa-pastoris*), Spiny Emex (*Emex australis*), Three-Horned Bedstraw (*Gallium tricornutum*), Tree Hogweed (*Polygonum patulam*), Variegated Thistle (*Silybum marianum*), Volunteer Potato, Wild Radish (*Raphanus raphanistrum*), Fumitories (*Fumaria* spp.), Patersons Curse (*Echium plantagineum*), Turnip Weed (*Rapistrum rugosum*), Wild Mustard (*Sisymbrium* spp.), Wild Turnip (*Brassica tournefortii*), Wireweed (*Polygonum aviculare*)	NR NG	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory Risk
Clethodim (Select)	1***	Onions	Barnyard Grass (*Echinochloa* spp.), Blown Grass (*Agrostis aveacea*), Crowsfoot Grass (*Eleusine indica*), Feather Top Rhodes Grass (*Chloris virgata*), Liverseed Grass (*Urochloa panicoides*), Red Sprangletop Grass (*Leptochloa filiformis*), Johnson Grass /seedlings (*Sorghum halepense*), Summer Grass (*Digitaria* spp.), Volunteer Sorghum, Annual Ryegrass (*Lolium rigidum*), Annual Phalaris (*Phalaris minor*), Barely Grass (*Hordeum leporinum*), Brome Grass (*Bromus diandrus*), Wild Oats (*Avena* spp.), Volunteer Wheat, Volunteer Oats, Volunteer Barley, Winter Grass (*Poa annua*)	14	ALL	R3
			Silver Grass (*Vulpia bromoides*)		ALL (excl. QLD & WA)	
Cyanazine (Bladex)	5**	Onions	Blackberry Nightshade (*Solanum nigrum*), Black Bindweed (*Polygonum convolvulus*), Chickweed (*Stellaria media*), Clovers (*Trifolium* spp.), Cotula (*Cotula* spp.), Crowsfoot / Storksbill (*Erodium* spp.), Docks (*Rumex* spp.), Mountain Sorrel (*Calindrinia caulescens*), Persicaria / Redshank (*Polygonum persicaria*), Plantain (*Plantago* spp.), Sorrel (*Rumex acetosella*), Sowthistle (*Sonchus oleraceus*), Spear Thistle (*Cirsium vulgare*), Wild Turnip *(Brassica tournefortii*)	NR	TAS	R3
Dimethenamid-P (Outlook) PER89991	15**	Onions	Suppression of: Annual Ryegrass (*Lolium rigidum*)	NR NG	ALL (excl. VIC)	-
Ethofumesate (Tramat)	15**	Onions	Barley Grass, Clovers, Cruciferous Weeds, Fat Hen, Fumitory, Winter Grass, Wireweed.	91	TAS	-
Ethofumesate (Tramat) PER84808	15**	Bulb Onions	Barley Grass, Clovers, Cruciferous Weeds, Fat Hen, Fumitory, Winter Grass, Wireweed.	70	ALL	-

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory Risk
Fluazifop-P (Fusilade)	1***	Onions	Annual Ryegrass, Barley Grass, Barnyard Grass, Brome Grasses, Crowsfoot Grass, Liverseed Grass, Stinkgrass, Summer Grass, Volunteer Cereals, Wild Oats, Innocent Weed, Pigeon Grass Seedlings of: Couch Grass, English Couch, Johnson Grass & Water Couch	35	ALL	-
			Foxtail seedlings		TAS	
Fluroxypyr (Starane) PER87200	4**	Bulb Onions	Broadleaf Weeds	NR	TAS	-
Glyphosate	9**	Onions / Post-plant, pre-emergence	Grass & broadleaf weeds	NR	TAS	R3
Haloxyfop (Verdict) PER84734	1***	Bulb Onions	Storksbill (*Erodium botrys* & *E. moschatum*), Australian Millet (*Panicum decompositum*), Green Panic (*Panicum maximum var. trichoglume),* Mossman River Grass (*Cenchrus echinatus*), Prairie Grass (*Bromus catharticus*)	28	ALL (excl. VIC)	-

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory Risk
Ioxynil (Totril)	6**	Onions	Bellvine (*Ipomea plebeia*), Burr Medic (*Medicago polymorpha*), Capeweed (*Arctotheca calendula*), Chickweed (*Stellaria media*), Climbing Buckwheat / Black Bindweed (*Polygonum convolvulus*), Common Heliotrope (*Heliotropium europaeum*), Sowthistle (*Sonchus oleraceus*), Corn Gromwell (*Buglossoides arvense*), Dandelion (*Taraxacum officinale*), Dead Nettle (*Lamium amplexicaule*), Fat Hen (*Chenopodium album*), Fumitories (*Fumaria* spp.), Green Amaranth (*Amaranthus viridis*), Green Crumbweed (*Chenopodium carinatum*), Lesser Swinecress (*Coronopus didymus*), Ox Tongue (*Picris echioides*), Pigweed (*Portulaca oleracea*), Potato Weed (*Galinsoga parviflora*), Prickly Paddy Melon (*Cucumis myriocarpus*), Saffron Thistle (*Carthamus lantanus*), Scarlet Pimpernel (*Anagallis arvensis*), Shepherds Purse (*Capsella bursa-pastoris*), Slender Celery (*Apium leptophyllum*), Marshmallow (*Malva parviflora*), Stagger Weed (*Stachys arvensis*), Spiny Emex (*Emex australis*), Threeflower Nightshade (*Solanum triflorum*), Turnip Weed (*Rapistrum rugosum*), Wards Weed (*Carrichtera annua*), Wild Radish (*Raphanus raphanistrum*), Wild Turnip (*Brassica tournefortii*), Wireweed (*Polygonum aviculare*)	NR	ALL	R3
Linuron	5**	Onions	Black Bindweed, Capeweed, Charlock, Chickweed, Clover, Sowthistle, Corn Spurry, Deadnettle, Fat Hen, Field Cress, Hedge Mustards, Lesser Swinecress, Medics, Prickly Sowthistle, Shepherds Purse, Spear Thistle, Stinging Nettle, Wild Mustard, Wild Radish, Wild Turnip	NR	ALL	R3
Methabenzthiazuron (Tribunil)	5**	Onions	Deadnettle, Spiny Emex, Mustard, Wild Turnip, Dwarf Nettle, Ball Mustard, Amsinckia, Capeweed, Chickweed, Long Storksbill / Crowsfoot, Iceplant, Rough Poppy, Corn Gromwell, Spurry (Corn & Sand), Stagger Weed, Variegated Thistle, Treacle-Mustard, Common Cotula, Fat Hen, Fumitory, Lesser Swinecress, Ribwort / Common Plantain, Lambs Tongue, London Rocket, Small Flowered Mallow, Mexican Lovegrass, Pimpernel, Pigweed, Potato Weed, Redshank, Shepherds Purse, Sowthistle, Speedwell, Stinking Goosefoot, Winter Grass, Wild Radish	49	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory Risk
Oxyfluorfen (Goal)	14**	Onions	Blackberry Nightshade, Docks, Crowsfoot / Storksbill, Fumitory Weed / Pink & White Weed, Hogweed / Wireweed, Plantain, Sorrel, Volunteer Potato, Potato Weed, Milk Thistle, Deadnettle, Common Cotula, Groundsel	NR NG	ALL	-
Paraquat (Gramoxone)	22**	Vegetables / Pre-Plant / Post-Emergence Inter-Row Weed Control	Annual Grass & Broadleaf Weeds	NR G:1	ALL	R1
Paraquat + Diquat (SpraySeed)	22**	Vegetables / Pre-Crop Emergence Weed Control	Annual Grass & Broadleaf Weeds	NR G:1	ALL	R1
Pendimethalin (Stomp)	3**	Onions	Hogweed (*Polygonum aviculare*)	NR	ALL (excl. QLD)	-
Propachlor (Ramrod)	15**	Onions / Direct Seeded	Annual Ryegrass, Barnyard Grass, Blue & Red Pimpernel, Chickweed, Course & Swamp Club-Rush, Crowsfoot Grass, Dead Nettle, Fat Hen, Fleabane, Green & Pale Pigeon Grass / Foxtail Grass, Hairy Centrolepis, Liverseed Grass, Milk Thistle, Mouse-Ear Chickweed, Prince of Wales Feather, Cudweeds, Shepherds Purse, Stinging Nettle, Summer Grass, Toad Rush, Winter Grass, White Clover, Potato Weed	NR	ALL	R3
Quizalofop-P-Ethyl	1***	Onions	Annual Ryegrass (*Lolium rigidum*), Brome Grasses (*Bromus* spp.), Barley Grass (*Hordeum* spp.), Volunteer Barley, Volunteer Wheat, Wild Oats (*Avena* spp.)	126	ALL	-
Sethoxydim (Sertin)	1***	Onions	English Couch / Rope Twitch, Onion Twitch / Bulbous Oat Grass	28	TAS	R3

Chemical Group Resistance Risk: ** Moderate, *** High

Appendix 4. Plant Growth Regulators available in onions

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use	WHP (days)	States	Regulatory risk
Maleic Hydrazide	PGR	Onions	Inhibit Sprouting of Bulbs	NR	TAS, NSW, ACT, VIC, SA & WA	-

Appendix 5. Current permits for use in onions

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER13119 Version 6	Diazinon / Onions / Onion Thrips	06-Mar-12	28-Feb-25	Hort Innovation
PER89185 Version 2	Flonicamid (Mainman) / Bulb Vegetables / Thrips	06-Aug-20	31-Jul-25	Hort Innovation
PER13698 Version 4	Phosphorous Acid / Fennel & Bulb Vegetables / Downy Mildew	01-Oct-12	30-Sep-25	Hort Innovation
PER80282 Version 3	Alpha-Cypermethrin / Onions / Onion Thrips	16-Dec-14	30-Nov-25	Hort Innovation
PER94835	Fluxapyroxad (Systiva) / Bulb Onions / Neck Rot	20-May-24	31-May-26	Hort Innovation
PER89991 Version 2	Dimethamid-P (Outlook) / Onions / Annual Ryegrass	05-Feb-21	31-Jan-27	Hort Innovation
PER12221 Version 5	Petroleum Oil / Alliums / Specified Insect Pests	29-Jun-12	30-Sep-27	Hort Innovation
PER14773 Version 4	Bentazone (Basagran) / Onions / Broadleaf Weeds	16-Apr-14	30-Nov-27	Hort Innovation
PER84808 Version 2	Ethofumesate (Tramat) / Onions / Broadleaf & Grass Weeds	20-Feb-18	31-Dec-27	Hort Innovation
PER87200 Version 2	Fluroxypyr (Starane) / Bulb Onions / Broadleaf Weeds	26-Aug-19	31-Aug-28	Australian Onion Association
PER94740	Iprodione (Rovral) & Chlorothalonil / Onion / Botrytis Neck-Rot	31-Mar-24	30-Apr-29	Hort Innovation
PER84734 Version 3	Haloxyfop (Verdict) / Bulb Onions / Various Grass Weeds	19-Dec-17	30-Sep-29	Hort Innovation

Appendix 6. Onion Maximum Residue Limits (MRLs)

CODEX commodity groupings of melon and subgroups:

	Vegetables
VA 0035	Bulb Vegetables
VA 0036	Bulb Vegetables, except fennel, bulb
VA 0385	Onion, Bulb
VA 2031	Bulb onions (subgroup)

Note: Australia is a net exporter of fresh onions, typically between 35,000-50,000 tonnes per year. Major export destinations are Thailand (28%), Malaysia (11%), UAE (9%), Spain (9%) and Netherlands (7%). Available information indicates that in the absence of specific limits in legislation, that some countries defer to Codex, followed by EU MRL standards, or apply a 0.01ppm default value. Food exported to New Zealand from Australia may be legally sold if it complies with Australian requirements. MRLs and legislation are subject to change; the values presented should not be relied on.

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Abamectin	VA 0035	Bulb Vegetables	0.05	-
	VA 0385	Onion, Bulb	-	0.005
Acetamiprid	VA 0385	Onion, Bulb	-	0.02
Acibenzolar-S-methyl	VA 0385	Onion, Bulb	-	0.15
Afidopyropen	VA 0035	Bulb Vegetables {except chives}	*0.01	-
Aldicarb	VA 0385	Onion, Bulb	-	0.1
Aldrin & Dieldrin	VA 0385	Onion, Bulb	E0.1	-
	VA 0035	Bulb Vegetables	-	E0.05
Amectotradin	VA 0385	Onion, Bulb	-	1.5
	VA 2031	Bulb onions (subgroup)	0.7	-
Azoxystrobin	VA 0385	Onion, Bulb	0.2	-
	VA 0035	Bulb Vegetables	-	10
Benalaxyl	VA 0385	Onion, Bulb	-	*0.02
Bentazone	VA 0385	Onion, Bulb	T0.1	0.04
Benzovindiflupyr	VA 2031	Bulb onions (subgroup)	-	0.02
Boscalid	VA 0385	Onion, Bulb	0.5	-
	VA 0035	Bulb Vegetables	-	5
Bromoxynil	VA 0385	Onion, Bulb	*0.01	-
Chlordane		Vegetables {except Fruiting vegetables, cucurbits; Sugar beet}	E0.02	-
Chlorfenapyr	VA 0385	Onion, Bulb	-	*0.01
Chlorothalonil	VA 0385	Onion, Bulb	10	1.5
Chlorpyrifos		Vegetables {except Asparagus; Brassica vegetables; Cassava; Celery; Leek; Peppers, sweet [capsicum]; Potato; Swede; Sweet potato; Taro; Tomato}	T*0.01	-
Chlorthal-Dimethyl		Vegetables {except lettuce}	5	-
Clethodim	VA 0385	Onion, Bulb		0.5
Cyanazine	VA 0035	Bulb Vegetables	*0.02	-
Cyantraniliprole	VA 0385	Onion, Bulb	0.05	0.05

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Cyazofamid	VA 2031	Bulb onions (subgroup)	-	1.5
Cycloxydim	VA 0385	Onion, Bulb	-	3
Cyhalothrin	VA 0385	Onion, Bulb	*0.05	-
	VA 0035	Bulb Vegetables	-	0.2
Cypermethrin	VA 0385	Onion, Bulb	*0.01	*0.01
Cyprodinil	VA 0385	Onion, Bulb	0.2	0.3
Cyrozamine	VA 0385	Onion, Bulb	-	0.1
DDT		Vegetables	E1	-
Deltamethrin	VA 0385	Onion, Bulb	-	0.05
Diazinon		Vegetables	0.7	-
Dichlobenil	VA 0385	Onion, Bulb	-	*0.01
Dicofol		Vegetables {except Cucumber; Gherkin; Tomato}	5	-
Diclofop-methyl		Vegetables {except Cucumber; Gherkin; Tomato}	5	-
Difenoconazole	VA 0385	Onion, Bulb	T0.1	0.1
Dimethenamid-P	VA 0385	Onion, Bulb	T*0.01	*0.01
Dimethoate	VA 0385	Onion, Bulb	0.7	-
Dimethomorph	VA 0385	Onion, Bulb	-	0.6
	VA 2031	Bulb onions (subgroup)	0.5	-
Dinotefuran	VA 0385	Onion, Bulb	-	0.1
Diquat	VA 0385	Onion, Bulb	0.1	-
Dithiocarbamates	VA 0385	Onion, Bulb	4	0.5
2,2-DPA		Vegetables	*0.1	-
EPTC		Vegetables	*0.04	-
Ethofumesate	VA 0035	Bulb Vegetables	*0.1	-
Famoxadone	VA 2031	Bulb onions (subgroup)	-	0.4
Fenamidone	VA 0385	Onion, Bulb	-	0.15
Fenhexamid	VA 2031	Bulb onions (subgroup)	-	3
Flonicamid	VA 0035	Bulb Vegetables	T0.2	-
Fluazaindolizine	VA 0035	Bulb Vegetables	-	0.04
Fluazifop-p-butyl	VA 0385	Onion, Bulb	0.05	0.3
Fludioxonil	VA 0385	Onion, Bulb	0.2	-
	VA 2031	Bulb onions (subgroup)	-	0.5
Flumioxazin	VA 0385	Onion, Bulb	-	*0.02
Fluopicolide	VA 0385	Onion, Bulb	0.1	1
Fluopyram	VA 0385	Onion, Bulb	-	0.07
	VA 2031	Bulb onions (subgroup)	0.07	-
Flupyradifurone	VA 0036	Bulb Vegetables, except fennel, bulb	-	*0.01
Fluroxypyr	VA 0385	Onion, Bulb	T0.03	-
Fluxapyroxad	VA 0385	Onion, Bulb	T0.3	0.6
Folpet	VA 0385	Onion, Bulb	-	1
Glufosinate-ammonium	VA 0385	Onion, Bulb	-	0.05
Glyphosate	VA 0035	Bulb Vegetables	*0.1	-
Haloxyfop	VA 0385	Onion, Bulb	T0.2	0.2

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Heptachlor		Vegetables {except Carrot; Soya bean (dry); Tomato}	E0.05	-
Imidacloprid	VA 0385	Onion, Bulb	-	0.1
Inorganic Bromide		Vegetables {except Peppers, sweet [capsicum]}	20	-
Ioxynil	VA 0385	Onion, Bulb	*0.02	-
Iprodione	VA 0385	Onion, Bulb	T0.7	0.2
Isocycloseram	VA 2031	Bulb onions (subgroup)	*0.01	-
Lindane		Vegetables	E2	-
Linuron		Vegetables {except Celeriac; Celery; Leek; Parsnip}	*0.05	-
Maldison	VA 0385	Onion, Bulb	2	1
Maleic hydrazide	VA 0385	Onion, Bulb	15	15
Mandestrobin	VA 0385	Onion, Bulb	*0.01	-
Mandipropamid	VA 2031	Bulb onions (subgroup)	-	0.05
Mefentrifluconazole	VA 2031	Bulb onions (subgroup)	-	0.2
Metalaxyl	VA 0035	Bulb Vegetables	0.1	-
	VA 0385	Onion, Bulb	-	0.03
Metaldehyde		Vegetables	1	-
Metconazole	VA 0385	Onion, Bulb	-	*0.05
Methabenzthiazuron	VA 0385	Onion, Bulb	*0.05	-
Methiocarb	VA 0385	Onion, Bulb	-	0.5
		Vegetables	0.1	-
Methomyl	VA 0385	Onion, Bulb	T0.1	0.2
Methyl bromide		Vegetables {except Cucumber; Peppers}	T*0.05	-
Myclobutanil	VA 0035	Bulb Vegetables	-	0.06
Omethoate	VA 0385	Onion, Bulb	0.5	-
Oxadixyl	VA 0385	Onion, Bulb	0.5	-
Oxathiapiprolin	VA 0385	Onion, Bulb	0.02	0.04
Oxyfluorfen	VA 0035	Bulb Vegetables	*0.05	-
Paraquat		Vegetables {except Potato, Pulses}	*0.05	-
Pendimethalin	VA 0035	Bulb Vegetables	*0.05	-
	VA 0385	Onion, Bulb	-	*0.05
Penthiopyrad	VA 0385	Onion, Bulb	1	0.7
Phorate	VA 0385	Onion, Bulb	0.5	-
Phosphorous Acid	VA 0035	Bulb Vegetables	T10	-
Piperonyl butoxide		Vegetables	8	-
Pirimicarb	VA 0385	Onion, Bulb	-	0.1
		Vegetables {except Celeriac; Celery; Leafy vegetables; Onion, Welsh; Pulses; Shallot; Spring onion; Sweet corn (corn-on-the-cob)}	1	-
Procymidone	VA 0385	Onion, Bulb	0.2	-
Prometryn		Vegetables	*0.1	-
Propachlor	VA 0385	Onion, Bulb	0.7	-
Propargite		Vegetables	3	-

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Propamocarb	VA 0385	Onion, Bulb	0.5	2
Propineb	VA 0385	Onion, Bulb	2	-
Pydiflumetofen	VA 2031	Bulb onions (subgroup)	-	0.3
Pyraclostrobin	VA 0385	Onion, Bulb	-	1.5
Pyrethrins		Vegetables	1	-
Pyrimethanil	VA 0385	Onion, Bulb	-	0.2
Quizalofop-ethyl	VA 0385	Onion, Bulb	*0.02	-
Quizalofop-P-tefuryl	VA 0385	Onion, Bulb	*0.02	-
Sethoxydim	VA 0385	Onion, Bulb	0.3	-
Spinetoram	VA 0035	Bulb Vegetables {except chives}	0.1	-
	VA 0385	Onion, Bulb	-	*0.01
Spinosad	VA 0385	Onion, Bulb	-	0.1
Spirotetramat	VA 0035	Bulb Vegetables {except chives}	0.5	-
	VA 0385	Onion, Bulb	-	0.4
Sulfoxaflor	VA 0385	Onion, Bulb	-	*0.01
Tebuconazole	VA 0385	Onion, Bulb	-	0.15
	VA 2031	Bulb onions {except garlic}	0.07	-
Tolfenpyrad	VA 2031	Bulb onions (subgroup)	-	0.09
Triadimenol	VA 0385	Onion, Bulb	0.05	-
Trichlorfon		Vegetables {except Beetroot; Brussels sprouts; Cape gooseberry; Cauliflower; Celery; Egg plant, Thai; Pepino; Peppers; Pulses (dry); Sweet corn (corn-on-the-cob)}	0.1	-
Trifluralin		Vegetables {except carrot, parsnip, fennel bulb, galangal, greater}	0.05	-
Valifenalate	VA 0385	Onion, Bulb	-	0.5

NOTE: MRLs are constantly under review and subject to change. Check for current MRLs and do not rely on the values stated above.
Note: Available information indicates that in the absence of specific limits in legislation, some countries defer to Codex, followed by EU MRL standards or apply a 0.01ppm default value. Food exported to New Zealand from Australia may be legally sold if it complies with Australian requirements. MRLs and legislation are subject to change; the values presented should not be relied on.

* Indicates that an MRL is at the Limit of Quantitation (LOQ)
T = Temporary MRL
E = The MRL is based on extraneous residues
Po = The MRL accommodates post-harvest treatment of the commodity

Sources:
APVMA MRLs: Agricultural and Veterinary Chemicals Code (MRL Standard) Instrument 2023. Compilation 5. Prepared 14 September 2024.
CODEX MRLs: CODEX Alimentarius International Food Standards database (August 2024), http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/

Appendix 7. Onion regulatory risk assessment

Bulb Onion
Agrichemical Regulatory
Risk Assessment

March 2024

Regulatory pressures on agrichemicals are increasing globally, with many being either restricted or withdrawn from use. For older agrichemicals these pressures are often the result of reconsiderations involving new or refined risk assessment methodologies that requiring the generation of new data. A consequence of which can be that many of these agrichemicals are not meeting contemporary risk assessment standards as the necessary data is unavailable, or where data is available, the risk posed is considered unacceptable.

The use of agrichemicals can also be impacted through differences in standards between trading partners. The lack of an appropriate pesticide maximum residue limit (MRL) in an importing country can, for practical purposes, effectively prohibit use in the exporting country so as to ensure compliance, as a MRL breach would adversely affect market access.

The effects of the above are greater regulatory pressure placed on the use of individual agrichemicals or chemical groups. As a consequence it is possible that the number of approved agrichemical options could be adversely impacted.

To assist strategic planning, with respect to future pest management options, the following tables have been developed to highlight the regulatory threats to agrichemicals currently approved for the management of the pests and diseases in almonds as well as current initiatives aimed at addressing identified pest management deficiencies.

Onion Agrichemical Regulatory Risk Assessment

R1	Short-term: Critical concern over retaining access
R2	Medium-term: Maintaining access of significant concern
R3	Long-term: Potential issues associated with use - Monitoring required

Active Constituents	Chemical Group	Problem	Comments
INSECT AND OTHER PESTS			
1,3-dichloropropene +chloropicrin	**8B**	Cyst forming nematodes	EU/UK: No authorisations in place
		Symphylids	
		Wireworm	
Alpha-cypermethrin	**3A**	Onion (Cotton seedling) thrips (PER80282)	EU/UK: No authorisations in place
Chlorpyrifos	**1B**	Australian plague locust	APVMA: Proposed deletion of uses Codex: All MRLs revoked Canada: Cancellation of all uses. EU/UK: No authorisation in place USA: EPA decision to cancel use on food crops
		Black field cricket	
		Cutworms	
		Earwig	
		False wireworm	
		Field crickets	
		Migratory locust	
		Mole crickets	
		Seed harvesting ants	
		Spotted vegetable weevil	
		Spur-throated locust	
		Vegetable weevil	
		Wingless grasshopper	
Cyantraniliprole	**28**	Onion (Cotton seedling) thrips	
		Vegetable leafminer(PER90387)	

Onion Agrichemical Regulatory Risk Assessment

Active Constituents	Chemical Group	Problem	Comments
Dazomet		Non cyst forming	
Diazinon	**1B**	Onion seedling maggot	APVMA: Proposed deletion of uses EU/UK: No authorisation in place Codex: Codex MRLs deleted
		Wireworm	
		Onion (Cotton seedling) thrips (PER13119)	
Dimethoate	**1B**	Aphids	Codex: No MRL. EU/UK: No authorisations in place
		Bugs	
		Green vegetable bug	
		Jassids	
		Leafhoppers	
		Leafminer flies	
		Mites	
		Redlegged earth mite	
		Thrips	
		Wingless grasshopper	
Ethyl formate	**8A**	Onion (Cotton seedling) thrips	EU/UK: No authorisations in place
Flonicamid	**29**	Onion (Cotton seedling) thrips(PER89185)	
		Western flower thrips(PER89185)	
Isocycloseram	**30**	Onion thrips	EU/UK: No authorisations in place
		Plague thrips	
Lambda-cyhalothrin	**3A**	Onion (Cotton seedling) thrips	EU: Candidate for substitution
Malathion/Maldison	**1B**	Australian plague locust	APVMA: Under review Codex: Re-evaluation scheduled for 2025/26 EU: Restricted use to permanent greenhouses USA: Under review, label use patterns amended
		Migratory locust	
		Onion (Cotton seedling) thrips	
		Spur-throated locust	

Active Constituents	Chemical Group	Problem	Comments
Petroleum oil	**UNM**	Aphids (PER12221)	
		Green mirids (PER12221)	
		Grey cluster bug (PER12221)	
		Leafhoppers (PER12221)	
		Mites (PER12221)	
		Rutherglen bug (PER12221)	
		Thrips (PER12221)	
Phorate	**1B**	Onion seedling maggot	APVMA: nominated for review EU/UK: No authorisations in place
		Thrips	
Spinetoram	**5**	Onion thrips	EU: Authorisation expires June 2024
		Western flower thrips	
Spirotetramat	**23**	Onion (Cotton seedling) thrips	EU: Authorisation expires April 2024
		Plague thrips	
		Tomato thrips	
		Western flower thrips	

Active Constituents	Chemical Group	Problem	Comments
DISEASES			
1,3-dichloropropene +chloropicrin		Rhizoctonia	EU: Pending, under review
Ametoctradin + dimethomorph	**45 + 40**	Downy mildew	Dimethomorph: EU: Pending, under review
Azoxystrobin + oxathiapiprolin	**11 + 49**	Downy mildew White rot	Azoxystrobin Canada: Review proposed
Boscalid	**7**	Neck rot	Canada: Review initiated
Chlorothalonil	**M5**	Downy mildew Neck and bulb rot	APVMA: nominated for review Canada: Cancellation of uses proposed EU/UK: No authorisations in place USA: Under review
Chlorothalonil + iprodione	**M5 + 2**	Neck rot (PER94430)	Chlorothalonil: APVMA: nominated for review Canada: Cancellation of uses proposed EU/UK: No authorisations in place USA: Under review Iprodione: Canada: Majority of food crop uses deleted Codex: Review scheduled EU/UK: No authorisations in place USA: Proposed deletion or restriction of uses
Copper	**M1**	Downy mildew Purple blotch	EU: Candidates for substitution
Cyprodinil +fludioxonil	**9 + 12**	Black mould Grey mould Neck and bulb rot	Cyprodinil Canada: Under review EU: Candidate for substitution Fludioxonil EU: Under review & Candidate for substitution

Active Constituents	Chemical Group	Problem	Comments
Dazomet		Club root	
		Rhizoctonia	
Dimethomorph	**40**	Downy mildew	EU: Pending, under review
		Purple blotch	
Dimethomorph +mancozeb	**40 + M3**	Botrytis rot (various)	Dimethomorph: EU: Pending, under review Mancozeb APVMA: nominated for review Canada: Many uses cancelled Codex: To be reviewed EU/UK: No authorisations in place
Fluopicolide +propamocarb HCl	**28 + 43**	Downy mildew	Fluopicolide EU: Candidate for substitution
Hydrogen peroxide +peroxyacetic acid	**M**	Downy mildew	
		Neck and bulb rot	
Iodine	**M**	Bactericide	
		Fungi (Post-harvest)	
Iprodione	**2**	Neck and bulb rot (PER94740)	Canada: Majority of food crop uses deleted Codex: Review scheduled EU/UK: No authorisations in place USA: Proposed deletion or restriction of uses
Mancozeb	**M3**	Downy mildew	APVMA: nominated for review Canada: Many uses cancelled Codex: To be reviewed EU/UK: No authorisations in place
		Purple blotch	
Metalaxyl/metalaxyl-M	**4**	Downy mildew	Metalaxyl EU: Candidate for substitution Metalaxyl-M EU: Restricted use approval
		Purple blotch	

Active Constituents	Chemical Group	Problem	Comments
Metiram	**M3**	Downy mildew Purple blotch	APVMA: nominated for review Canada: Only foliar use on potato Codex: To be reviewed EU/UK: No authorisations in place
Oxadixyl	**4**	Downy mildew	EU: No authorisation
Oxathiapiprolin	**49**	Downy mildew	
Penthiopyrad	**7**	Botrytis blight Purple blotch	
Phosphorous acid	**33**	Downy mildew (PER13698)	
Procymidone	**2**	White rot	APVMA: Under review Codex: No MRLs EU/UK: No authorisations in place
Propineb	**M3**	Downy mildew	APVMA: nominated for review EU/UK: No authorisations in place Codex: To be reviewed
Tebuconazole	**3**	White rot	APVMA: nominated for review Canada: Under review EU: Candidate for substitution USA: Under review
Triadimenol	**3**	White rot	APVMA: nominated for review Canada: No authorisation in place EU/UK: No authorisations in place USA: Registration cancelled
Zineb	**M3**	Blue mould Downy mildew Purple blotch	APVMA: nominated for review Canada: Proposed cancelling of all uses Codex: To be reviewed EU/UK: No authorisations in place

Active Constituents	Chemical Group	Comment
WEEDS		
Asulam	**18**	EU: Under review
Bentazone (PER14773)	**6**	
Bromoxynil	**6**	EU/UK: No authorisations in place
Clethodim	**1**	Codex: MRLs proposed for deletion
Cyanazine	**5**	APVMA: nominated for review EU/UK: No authorisations in place
Dimethenamid-P (PER89991)	**15**	
Diquat	**22**	APVMA: Currently under review EU/UK: No authorisations in place
Ethofumesate (PER84808)	**15**	
Fluazifop-P	**1**	
Fluroxypyr (PER87200)	**4**	
Glyphosate	**9**	Ongoing issues internationally
Haloxyfop-P (PER84734)	**1**	EU/UK: No authorisations in place
Ioxynil	**6**	EU/UK: No authorisations in place
Linuron	**5**	Canada: Cancellation of many uses EU/UK: No authorisations in place
Methabenzthiazuron	**5**	EU/UK: No authorisations in place
Oxyfluorfen	**14**	EU: Candidate for substitution USA: Interim review decision Label amendments proposed
Pendimethalin	**3**	EU: Candidate for substitution
Propachlor	**15**	EU/UK: No authorisations in place
Quizalofop-P	**1**	Canada: Under re-evaluation EU: Candidate for substitution
Sethoxydim	**1**	EU/UK: No authorisations in place
PGR		
Maleic hydrazine	**-**	

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Communications Manager
Hort Innovation
Level 7, 141 Walker Street
North Sydney NSW 2060
Australia
Email: communications@horticulture.com.au
Phone: 02 8295 2300