



Carrot

Strategic Agrichemical Review Process (SARP)

July 2026

**Hort Innovation
Project – MT25005**

Hort Innovation Project Number:

MT25005 – Vegetable Strategic Agrichemical Review Process (SARP) 2026 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 carrot industry across Australia. The information in this report will assist the industry with its agrichemical selection and usage into the future.

Date of report:

July 2026

Disclaimer:

Hort Innovation makes no representations and expressly disclaims all warranties (to the extent permitted by law) about the accuracy, completeness, or currency of information in the Carrot Industry SARP Report. Users of this material should take independent action before relying on its accuracy in any way.

Reliance on any information provided by Hort Innovation is entirely at your own risk. Hort Innovation is not responsible for, and will not be liable for, any loss, damage, claim, expense, cost (including legal costs) or other liability arising in any way (including from Hort Innovation or any other person's negligence or otherwise) from your use or non-use of the Carrot Industry SARP Report, or from reliance on information contained in the material or that Hort Innovation provides to you by any other means.

Legal Notice:

Copyright © Horticulture Innovation Australia Limited 2026

Copyright subsists in the Carrot SARP. Horticulture Innovation Australia Limited (Hort Innovation) owns the copyright, other than as permitted under the Copyright ACT 1968 (Cth). The Carrot SARP (in part or as a whole) cannot be reproduced, published, communicated or adapted without the prior written consent of Hort Innovation. Any request or enquiry to use the Carrot SARP should be addressed to:

Communications Manager
Hort Innovation
Level 15, 141 Walker Street
North Sydney NSW 2060
Australia
Email: communications@horticulture.com.au
Phone: 02 8295 2300

**Hort
Innovation**
Strategic levy investment

**VEGETABLE
FUND**

This project has been funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Table of Contents

1. Summary	4
1.1 Diseases	5
1.2 Insects and nematodes	5
1.3 Weeds	5
2. The Australian Carrot Industry	5
3. Introduction	7
3.1 Background.....	7
3.2 Minor use permits and registration	8
3.3 Methods	9
3.4 Results and discussions	10
3.4.1 Detail.....	10
3.4.2 Appendices	10
4. Diseases, Pests and Weeds of Carrot.....	11
4.1 Diseases of carrot.....	12
4.1.1 Disease priorities	12
4.1.2 Available and potential products for priority diseases	13
4.2 Insect and mite pests of carrot.....	35
4.2.1 Insect and mite pest priorities	35
4.2.2 Available and potential products for priority insects and mites	37
4.3 Weeds in Carrot	61
4.3.1 Weed priorities	61
4.3.2 Available and potential products for weed control.....	62
5. References.....	75
5.1 Information:	75
5.2 Abbreviations and Definitions:	75
5.3 Acknowledgements:	75
6. Appendices:	76
Appendix 1. Products available for disease control in carrot	78
Appendix 2. Products available for control of insects and mites in carrot.....	81
Appendix 3. Products available for weed control in carrot	85
Appendix 4. Current permits for use in carrot	92
Appendix 5. Carrot Maximum Residue Limits (MRLs)	93
Appendix 6: Carrot Agrichemical Regulatory Risk Assessment	98

1. Summary

The strategic levy investment project Vegetable Industry SARP Report Updates (MT25005) is part of the Hort Innovation Vegetable Fund. A Strategic Agrichemical Review Process (SARP), through the process of a desktop audit and industry liaison;

- (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 carrot 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:

Common name	Scientific name
Cavity Spot	<i>Pythium sulcatum, Pythium violae</i>
Powdery Mildew	<i>Erysiphe heraclei</i>

1.2 Insects and Mites

The high priority insects and mites are:

Common name	Scientific name
Cutworms	<i>Agrotis</i> spp.
Root Knot Nematode	<i>Meloidogyne</i> spp.

1.3 Weeds

The high priority weeds are:

Common Name	Scientific Name
Annual Ryegrass	<i>Lolium rigidum</i>
Carrot Weed	<i>Cotula australis</i>

2. The Australian Carrot Industry

The Australian carrot industry is a major horticultural industry. They are grown in every Australian state and provide year-round supply to the domestic market.

Production for the year ending June 2025¹ was 304,038 tonnes with a value of \$253.4m. A total of 198,933 tonnes (65%) was supplied to the fresh domestic market, a further 86,414 tonnes (28%) to fresh export and 18,690 tonnes (6%) to processing. Production and value have been stable over the past 5 years.

Fresh Carrot Seasonality by State

State	24/25 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Western Australia	117,402												
Victoria	53,230												
Tasmania	49,830												
South Australia	46,547												
Queensland	31,205												
New South Wales	5,824												
Availability Legend			High		Medium		Low						

Australia is a net exporter of carrots. For the year ending June 2025, Australia exported 86,414 tonnes of carrots. Of this export, 33.9% was destined for UAE, followed by Saudi Arabia (17.2%), Malaysia (14%), Singapore (11.1%) and Qatar (7.7%).

¹ Hort Innovation (2026). Australian Horticulture Statistics Handbook 2024/25. [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 carrot 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 carrot industry regarding pesticide access, Hort Innovation undertook a review of the pesticide requirements via a Strategic Agrichemical Review Process (SARP) in 2019. The current project is to update the SARP with the latest information and progress.

The SARP identifies diseases, insect pests and weeds of major concern to the carrot 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 carrot 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 carrots but attempts to prioritise the major problems.

Exotic plant pests, not present in Australia, are not addressed in this document. A biosecurity plan has been developed for the Vegetable Industry in consultation with industry, government and scientists. The Biosecurity Plan for the vegetable industry² which covers carrot 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.

² <https://ausveg.com.au/app/uploads/2018/06/Industry-Biosecurity-Plan-for-the-Vegetable-Industry.pdf>

3.2 Minor use permits and registration

From a pesticide access perspective, the APVMA classifies carrots as a major crop. The crop fits within the APVMA crop group 16: Root and tuber vegetables, within the subgroup 16A: Root vegetables. Access to minor use permits for carrots can be quite complex given the crop status as a major crop. Reasonable justification is required for minor use permits, in accordance with the APVMA's minor use guidance³.

Possible justification for future permit applications could be based on:

- Minor use within a major crop
- 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 carrot industry is for manufacturers to register new pesticides uses in the crop.

³ <https://apvma.gov.au/node/10931>

3.3 Methods

The current update of the Carrot Strategic Agrichemical Review Process (SARP), which was last updated in 2021, was conducted by desktop audit. The process included gathering, collating and confirming information:

Hort Innovation Project Reference	Process of Review - Activity
MT25005 – Vegetable Strategic Agrichemical Review Process (SARP) 2026 Updates	Engagement and consultation with growers and other relevant stakeholders. Including; Online crop specific surveys, workshops and one on one consultation Nationally. Collation of information collected by commodity on applicable pests, diseases and weeds in order of priority.
MT24008 – Regulatory Support & Response Co-ordination (pesticides) DTS Pty Ltd	Carrot Agrichemical Regulatory Risk Assessment Document To assist strategic planning, with respect to future pest management options, this document was developed as part of the Hort Innovation funded project MT24008 to highlight the regulatory threats to agrichemicals currently approved for the management of the pests and diseases in Carrot as well as current initiatives aimed at addressing identified pest management deficiencies.
MT25005 – Vegetable Strategic Agrichemical Review Process (SARP) 2026 Updates	SARP updated via a desktop audit: Review list of priorities rated as high, moderate and low for each plant pest groups (disease, insects and weeds) – provided by VG16060 Identify industries pest priority gaps in order of importance Update current pesticides available via label registrations or minor use permits Update available pesticide use patterns, IPM ranking/compatibility, mode of action and chemical group. Identify pesticides at risk (under review and/or limited uses) via MT24008 Regulatory Support & Response Co-ordination (pesticides) – DTS Pty Ltd. Identify any appropriate solutions through the outcomes of the AgChem Forum's or similar market intelligence and their overall suitability (IPM compatibility, Chemical group to manage resistance, risk profile, existing domestic MRL's or global MRL's including any potential trade barriers, efficacy, OH&S, environmental safety and sustainability). Include known pesticide solutions that are currently under development with registrants for new uses in the nominated crops or in current Hort Innovation projects. Update MRL tables to include Australian MRL's, Codex and any applicable export market MRL's

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 carrot
- Appendix 2. Products available for control of insects and mites in carrot
- Appendix 3. Products available for weed control in carrot
- Appendix 4. Current permits for use in carrot
- Appendix 5. Carrot Maximum Residue Limits (MRLs)
- Appendix 6. Carrot Agrichemical Regulatory Risk Assessment

4. Diseases, Pests and Weeds of Carrot

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 and permit instructions. Specific resistance management strategies may apply. These can be found, along with other useful information, on the CropLife Australia website⁴.

In Chapter 4 information on regulatory risk derived from project MT24008 (Regulatory support and response coordination) has been incorporated.

Some of the suggested options have no overseas MRLs (see Appendix 5). Some importing countries may defer to MRLs established by the Codex Alimentarius Commission (Codex MRLs) but this cannot be automatically assumed.

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 carrot

4.1.1 Disease priorities

Common name	Scientific name
High	
Cavity Spot	<i>Pythium sulcatum</i> , <i>Pythium violae</i>
Powdery Mildew	<i>Erysiphe heraclei</i>
Moderate	
Alternaria Leaf Spot	<i>Alternaria dauci</i>
Cercospora Leaf Spot	<i>Cercospora carotae</i>
Bacterial Leaf Blight	<i>Xanthomonas hortorum</i> pv. <i>carotae</i>
Bacterial Soft Rot	<i>Erwinia</i> spp., <i>Pectobacterium</i> spp.
Sclerotinia Rot / White Mould	<i>Sclerotinia sclerotiorum</i> , <i>S. minor</i> , <i>S. rolfsii</i>
Damping Off	<i>Pythium</i> spp., <i>Rhizoctonia</i> spp.
Low	
Black Root Rot	<i>Thielaviopsis basicola</i> , <i>Chalaropsis thielavioides</i>
Carrot Black Rot	<i>Alternaria radicina</i>
Crater Rot	<i>Rhizoctonia carotae</i>
Crown Rot	<i>Fusarium</i> spp., <i>Rhizoctonia</i> spp.
Liquorice Rot	<i>Mycocentrospora acerina</i>

The high priority diseases are Cavity Spot and Powdery Mildew. Available and potential products for controlling diseases of carrot are listed in Section 4.1.2.

Soil-borne diseases are the main issue faced by carrot growers. Outbreaks are generally favoured by cool, wet conditions particularly after rain events and in water-logged areas. Crop rotation, irrigation practices, farm hygiene and good harvest and storage management are critical elements of managing diseases in carrots. It is critical to always use disease-free seed and fungicide seed treatments are often an effective tool for reducing infections.

Resistance Management

There are several disease strategies that apply to vegetables on the CropLife website⁵. Growers should review these strategies and implement management plans for fungicides that will reduce the risk of resistance development.

⁵ www.croplife.org.au/resources/programs/resistance-management/

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 6)	
A	Available via either registration or permit approval	R1	Short-term risk: Critical concern over retaining access < 1 year
P	Potential - a possible candidate to pursue for registration or permit	R2	Medium-term risk: Maintaining access of significant concern <2-5 years
P-A	Potential, already approved in the crop for another use	R3	Long-term: Potential issues associated with use - Monitoring required < 5 years
		R4	No current risk / concerns
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
Cavity Spot (<i>Pythium sulcatum</i> , <i>Pythium violae</i>) Priority: High Cavity Spot is rated as a high priority. Cavity Spot reduces the quality of carrots so that they become unacceptable for the local and export fresh markets. It causes forking and lesions on the roots leading to severe crop losses, and it is difficult to control. Cavity Spot can be minimised by using an integrated control program based on tolerant varieties, crop rotation, increasing soil pH, scheduling harvesting and fungicide application. A long rotation cycle out of carrots is needed to keep disease incidence low and this is often impractical to manage.							
1,3-Dichloropropene + Chloropicrin	8B	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphyllans, Wireworms, soil borne diseases (including <i>Fusarium</i> and <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , <i>Pythium</i>) and suppression of weeds. Restricted chemical. For use by professional and registered fumigators only.	R4
Dazomet (Basamid)	8F	Soil Fumigant	NR	A	ALL	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , <i>Sclerotinia</i> , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmidiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp. Apply granules to the soil surface and incorporate and seal the soil surface immediately. Do not plant into soil until a positive germination test has been conducted.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Mancozeb + Metalaxyl (Ridomil Gold MZ) Syngenta PER14045	M3 + 4	Protectant	7	A	ALL (excl. VIC)	Permitted in carrots for control of Pythium spp. and <i>Phytophthora</i> spp. Apply as a foliar spray at first signs of disease or when conditions favour development of disease. Maximum of 2 applications per crop, applied at 4 and 6 weeks after planting.	R2
Metham Sodium	-	Fumigant	NR	A	ALL	Registered in food crops as a pre-plant fumigant for control of fungus diseases including <i>Rhizoctonia</i> , Pythium , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , <i>Sclerotinia</i> and Club Root of crucifers. Applied as a soil injection, soil surface spray in front of a rotary tiller or through approved trickle irrigation systems.	R4
<i>Streptomyces lydicus</i> WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	A	ALL	Registered in vegetables for <i>Fusarium</i> , <i>Rhizoctonia</i> & Pythium Management. Apply as a seed treatment.	R4
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4
Metalaxyl-M (Apron)	4	Protectant Seed Treatment	NR	P-A	ALL	Registered in carrots as a seed treatment for control of Damping Off.	R4
Phosphorous Acid PER14184	33	Protectant & Curative	1	P-A	ALL (excl. VIC)	Permitted in carrots for control of Damping Off (Pythium spp. , <i>Phytophthora</i> spp., <i>Rhizoctonia</i> spp., <i>Fusarium</i> spp.)	R4
<i>Bacillus amyloliquefaciens</i> strain MBI 600 (Serifel) BASF	BM 02	Biological	NR	P		Registered for control of Botrytis in grapevines and strawberries. US registration for control of Pythium spp. in artichoke, asparagus, brassica leafy vegetables, bulb vegetables, citrus, cucurbits, corn, fruiting vegetables, legume vegetables, oilseeds, soybean, strawberry and root and tuber vegetables (except sugar beet).	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Cyazofamid (Ranman) ISK/UPL	21	Protectant		P		Permitted for control of <i>Pythium</i> spp. in nursery stock, spinach and silverbeet.	R4
Thiophanate-Methyl + Etridiazole (Banrot)	1+14	Protectant		P		Registered as a post plant soil drench for control of <i>Pythium</i>, <i>Phytophthora</i>, <i>Rhizoctonia</i> and <i>Thielaviopsis</i> in container grown ornamentals and in ground bedding plants.	R4
Powdery Mildew (<i>Erysiphe heraclei</i>) Priority: High Powdery Mildew is rated as a high priority. Powdery Mildew causes a characteristic white, powdery growth which predominantly affects the leaves. Photosynthetic efficiency is reduced in affected leaves, leading to reduced carrot yields. It is favoured by warm, humid conditions and a planned fungicide program is generally required when conditions favour the disease. High resistance risk and regular fungicide use necessitates a planned approach to ensure long-term effective control of Powdery Mildew.							
Azoxystrobin (Amistar)	11	Protectant	21	A	ALL	Registered in carrots for control of Powdery Mildew (<i>Erysiphe heraclei</i>) , Sclerotinia Rot / White Mould (<i>Sclerotinia sclerotiorum</i>) and suppression of Black Rot (<i>Alternaria radicina</i>). Apply as a foliar spray when conditions favour disease development and before infection occurs. Use a retreatment interval of 10-14 days. Maximum of 3 applications per crop, with no more than 2 consecutive applications.	R4
Azoxystrobin + Difenoconazole (Amistar Top)	11+3	Protectant & Curative	7	A	ALL	Registered in carrots for control of Leaf Blight (<i>Alternaria dauci</i> , <i>Cercospora carotae</i>) and Powdery Mildew (<i>Erysiphe heraclei</i>) . Apply as a foliar spray commencing before disease occurs. Apply 2 consecutive applications using a retreatment interval of 7-14 days. Maximum of 3 applications per crop.	R3
Penthiopyrad (Fontelis) Corteva	7	Protectant	7	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Early Blight (<i>Alternaria</i> spp.) and Powdery Mildew (<i>Erysiphe</i> spp.) Apply as a foliar spraying, beginning prior to disease development. Use a retreatment interval of 7-14 days. Maximum of 2 applications per crop.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pydiflumetofen + Difenconazole (Miravis Duo) Syngenta	7+3	Protectant & Curative	7 NG	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Early Blight / Target Spot / Leaf Spot (<i>Alternaria</i> spp.), Powdery Mildew (<i>Erysiphe</i> spp., <i>Oidium</i> spp.) and Cercospora Leaf Spot (<i>Cercospora</i> spp.) Apply as a foliar spray when conditions favour disease development and before the onset of symptoms. Use a minimum retreatment interval of 7-10 days. Maximum of 2 applications per crop.	R3
<i>Streptomyces lydicus</i> WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	A	ALL	Registered in carrots for suppression of Powdery Mildew . Apply as a foliar spray before or at the very early stages of disease development. Retreatment interval and maximum number of applications per crop not specified.	R4
Sulphur	M2	Protectant	NR	A	ALL	Registered in vegetables for control of Powdery Mildew and Rust. Apply as a foliar spray when disease is first seen. Retreatment interval and maximum number of applications per crop not specified.	R4
Tebuconazole	3	Protectant & Curative	21	A	ALL	Registered in carrots for suppression of Powdery Mildew . Apply as a foliar spray at first signs of disease. Use a retreatment interval of 14-21 days. Maximum of 3 applications per crop.	R4
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 Powdery Mildew in cucurbits.	R4
<i>Bacillus amyloliquefaciens</i> (Serifel) BASF	BM02	Biological	NR	P		Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (<i>Botrytis cinerea</i>). US registration for control of Powdery Mildew in artichoke, berries, brassica leafy vegetables, bulb vegetables, cucurbits, fruiting vegetables, grapes, hops, leafy vegetables, legume vegetables, pome fruit, stone fruit, sugar beet and tobacco.	R4
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	P		Registered in strawberries for control of Botrytis (<i>Botrytis cinerea</i>). Permitted for control of Powdery Mildew in eggplant. US registration for control of Powdery Mildew in cucurbits, grapes, pome fruit, stone fruit and strawberries.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
BLAD (ProBlad Plus)	BM 01	Biological	NR	P		Registered for control of Brown Rot and Blossom Blight in stone fruit. US registration for control of Powdery Mildew in cucurbits, fruiting vegetables, grapes, hops, pome fruit and strawberries.	R4
Boscalid + Kresoxim-Methyl (Colliss) BASF	7+11	Protectant & Curative		P		Registered for control of Powdery Mildew in cucurbits.	R4
Bupirimate (Nimrod) Adama	8	Protectant & Curative		P		Registered for control of Powdery Mildew in apples, cucurbits, cut flower, eggplant, melons, nursery stock, ornamentals, peppers and strawberries.	R4
Cyflufenamid (Flute) AgNova	U6	Protectant & Curative		P		Registered for control of Powdery Mildew in cucurbits, grapevines and strawberries.	R4
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant & Curative		P		Registered for control of Powdery Mildew in cucurbits, capsicum, chilli, eggplant, okra, tomato, strawberries and grapevines.	R4
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative		P		Registered for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot in bananas. US registration for control of Powdery Mildew in almonds, brassica leafy greens, cucurbits, grapes, hops, dry and succulent beans, stone fruit and sunflowers.	R4
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered for control of Powdery Mildew in fruiting vegetables, cucurbits and mangoes.	R4
Hydrogen Peroxide + Peroxyacetic Acid (Peratec Plus)	M	Protectant		P		Registered for control of Powdery Mildew in grapes, fruiting vegetables, cucurbits and potatoes.	R4
Mandestrobin (Intuity) Sumitomo	11	Protectant		P		Registered for control of Powdery Mildew in cucurbits.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Mefentrifluconazole (Belanty) BASF	3	Protectant & Curative		P		Registered for control of Powdery Mildew in grapes, apples, cucurbits and fruiting vegetables.	R4
Metrafenone (Vivando) BASF	U8	Protectant		P		Registered for control of Powdery Mildew in cucurbits and grapes.	R4
Orange Oil (Prev-Am) Oro Agri	-	Protectant	NR	P		Registered for control of Powdery Mildew in fruiting vegetables, cucurbits, berries, apples and winegrapes.	R4
Polyoxin-D (Intervene) Nufarm	19	Protectant		P		Pending registration for control of Botrytis and Powdery Mildew in grapes, Botrytis, Powdery Mildew and Rhizopus Fruit Rot in berries, and Powdery Mildew , Alternaria and Fruit Spot in apples.	R4
Proquinazid (Talendo) Corteva	13	Protectant		P		Registered for control of Powdery Mildew in fruiting vegetables, cucurbits, grapes and pome fruit.	R4
Pyriofenone (Kusabi) AgNova	50	Protectant & Curative		P		Registered for control of Powdery Mildew in cucurbits and grapes.	R4
Tea Tree Oil (Timorex)	46	Protectant				Registered for control of Powdery Mildew in fruiting vegetables, cucurbits and grapes.	R4
Alternaria Leaf Spot (<i>Alternaria dauci</i>) Priority: Moderate Alternaria Leaf Spot is rated as a moderate priority. It is predominantly a seed-borne pathogen, but it can also spread through crop residues or via dispersal of spores through wind or on farm equipment. It is a problem in wet years and tends to be more sporadic than Powdery Mildew. Alternaria can cause significant damage to foliage in carrots and lead to reduced yields and difficulties with mechanical harvesting. Management options include general farm hygiene, seed treatment and application of in-crop fungicides.							
Azoxystrobin + Difenconazole (Amistar Top)	11+3	Protectant & Curative	7	A	ALL	Registered in carrots for control of Leaf Blight (<i>Alternaria dauci</i>, <i>Cercospora carotae</i>) and Powdery Mildew (<i>Erysiphe heraclei</i>). Apply as a foliar spray commencing before disease occurs. Apply 2 consecutive applications using a retreatment interval of 7-14 days. Maximum of 3 applications per crop.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Chlorothalonil (Bravo)	M5	Protectant	7	A	ALL	Registered in carrots for control of Leaf Blight (<i>Alternaria dauci</i>). Apply as a foliar spray, commencing at first sign of disease. Use a retreatment interval of 7-14 days. Maximum number of applications per crop not specified.	R2
Copper	M1	Protectant	1	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Downy Mildew (<i>Peronospora farinosa</i>), Rust (<i>Uromyces betae</i>), Leaf Spot (<i>Alternaria</i> , <i>Cercospora</i> , <i>Septoria</i>), Target Spot / Early Blight (<i>Alternaria solani</i>) and Irish Blight / Late Blight (<i>Phytophthora infestans</i>). Apply as a foliar spray at first sign of disease. Use a retreatment interval of 10-14 days. Maximum number of applications per crop not specified.	R4
Difenoconazole	3	Protectant & Curative	7	A	ALL	Registered in carrots for control of Leaf Spot (<i>Alternaria dauci</i> , <i>Cercospora carotae</i>). Apply as a foliar spray commencing before disease occurs. Use a retreatment interval of 7-14 days. Maximum of 6 applications per crop.	R3
Mancozeb	M3	Protectant	7	A	ALL	Registered in carrots for control of <i>Cercospora</i> Leaf Spot and Alternaria Leaf Spot . Apply as a foliar spray at first sign of disease. Use a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	R2
Metiram (Polyram)	M3	Protectant	7	A	ALL	Registered in carrots for control of <i>Cercospora</i> Leaf Spot and Alternaria Leaf Spot . Apply as a foliar spray at first sign of disease. Use a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	R2
Penthiopyrad (Fontelis) Corteva	7	Protectant	7	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Early Blight (<i>Alternaria</i> spp.) and Powdery Mildew (<i>Erysiphe</i> spp.) Apply as a foliar spraying, beginning prior to disease development. Use a retreatment interval of 7-14 days. Maximum of 2 applications per crop.	R4
Pydiflumetofen + Difenoconazole (Miravis Duo) Syngenta	7+3	Protectant & Curative	7 NG	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Early Blight / Target Spot / Leaf Spot (<i>Alternaria</i> spp.), Powdery Mildew (<i>Erysiphe</i> spp., <i>Oidium</i> spp.) and <i>Cercospora</i> Leaf Spot (<i>Cercospora</i> spp.) Apply as a foliar spray when conditions favour disease development and before the onset of symptoms. Use a minimum retreatment interval of 7-10 days. Maximum of 2 applications per crop.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Zineb	M3	Protectant	7	A	ALL	Registered in carrots for control of Cercospora Leaf Spot and Alternaria Leaf Spot . Apply as a foliar spray at first sign of disease. Use a retreatment interval of 7 days. Maximum number of applications per crop not specified.	R2
<i>Bacillus amyloliquefaciens</i> (Serenade Opti) Bayer	BM 02	Biological	NR	P		Registered in grapes and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of Bacterial Spot and in avocado, other tropical fruit crops (excluding banana) and mango for control of Anthracnose and suppression of Stem End Rot. US registration for control of Alternaria in berries, brassica vegetables, citrus, bulb vegetables, herbs/spices, root/tuber and corm vegetables, stone fruit and tree nuts.	R4
<i>Bacillus amyloliquefaciens strain MBI 600</i> (Serifel) BASF	BM 02	Biological	NR	P		Registered for control of Botrytis in grapevines and strawberries. US registration for control of Alternaria in artichoke, asparagus, berries, brassica leafy vegetables, bulb vegetables, citrus, cucurbits, pome fruit, stone fruit and tobacco.	R4
Florypicoxamid (Adavelt) Corteva	21	Protectant & Curative		P		New active in development from Corteva with activity on Septoria, Powdery Mildew, Botrytis, Anthracnose, Alternaria , Scab, Monilinia, Rust and <i>Mycosphaerella</i> spp. Scheduled for JMPR evaluation in 2023.	R4
Fluazinam (Shirlan) Syngenta	29	Protectant		P		Registered in Brassica vegetables for control of Club Root. US registration for control of Alternaria in carrots.	R4
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative		P		Registered for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot in bananas. US registration for control of Alternaria in almond, Brassica leafy greens, bulb vegetables, cucurbits, pistachio, tree nuts and sunflower.	R4

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 Alternaria , Black Spot and Powdery Mildew in apples, Black Spot in pears, Blossom Blight, Brown Rot, Hull Rot, Shot Hole and Rust in stone fruit, and various leaf diseases in tropical fruits. US registration for control of Alternaria in almond, Brassica vegetables, Brassica leafy vegetables, carrot, citrus, pome fruit, small vine climbing fruit except kiwi fruit, leafy greens, cucurbits, tree nuts, fruiting vegetables & root vegetables except sugar beet.	R4
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered for control of Alternaria Leaf Spot, Black Spot, Brown Rot Nut Scab, Shot Hole and Rust in almond, Brown Rot in cherries and Husk Spot in macadamia. US registration for control of Alternaria Leaf Blight , Powdery Mildew, Anthracnose, Cercospora Leaf Spot, Gummy Stem Blight, Microdochium Blight, Target Leaf Spot and suppression of Downy Mildew in cucurbits.	R4
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant & Curative		P		Registered for control of Botrytis in berries and grapes, and Botrytis and Sclerotinia in leafy vegetables and potato. US registration for control of Alternaria in berries, brassica vegetables, bulb vegetables, carrots, cucurbits, fruiting vegetables, grape and small fruit vine climbing (except fuzzy kiwifruit), specific leaf petioles, specific leafy greens, root and tuber vegetables, lemon and lime, mustard greens, pistachio, potato, root vegetables and tuberous and corm vegetables.	R4
Cercospora Leaf Spot (<i>Cercospora carotae</i>) Priority: Moderate Cercospora Leaf Spot is rated as a moderate priority. The disease is transmitted through undecomposed crop residues, weed hosts and via seed. Outbreaks are favoured by warm, showery weather and severe infections can result in significant loss of foliage. Management options include crop rotation, farm hygiene, resistant varieties and use of fungicides.							
Azoxystrobin + Difenconazole (Amistar Top)	11+3	Protectant & Curative	7	A	ALL	Registered in carrots for control of Leaf Blight (<i>Alternaria dauci</i>, <i>Cercospora carotae</i>) and Powdery Mildew (<i>Erysiphe heraclei</i>). Apply as a foliar spray commencing before disease occurs. Apply 2 consecutive applications using a retreatment interval of 7-14 days. Maximum of 3 applications per crop.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Copper	M1	Protectant	1	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Downy Mildew (<i>Peronospora farinosa</i>), Rust (<i>Uromyces betae</i>), Leaf Spot (<i>Alternaria</i> , <i>Cercospora</i> , <i>Septoria</i>), Target Spot / Early Blight (<i>Alternaria solani</i>) and Irish Blight / Late Blight (<i>Phytophthora infestans</i>). Apply as a foliar spray at first sign of disease. Use a retreatment interval of 10-14 days. Maximum number of applications per crop not specified.	R4
Difenoconazole	3	Protectant & Curative	7	A	ALL	Registered in carrots for control of Leaf Spot (<i>Alternaria dauci</i> , <i>Cercospora carotae</i>). Apply as a foliar spray commencing before disease occurs. Use a retreatment interval of 7-14 days. Maximum of 6 applications per crop.	R3
Mancozeb	M3	Protectant	7	A	ALL	Registered in carrots for control of Cercospora Leaf Spot and <i>Alternaria</i> Leaf Spot. Apply as a foliar spray at first sign of disease. Use a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	R2
Metiram (Polyram)	M3	Protectant	7	A	ALL	Registered in carrots for control of Cercospora Leaf Spot and <i>Alternaria</i> Leaf Spot. Apply as a foliar spray at first sign of disease. Use a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	R2
Pydiflumetofen + Difenoconazole (Miravis Duo) Syngenta	7+3	Protectant & Curative	7 NG	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Early Blight / Target Spot / Leaf Spot (<i>Alternaria</i> spp.), Powdery Mildew (<i>Erysiphe</i> spp., <i>Oidium</i> spp.) and Cercospora Leaf Spot (<i>Cercospora</i> spp.) Apply as a foliar spray when conditions favour disease development and before the onset of symptoms. Use a minimum retreatment interval of 7-10 days. Maximum of 2 applications per crop.	R3
Zineb	M3	Protectant	7	A	ALL	Registered in carrots for control of Cercospora Leaf Spot and <i>Alternaria</i> Leaf Spot. Apply as a foliar spray at first sign of disease. Use a retreatment interval of 7 days. Maximum number of applications per crop not specified.	R2

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
<i>Bacillus amyloliquefaciens</i> strain MBI 600 (Serifel) BASF	BM 02	Biological	NR	P		Registered for control of <i>Botrytis</i> in grapes and strawberries. US registration for control of Cercospora in leafy vegetables, sugar beet and tobacco.	R4
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative		P		Registered for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot in bananas. US registration for control of a variety of diseases including Powdery Mildew, Alternaria Leaf Spot, Gummy Stem Blight, Septoria, <i>Botrytis</i> , <i>Cladosporium</i> , Cercospora , <i>Sclerotinia</i> and Anthracnose in almond, brassica leafy vegetables, legume vegetables, melons and various fruit crops.	R4
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant & Curative		P		Registered for control of various leaf diseases in almonds, pome fruit, stone fruit and tropical and sub-tropical fruit (inedible peel). US registration for control of Cercospora in peanuts and sugarbeet.	R4
Hydrogen Peroxide + Peroxyacetic Acid (Peratec Plus)	M	Protectant		P		Registered for control of Cercospora spp. in celery.	R4
Mefentrifluconazole (Belanty) BASF	3	Protectant & Curative		P		Registered for control of Black Spot in apples and Powdery Mildew in grapes. US registration for control of Cercospora in corn, legume vegetables, peanuts, sorghum, millet, soybean and sugar beet.	R4
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant & Curative		P		Registered for control of Botrytis in berries and grapes, and Botrytis and Sclerotinia in leafy vegetables and potato. US registration for control of Cercospora in brassicas, carrots, cucurbits, stalk vegetables and root and tuber vegetables.	R4
Tebuconazole + Azoxystrobin (Veritas) Adama	3+11	Protectant		P		Registered for control of Cercospora Leaf Spot in faba beans and broad beans.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacterial Leaf Blight (<i>Xanthomonas hortorum</i> pv. <i>carotae</i>) Bacterial Soft Rot (<i>Erwinia</i> spp., <i>Pectobacterium</i> spp.) Priority: Moderate Bacterial Leaf Blight and Bacterial Soft Rot are rated as a moderate priority. Bacterial Leaf Blight is a seedborne disease that is prevalent in warm, wet conditions. It causes significant leaf death and distortion. Bacterial soft Rot is caused by a soil-borne bacteria and results in rapid, mushy, and foul-smelling decomposition of roots. It thrives in wet, warm conditions, frequently entering through bruises or harvest injuries. Control of both diseases involves using certified disease-free seeds, hot water seed treatment, crop rotation and reducing overhead irrigation. Fungicide treatment is of limited effectiveness for control of bacterial diseases in carrots.							
Copper	M1	Protectant	1	P-A	ALL	Registered in root and tuber vegetables, including carrots, for control of Downy Mildew (<i>Peronospora farinosa</i>), Rust (<i>Uromyces betae</i>), Leaf Spot (<i>Alternaria</i> , <i>Cercospora</i> , <i>Septoria</i>), Target Spot / Early Blight (<i>Alternaria solani</i>) and Irish Blight / Late Blight (<i>Phytophthora infestans</i>). Registered for control of Bacterial Spot in stone fruit, brassica vegetables, cucurbits, peas and tomatoes.	R4
Acibenzolar-S-Methyl (Actigard Plant Activator) Syngenta	P01	Protectant	NR	P		Registered to reduce symptoms of Bacterial Speck (<i>Pseudomonas syringae</i>) in tomatoes.	R4
<i>Bacillus amyloliquefaciens</i> (Serenade Opti) Bayer	BM 02	Biological	NR	P		Permitted for suppression of Bacterial Blight in lettuce.	R4
<i>Bacillus amyloliquefaciens</i> strain MBI 600 (Serifel) BASF	BM 02	Biological	NR	P		Registered in grapes and strawberries for control of Botrytis. US registration for control of <i>Pseudomonas</i> spp. in berries, fruiting vegetables, leafy vegetables, stone fruit, tobacco and tree nuts.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Sclerotinia Rot / White Mould (<i>Sclerotinia sclerotiorum</i> , <i>S. minor</i> , <i>S. rolfsii</i>) Priority: Moderate Sclerotinia Rot / White Mould is rated as a moderate priority. Symptoms may appear in-crop but tend to be most significant during post-harvest storage. Initial infection is favoured by cool, moist conditions in crops with dense canopies. Sclerotinia is a soil borne disease and infection can be aided through mechanical damage to roots. Management options include general farm hygiene, crop rotation, planting space (to allow air movement) and the use of protectant and curative fungicide spray applications when conditions favour disease outbreaks. Correct timing and good penetration of foliage are essential for effective control. Harvest and post-harvest management are also important, avoiding mechanical damage and using cold storage to slow the development of symptoms.							
Azoxystrobin (Amistar)	11	Protectant	21	A	ALL	Registered in carrots for control of Powdery Mildew (<i>Erysiphe heraclei</i>), Sclerotinia Rot / White Mould (<i>Sclerotinia sclerotiorum</i>) and suppression of Black Rot (<i>Alternaria radicina</i>). Apply as a foliar spray when conditions favour disease development and before infection occurs. Use a retreatment interval of 10-14 days. Maximum of 3 applications per crop, with no more than 2 consecutive applications.	R4
Boscalid (Filan) BASF	7	Protectant	7	A	ALL	Registered in root and tuber vegetables for control of Sclerotinia Rot (<i>Sclerotinia minor</i> , <i>S. sclerotiorum</i>). Apply as a foliar spray commencing before disease has developed. Use a retreatment interval of 7-14 days. Maximum of 2 applications per crop.	R4
Dazomet (Basamid)	8F	Soil Fumigant	NR	A	ALL	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , Sclerotinia , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmodiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp. Apply granules to the soil surface and incorporate and seal the soil surface immediately. Do not plant into soil until a positive germination test has been conducted.	R4
Metham Sodium	-	Fumigant	NR	A	ALL	Registered in food crops as a pre-plant fumigant for control of fungus diseases including <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , Sclerotinia and Club Root of crucifers. Applied as a soil injection, soil surface spray in front of a rotary tiller or through approved trickle irrigation systems.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
<i>Bacillus amyloliquefaciens</i> <i>Strain QST 713</i> (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4
<i>Aureobasidium pullulans</i> (Botector) Nufarm	BM 02	Biological		P		Registered for suppression of Sclerotinia in fruiting vegetables.	R4
Azoxystrobin + Oxathiapiprolin (Orondis Flexi) Syngenta	11+49	Protectant & Curative		P		Registered for suppression of Sclerotinia in brassica vegetables, cucurbits, endive, leafy vegetables and lettuce.	R4
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant		P		Registered for control of Sclerotinia in capsicum, green beans, garden peas, snow peas, sugar snap peas, leafy vegetables, lettuce, nursery stock and ornamentals.	R4
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative		P		Registered for control of various diseases in various fruit and vegetable crops, tree nuts and pyrethrum. US registration for control of Sclerotinia in brassica leafy greens and sunflowers.	R4
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant & Curative		P		Registered for control of Sclerotinia in lettuce.	R4
Mandestrobin (Intuity) Sumitomo	11	Protectant		P		Registered for control of White Mould in green beans and lettuce and control of Blossom Blight and Brown Rot in stone fruit.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant & Curative		P		Registered for control of Sclerotinia in lettuce, leafy vegetables and root vegetables.	R4
Damping Off (<i>Pythium</i> spp., <i>Rhizoctonia</i> spp.) Priority: Moderate Damping Off is rated as a moderate priority. Symptoms of Damping Off consist of poor seed germination, pre-emergence and death of seedlings, post-emergence death of newly emerged seedlings, stunted plants, yellowed lower leaves, general poor growth, wilting, and eventual collapse and death of older plants. Roots of infected plants can appear water-soaked or brown to black in colour. In severe cases, nearly all roots may be girdled or rotted off. While all stages of carrot can be infected by root rot organisms, newly emerging plants and young seedlings are very susceptible. Control options are limited and include the use of crop rotation to break the disease cycle.							
1,3-Dichloropropene + Chloropicrin	8B	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphyllans, Wireworms, soil borne diseases (including <i>Fusarium</i> and <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , <i>Pythium</i>) and suppression of weeds. Restricted chemical. For use by professional and registered fumigators only.	R4
Dazomet (Basamid)	8F	Soil Fumigant	NR	A	ALL	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , <i>Sclerotinia</i> , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmodiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp. Apply granules to the soil surface and incorporate and seal the soil surface immediately. Do not plant into soil until a positive germination test has been conducted.	R4
Mancozeb + Metalaxyl (Ridomil Gold MZ) Syngenta PER14045	M3 + 4	Protectant	7	A	ALL (excl. VIC)	Permitted in carrots for control of <i>Pythium</i> spp. and <i>Phytophthora</i> spp. Apply as a foliar spray at first sign of disease or when conditions favour development of disease. Apply a maximum of 2 applications at 4 and 6 weeks after planting.	R2
Metalaxyl-M (Apron)	4	Protectant Seed Treatment	NR	A	ALL	Registered in carrots as a seed treatment for control of Damping Off .	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Metham Sodium	-	Fumigant	NR	A	ALL	Registered in food crops as a pre-plant fumigant for control of fungus diseases including <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , <i>Sclerotinia</i> and Club Root of crucifers. Applied as a soil injection, soil surface spray in front of a rotary tiller or through approved trickle irrigation systems.	R4
Phosphorous Acid PER14184	33	Protectant & Curative	1	A	ALL (excl. VIC)	Permitted in carrots for control of Damping Off (<i>Pythium</i> spp., <i>Phytophthora</i> spp., <i>Rhizoctonia</i> spp., <i>Fusarium</i> spp.) Apply as a foliar spray when conditions favour disease development. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	R4
<i>Streptomyces lydicus</i> WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	A	ALL	Registered in vegetables as a seed treatment for <i>Fusarium</i> , <i>Rhizoctonia</i> & <i>Pythium</i> Management.	R4
Thiram	M3	Protectant	7	A	QLD	Registered in carrots for control of Damping Off . Apply as a soil drench. Use a retreatment interval of 5-7 days. Maximum number of applications per crop not specified.	R2
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4
<i>Bacillus amyloliquefaciens</i> (Serifel) BASF	BM 02	Biological	NR	P		Registered for control of <i>Botrytis</i> in grapes. US registration for control of Pythium Damping Off in artichoke, asparagus, brassica leafy vegetables, bulb vegetables, citrus, cucurbits, corn, fruiting vegetables, legume vegetables, oilseeds, soybean, strawberry and root and tuber vegetables (except sugar beet).	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Cyazofamid (Ranman) UPL	21	Protectant & Curative		P		Registered in Brassica leafy vegetable seedlings for the control of Downy Mildew. US registration for control of <i>Pythium</i> spp. in carrot, leafy greens, succulent-podded and succulent-shelled beans, tuberous and corm vegetables, tomato greenhouse transplants and greenhouse-grown bell peppers.	R4
Fludioxonil + Sedaxane (Vibrance Premium Seed Treatment) Syngenta	12 +7	Protective Seed Treatment		P		Registered for control of Black Scurf (<i>Rhizoctonia</i>), Silver Surf, Black Rot, Gangrene and Fusarium Dry Rot and suppression of Scab in potatoes. Hort Innovation Project ST17000 is generating data to support a new registration as seed treatment for the control of <i>Rhizoctonia</i> in beetroot.	R4
Thiophanate-Methyl + Etridiazole (Banrot)	1+14	Protectant		P		Registered in container grown ornamentals and in ground bedding plants as a post plant soil drench for control of <i>Pythium</i>, <i>Phytophthora</i>, <i>Rhizoctonia</i> and <i>Thielaviopsis</i>.	R4
Black Root Rot (<i>Thielaviopsis basicola</i> , <i>Chalaropsis thielavioides</i>) Priority: Low Black Root Rot is rated as a low priority. It is both a field and post-harvest soil-borne disease that is favoured by cool, wet conditions. Management options include use of disease-free seed, crop rotation, improved soil drainage, good harvest management and general farm hygiene. Fungicides are largely ineffective.							
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4
Thiophanate-Methyl + Etridiazole (Banrot)	1+14	Protectant		P		Registered in container grown ornamentals and in ground bedding plants as a post plant soil drench for control of <i>Pythium</i> , <i>Phytophthora</i> , <i>Rhizoctonia</i> and <i>Thielaviopsis</i>.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Carrot Black Rot (<i>Alternaria radicina</i>) Priority: Low Carrot Black Rot is rated as a low priority. The pathogen is seed-borne but can survive in soil and on infect crop residues for several years. Management options include crop rotation, use of disease-free seed, farm hygiene and good harvest and storage management.							
Azoxystrobin (Amistar)	11	Protectant	21	A	ALL	Registered in carrots for control of Powdery Mildew (<i>Erysiphe heraclei</i>), Sclerotinia Rot / White Mould (<i>Sclerotinia sclerotiorum</i>) and suppression of Black Rot (<i>Alternaria radicina</i>). Apply as a foliar spray when conditions favour disease development and before infection occurs. Use a retreatment interval of 10-14 days. Maximum of 3 applications per crop, with no more than 2 consecutive applications.	R4
Iprodione (Rovral) PER84955	2	Protectant	NR NG	A	ALL (excl. VIC)	Permitted in carrots for suppression of Black Rot (<i>Alternaria radicina</i>). Apply as a foliar spray when conditions favour disease development. Maximum of 1 application per crop, applied when crop is 4 weeks old.	R4
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	P		Registered in strawberries for control of Botrytis (<i>Botrytis cinerea</i>). US registration for control of Black Rot in carrots.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Crater Rot (<i>Rhizoctonia carotae</i>) Priority: Low Crater Rot is rated as a low priority. Infection occurs in field, but symptoms usually only occur post-harvest. Management options include farm hygiene, avoiding late harvesting of carrots, maintaining constant storage temperatures and post-harvest treatments to wash off infested soil.							
1,3-Dichloropropene + Chloropicrin	8B	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphyllans, Wireworms, soil borne diseases (including <i>Fusarium</i> and <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , <i>Pythium</i>) and suppression of weeds. Restricted chemical. For use by professional and registered fumigators only.	R4
Dazomet (Basamid)	8F	Soil Fumigant	NR	A	ALL	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , <i>Sclerotinia</i> , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmodiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp. Apply granules to the soil surface and incorporate and seal the soil surface immediately. Do not plant into soil until a positive germination test has been conducted.	R4
Metham Sodium	-	Fumigant	NR	A	ALL	Registered in food crops as a pre-plant fumigant for control of fungus diseases including <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , <i>Sclerotinia</i> and Club Root of crucifers. Applied as a soil injection, soil surface spray in front of a rotary tiller or through approved trickle irrigation systems.	R4
<i>Streptomyces lydicus</i> WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	A	ALL	Registered in vegetables as a seed treatment for control of <i>Fusarium</i> , <i>Rhizoctonia</i> & <i>Pythium</i> .	R4
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
<i>Bacillus amyloliquefaciens</i> (Serenade Opti) Bayer	BM 02	Biological	NR	P		Registered in grapes and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of Bacterial Spot and in avocado, other tropical fruit crops (excluding banana) and mango for control of Anthracnose and suppression of Stem End Rot.	R4
<i>Bacillus amyloliquefaciens</i> strain MBI 600 (Serifel) BASF	BM 02	Biological	NR	P		Registered for control of <i>Botrytis</i> in grapes and strawberries in Australia. US registration for the management of <i>Pythium</i> spp., <i>Phytophthora</i> spp., <i>Fusarium</i> spp., <i>Rhizoctonia</i> spp. in peppers.	R4
Fludioxonil + Sedaxane (Vibrance Premium Seed Treatment) Syngenta	12+7	Protective Seed Treatment		P		Registered for control of Black Scurf (<i>Rhizoctonia</i>) in potatoes.	R4
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative		P		Registered for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot in bananas. US registration for control of Powdery Mildew, Alternaria Leaf Spot, Gummy Stem Blight, Septoria, Botrytis, Cladosporium, Cercospora, Sclerotinia, Rust and Anthracnose and suppression of <i>Rhizoctonia</i> in almond, Brassica leafy vegetables, legume vegetables, melons and various fruit crops.	R4
Metalaxyl-M + Azoxystrobin (Uniform)	4+11	Protectant & Curative		P		Permitted as an in-furrow directed spray at planting for control of Pythium and <i>Rhizoctonia</i> in beetroot.	R4
Thiophanate- Methyl + Etridiazole (Banrot)	1+14	Protectant		P		Registered in container grown ornamentals and in ground bedding plants as a post plant soil drench for control of <i>Pythium</i> , <i>Phytophthora</i> , <i>Rhizoctonia</i> and <i>Thielaviopsis</i> .	R4
Tolclofos-Methyl (Rizolex) Sumitomo	14	Protectant & Curative		P		Registered for control of <i>Rhizoctonia</i> in cotton and potatoes.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Crown Rot (<i>Fusarium</i> spp., <i>Rhizoctonia</i> spp.) Priority: Low Crown Rot is rated as a low priority. It is favoured by prolonged wet conditions coupled with physical injuries to the plant crown. Severe infections can lead to downgrading or reduced carrot packout. Management options include breaking soil crusting after cultivation, ensuring that carrot crowns are covered with soil and trimming of carrot tops to reduce infections associated with foliar diseases such as Sclerotinia.							
1,3-Dichloropropene + Chloropicrin	8B	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphyllans, Wireworms, soil borne diseases (including <i>Fusarium</i> and <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , <i>Pythium</i>) and suppression of weeds. Restricted chemical. For use by professional and registered fumigators only.	R4
Dazomet (Basamid)	8F	Soil Fumigant	NR	A	ALL	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , <i>Sclerotinia</i> , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmodiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp. Apply granules to the soil surface and incorporate and seal the soil surface immediately. Do not plant into soil until a positive germination test has been conducted.	R4
Metham Sodium	-	Fumigant	NR	A	ALL	Registered in food crops as a pre-plant fumigant for control of fungus diseases including <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , <i>Sclerotinia</i> and Club Root of crucifers. Applied as a soil injection, soil surface spray in front of a rotary tiller or through approved trickle irrigation systems.	R4
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4
Hymexazol (Tachigaren) Mitsui Chemicals	32	Curative		P		Not registered in Australia. US registration as a soil and seed treatment for control of soil-borne diseases caused by <i>Fusarium</i> , <i>Aphanomyces</i> , <i>Pythium</i> , and <i>Corticium</i> spp. in rice, sugar beet, fodder beet, vegetables, cucurbits, ornamentals, carnations, and forest tree seedlings.	R4

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Liquorice Rot (<i>Mycocentrospora acerina</i>) Priority: Low Liquorice Rot is rated as a low priority. It is a post-harvest disease caused by a soil-borne fungus that can appear during long term storage and reduce the marketability of carrots. Management options include harvest care, consistent storage temperatures, crop rotation and general farm hygiene.							
<i>Bacillus amyloliquefaciens</i> Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological	NR	P-A	ALL	Registered in vegetables for application to soil to improve bioavailability of soil resources to horticultural crops.	R4

4.2 Insect and mite pests of carrot

4.2.1 Insect and mite pest priorities

Common name	Scientific name
High	
Cutworms	<i>Agrotis</i> spp.
Root Knot Nematode	<i>Meloidogyne</i> spp.
Moderate	
Jassids	<i>Austroasca viridigrisea</i>
Carrot Aphid	<i>Cavariella aegopodii</i>
Green Peach Aphid	<i>Myzus persicae</i>
Red Legged Earth Mite	<i>Halotydeus destructor</i>
Rutherglen Bug	<i>Nysius vinitor</i>
Low	
Lesser Armyworm	<i>Spodoptera exigua</i>
Green Vegetable Bug	<i>Nezara viridula</i>
Cotton Bollworm	<i>Helicoverpa armigera</i>
Native Budworm	<i>Helicoverpa punctigera</i>
Loopers	<i>Chrysodeixis</i> spp.
Lucerne Leafroller	<i>Merophyas divulsana</i>
Root Lesion Nematode	<i>Pratylenchus</i> spp.
Onion Thrips	<i>Thrips tabaci</i>
Plague Thrips	<i>Thrips imaginis</i>
Tomato Thrips	<i>Frankliniella schultzei</i>
Western Flower Thrips	<i>Frankliniella occidentalis</i>
Vegetable Weevil	<i>Listroderes difficilis</i>
White Fringed Weevil	<i>Naupactus leucoloma</i>
Wireworms	<i>Gonocephalum</i> spp., <i>Arachnodima</i> spp., <i>Agrypnus</i> spp.
Fall Armyworm	<i>Spodoptera frugiperda</i>
Vegetable Leafminer	<i>Liriomyza sativae</i>
Serpentine Leafminer	<i>Liriomyza huidobrensis</i>

The high priority insect pests are Cutworms and Root Knot Nematode. Available and potential products for these pests are listed in Section 4.2.2.

Soil insects can be highly damaging to root crops such as carrot, and it is important to identify what species are causing crop damage. Sampling for soil insects is best conducted using a baiting technique, such as outlined on Page 35 of the Cotton Pest Management Guide⁶.

Resistance to some insect groups has reduced control options despite a range of actives registered. Additionally, not all actives have broad registrations across Lepidoptera. Growers should not exceed the maximum number of applications permitted on the insecticide label.

Biological control involving other insects or fungal organisms in insect pest control is another option that need to be further evaluated. There are several identified biological control agents commercially available for pests in Australia.

Resistance management strategies⁷ are available on the Croplife Australia website.

⁶ www.cottoninfo.com.au/publications/cotton-pest-management-guide

⁷ <https://www.croplife.org.au/resources/programs/resistance-management/various-cottonmelon-aphid-and-green-peach-aphid/>

4.2.2 Available and potential products for priority insects and mites

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

Availability		Regulatory risk (refer to Appendix 6)	
A	Available via either registration or permit approval	R1	Short-term risk: Critical concern over retaining access < 1 year
P	Potential - a possible candidate to pursue for registration or permit	R2	Medium-term risk: Maintaining access of significant concern <2-5 years
P-A	Potential, already approved in the crop for another use	R3	Long-term: Potential issues associated with use - Monitoring required < 5 years
		R4	No current risk / concerns
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 2025-26 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
Cutworms (<i>Agrotis</i> spp.) Priority: High Cutworm is rated as a high priority. Cutworms are caterpillars that attack seedling crops by chewing through leaves and stems at ground level. Infestations in young crops can reduce plant densities. The priority ranking for cutworms has been increased from MODERATE to HIGH. This change reflects the withdrawal of key chemical control options (i.e. chlorpyrifos and diazinon) in September 2025, and the resulting need to identify suitable replacement chemistry. It does not reflect an expansion in cutworm distribution or an increase in pest status. The significance of cutworms as a pest of carrots is restricted to certain regions within Queensland and Tasmania and is related to block history, time of year, rainfall, weed burden and surrounding vegetation. Reports from Western Australia indicate that cutworms do not represent a major issue.								
Emamectin (Proclaim Opti) Syngenta	6	Ingestion	3 NG	P-A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth / Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Heliothis (<i>Helicoverpa</i> spp.), Cluster Caterpillar (<i>Spodoptera litura</i>), Loopers (<i>Chrysodeixis</i> spp.) and Cabbage Centre Grub (<i>Hellula hydralis</i>).	M Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Trichlorfon	1B	Contact	2	P-A	ALL	Registered in vegetables for control of Cabbage White Butterfly, Cabbage Moth, Rutherglen Bug and Green Vegetable Bug. Registered for control of Cutworms in strawberries, beans, celery, crucifers, cucurbits, lettuce, peas, potatoes and tomato.	H Bee:H	R3
Bifenthrin (Talstar)	3A	Contact		P		Registered as an in-furrow spray at planting for control of Wireworms in cotton and sugarcane. US registration for control of Cutworms in field corn, sweet corn, succulent peas & beans, cilantro, dried beans & peas, tobacco and peanuts.	VH Bee:H	R3
Broflanilide (Cimegra) BASF	30	Contact & Ingestion		P		Registered in brassica vegetables and Chinese cabbage for control of Diamondback Moth. Broad spectrum activity on soil-dwelling pests although specific effect on cutworms is currently unknown.	H Bee:VH	R4
Chlorantraniliprole (Acelepryn, Coragen) Syngenta, FMC	28	Ingestion		P		Registered for control of Black Cutworm in turf. Note that rate in turf is higher than in vegetables.	L Bee:VL	R4
Chlorantraniliprole + Thiamethoxam (Durivo) Syngenta	28+4A	Contact & Ingestion		P		Registered for control of various lepidoptera and sucking pests in brassicas, fruiting vegetables and leafy vegetables.	L-H Bee:H	R2
Clothianidin + Imidacloprid (Poncho Plus Seed Treatment) Bayer	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 (Benevia) FMC	28	Ingestion		P		Registered for control of various lepidoptera and sucking pests in certain vegetables and strawberries. US registration for control of Cutworm in root vegetables, including carrots.	M Bee:VH	R4
Cyantraniliprole + Thiamethoxam (Spinner) Syngenta	28+4A	Contact & Ingestion		P		Registered for control of Black Cutworm in turf.	M Bee:VH	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Indoxacarb (Provaunt) Syngenta	22A	Ingestion		P		Registered for control of Black Cutworm in turf.	L Bee:H	R3
Root Knot Nematode (<i>Meloidogyne</i> spp.) Priority: High Root Knot Nematode is rated as a high priority. They are microscopic, worm-like animals that can invade plant roots near the root tip. Affected plants have an unthrifty appearance and often show symptoms of stunting, wilting or chlorosis. Symptoms are most severe in young plants. Management options include nematicides, soil fumigation and crop rotation.								
1,3-Dichloropropene + Chloropicrin	8B	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes , Symphylans, Wireworms, soil borne diseases (including <i>Fusarium</i> and <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , <i>Pythium</i>) and suppression of weeds. Restricted chemical. For use by professional and registered fumigators only.	-	R4
Dazomet (Basamid)	8F	Soil Fumigant	NR	A	ALL	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , <i>Sclerotinia</i> , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmodiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp., Nematodes , plus insects, weeds and soil fungi. Apply granules to the soil surface and incorporate and seal the soil surface immediately. Do not plant into soil until a positive germination test has been conducted.	-	R4
Fluazaindolizine (Salibro Reklamel) Corteva	N-UN	Contact	NR	A	ALL	Registered in root & tuber vegetables, including carrots, for control of Root-Knot Nematode (<i>Meloidogyne</i> spp.) Apply either pre-plant incorporated or as an in-furrow application at planting. Maximum of 1 application per crop.	-	R4
Fluensulfone (Nimitz) Adama	-	Contact	NR	A	ALL	Registered in carrots for control of Root-Knot Nematode (<i>Meloidogyne</i> spp.) Apply as a broadcast or banded spray and mechanically incorporate to a depth of 15-20 cm as soon as possible. Apply a single application at least 7 days prior to planting.	L Bee:L	R4

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	NR	A	ALL	Registered in root & tuber vegetables (excl. potatoes, sweet potatoes, aquatic root & tuber vegetables) for control of Root-Knot Nematode (<i>Meloidogyne</i> spp.) and Root Lesion Nematode (<i>Pratylenchus</i> spp.) Apply as a broadcast application 0-3 days before sowing and mechanically incorporate into the soil or apply within 1 week of sowing and irrigated immediately into the soil.	L Bee:L	R4
Metham Sodium	-	Fumigant	NR	A	ALL	Registered in food crops as a pre-plant fumigant for control of fungus diseases including <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , <i>Sclerotinia</i> , Club Root of crucifers and Nematodes . Applied as a soil injection, soil surface spray in front of a rotary tiller or through approved trickle irrigation systems.	-	R4
Abamectin (Tervigo) Syngenta	N-2	Contact		P		Registered for control of Root Knot Nematode in fruiting vegetables, cucurbits, potato and sweet potato.	M Bee:H	R3
Cadusafos (Rugby)	1B	Contact		P		Registered for control of Nematodes in banana, citrus, ginger, sugar cane, tobacco and tomato.	H Bee:H	R4
Cyclobutrifluram (Vaniva Tymirium) Syngenta	N-3	Contact		P		Registered for control of Root-Knot Nematode in fruiting vegetables and cucurbits.	L Bee:L	R4
Fenamiphos (Nemacur)	1B	Contact		P		Registered for control of Nematodes in aloe vera and bananas.	H Bee:H	R3
Oxamyl (Vydate) Corteva	1A	Contact		P		Registered for control of Nematodes in bananas, capsicum, tomatoes and sweet potatoes.	H Bee:H	R4
Terbufos (Counter)	1B	Contact		P		Registered for control of Burrowing Nematode and Spiral Nematode in bananas.	H Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Jassids (<i>Austroasca viridigrisea</i>) Priority: Moderate Jassids are rated as a moderate priority. Jassids are a sap sucking insect that can damage crops in both adult and nymph stages, causing wilting, stunting and distortion of plants. They are a sporadic pest, generally appearing during spring after building up in alternate hosts. Sooty mould may grow on honey dew after heavy infestations.								
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in vegetables for control of Ants, Aphids, Caterpillars, Earwigs, Whitefly, Thrips and Leafhoppers . Suitable for organic growers. Apply as a cover spray and re-apply as necessary every 2-3 weeks.	VH Bee:H	R4
Malathion	1B	Contact	3	A	ALL	Registered in carrots for control of Aphids, Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Green Vegetable Bug (<i>Nezara viridula</i>), Jassids , Leaf Hoppers , Rutherglen Bug (<i>Nysius vinitor</i>), Red Legged Earth Mite (not TAS) and Twenty-Eight-Spotted Ladybird (not TAS). Apply as a foliar spray when pest first appears. Retreatment interval not specified. Maximum of 4 applications per crop.	H Bee:H	R4
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered for control of various Hemiptera species in macadamias, tropical & subtropical fruit (inedible peel) and olives.	L Bee:VL	R4
Carrot Aphid (<i>Cavariella aegopodii</i>) Green Peach Aphid (<i>Myzus persicae</i>) Priority: Moderate Carrot Aphid and Green Peach Aphid are rated as a moderate priority. Heavy infestations can lead to yellowing and distortion of foliage, although the main impact is through vectoring Carrot Virus Y. Insecticide applications should be targeted at developing populations and treatment decisions should be made according to local thresholds. An integrated pest management approach should be used with consideration for preservation of beneficial species in the crop to avoid flaring of other insect pests.								
Afidopyropen (Versys) BASF PER88430	9D	Ingestion	1	A	ALL (excl. VIC)	Permitted in carrots for control of Green Peach Aphid (<i>Myzus persicae</i>) and Carrot Aphid (<i>Brevicoryne brassicae</i>). Apply as a foliar spray at first sign of pest infestation. Use a minimum retreatment interval of 14 days. Maximum of 4 applications per crop, with no more than 2 consecutive applications.	L Bee:L	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in vegetables for control of Ants, Aphids , Caterpillars, Earwigs, Whitefly, Thrips and Leafhoppers. Suitable for organic growers. Apply as a cover spray and re-apply as necessary every 2-3 weeks.	VH Bee:H	R4
Imidacloprid PER10918	4A	Contact & Ingestion	1	A	ALL	Permitted in carrots for control of Aphids including Green Peach Aphid, Carrot Aphid and Fennel Aphid. Apply as a foliar spray when pests first appear. Maximum of 1 application per crop.	M Bee:M	R2
Malathion	1B	Contact	3	A	ALL	Registered in carrots for control of Aphids , Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Green Vegetable Bug (<i>Nezara viridula</i>), Jassids, Leaf Hoppers, Rutherglen Bug (<i>Nysius vinitor</i>), Red Legged Earth Mite (not TAS) and Twenty-Eight-Spotted Ladybird (not TAS). Apply as a foliar spray when pest first appears. Retreatment interval not specified. Maximum of 4 applications per crop.	H Bee:H	R4
Phorate	1B	Contact	70	A	ALL	Registered in carrots for control of Aphids , Carrot Fly, Thrips and Jassids. Apply granules as a band at sowing or to established plants in a 5cm band each side of the crop. Incorporate into the soil where possible or apply when rain is expected or overhead irrigation can be made.	H Bee:H	R2
Potassium Salts of Fatty Acids (Natrasoap)	-	Contact	NR	A	ALL	Registered in vegetables for control of Aphids , Thrips, Mealybug, Two Spotted Mites, Spider Mite and Whitefly. Apply as a foliar spray as need. Use a retreatment interval of 5-7 days. Maximum number of applications per crop not specified.	L Bee:L	R4
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	7	A	ALL	Registered in root and tuber vegetables for control of Green Peach Aphid , and suppression of Tomato Potato Psyllid and Rutherglen Bug. Apply as a foliar spray when pest is present. Use a retreatment interval of 7-10 days. Maximum of 4 applications per crop, with no more than 2 consecutive applications.	M Bee:VH	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cyantraniliprole (Benevia) FMC	28	Ingestion		P		Registered for suppression of Green Peach Aphid (<i>Myzus persicae</i>) in fruiting vegetables and potatoes, and control of Green Peach Aphid (<i>Myzus persicae</i>) in strawberries.	M Bee:VH	R4
Dimpropridaz (Efficon) BASF	UN	Ingestion		P		Registered for control of Green Peach Aphid in brassica vegetables, leafy vegetables and brassica leafy vegetables.	M Bee:L	R4
Flonicamid (Mainman) UPL	9C	Ingestion		P		Registered for control of Green Peach Aphid in canola, cucurbits and potato.	M Bee:L	R4
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered for control of Green Peach Aphid in cucurbits, eggplant, peppers and tomatoes, green beans, potatoes and sweet potatoes.	L Bee:VL	R4
Orange Oil (Prev-Am) Oro Agri	-	Contact		P		Registered for control of Green Peach Aphid in fruiting vegetables, cucurbits, legume vegetables, berries, broccoli, cabbage, celery, herbs and paw paw.	VL Bee:VL	R4
Pymetrozine (Chess) Syngenta	9B	Contact & Ingestion		P		Registered for control of Green Peach Aphid (<i>Myzus persicae</i>) in beetroot, brassica vegetables, cucurbits, leafy vegetables, lettuce, potatoes, tomatoes, eggplant, capsicums, almonds, pistachios, stone fruit and cut flowers.	L Bee:VL	R3
Spirotetramat (Movento) Bayer	23	Ingestion		P		Registered for control of Green Peach Aphid in beans, peas, brassica vegetables, brassica leafy vegetables, celery, rhubarb, cucurbits, eggplant, peppers, tomatoes, herbs, leafy vegetables, lettuce, chicory, endive, radicchio, potatoes and sweet potatoes.	M Bee:VL	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Red Legged Earth Mite (<i>Halotydeus destructor</i>) Priority: Moderate Red Legged Earth Mite is rated as a moderate priority. Red Legged Earth Mites are a common and widespread pest of a broad range of crops, particularly in southern Australia. They spend most of their time on the soil surface and can cause extensive damage to plants, particularly in the seedling stage. It is important to monitor for presence of the pest before planting and to implement an integrated management strategy to reduce its impact.								
Malathion	1B	Contact	3	A	ALL (excl. TAS)	Registered in carrots for control of Aphids, Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Green Vegetable Bug (<i>Nezara viridula</i>), Jassids, Leaf Hoppers, Rutherglen Bug (<i>Nysius vinitor</i>), Red Legged Earth Mite (not TAS) and Twenty-Eight-Spotted Ladybird (not TAS). Apply as a foliar spray when pest first appears. Retreatment interval not specified. Maximum of 4 applications per crop.	H Bee:H	R4
Fipronil PER86665	2B	Contact	NR NG	P-A	ALL (excl. VIC)	Permitted in carrots for control of White Fringed Weevil (<i>Naupactus leucoloma</i>) and Symphylids (Class Symphyla). Registered for control of Red Legged Earth Mite in canola.	M Bee:VH	R2
Alpha-Cypermethrin	3A	Contact		P		Registered for control of Red Legged Earth Mite in canola, winter cereals, various pulse crops and pastures.	VH Bee:H	R3
Diafenthiuron (Pegasus)	12A	Contact		P		Registered for control of Red Legged Earth Mite in canola.	L Bee:VH	R4
Gamma-Cyhalothrin (Trojan) FMC	3A	Contact		P		Registered for control of Red Legged Earth Mite in canola, winter cereals, field peas, lucerne, lupins, pasture and vetch.	VH Bee:H	R4
Isocycloseram (Equento) Syngenta	30	Ingestion		P		Registered as a seed treatment for control of Red Legged Earth Mite in canola.	H Bee:H	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Rutherglen Bug (<i>Nysius vinitor</i>) Priority: Moderate Rutherglen Bug is rated as a moderate priority. They breed up on weeds adjacent to cropping areas. It is important to monitor crops for eggs and nymphs by regular field scouting. Large numbers can cause significant feeding damage to foliage by sucking the sap and depleting the crop of nutrients. Growers should anticipate potential migrations of pests from one finishing crop to another emerging one. Rutherglen Bug can be controlled by removing the weeds they use as hosts and by ploughing a deep furrow around the emerging crop, preventing wingless nymphs from migrating from weeds or harvested crops.								
Malathion	1B	Contact	3	A	ALL	Registered in carrots for control of Aphids, Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Green Vegetable Bug (<i>Nezara viridula</i>), Jassids, Leaf Hoppers, Rutherglen Bug (<i>Nysius vinitor</i>), Red Legged Earth Mite (not TAS) and Twenty-Eight-Spotted Ladybird (not TAS). Apply as a foliar spray when pest first appears. Retreatment interval not specified. Maximum of 4 applications per crop.	H Bee:H	R4
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	7	A	ALL	Registered in root and tuber vegetables for control of Green Peach Aphid, and suppression of Tomato Potato Psyllid and Rutherglen Bug . Apply as a foliar spray when pest is present. Use a retreatment interval of 7-10 days. Maximum of 4 applications per crop, with no more than 2 consecutive applications.	M Bee:VH	R4
Trichlorfon	1B	Contact	2	A	ALL	Registered in vegetables for control of Cabbage White Butterfly, Cabbage Moth, Rutherglen Bug and Green Vegetable Bug. Apply as a foliar spray when pests are first seen. Use a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	H Bee:H	R3
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered for control of various Hemiptera species in macadamias, tropical & subtropical fruit (inedible peel) and olives. Activity on Rutherglen Bug is unknown.	L Bee:VL	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Lesser Armyworm (<i>Spodoptera exigua</i>) Priority: Low Lesser Armyworm is rated as a low priority. It is a sporadic pest that can infest crops in large numbers if conditions are favourable for an outbreak. Larvae feed on the leaf surface and can cause rapid and extensive leaf loss.								
<i>Bacillus thuringiensis</i> <i>subsp. kurstaki</i> (DiPel)	11A	Biological	NR	A	ALL	Registered in vegetables for control of Lepidoptera. Time spraying to coincide with egg hatch. Treatments per season not limited.	VL Bee:L	R4
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in vegetables for control of Ants, Aphids, Caterpillars , Earwigs, Whitefly, Thrips and Leafhoppers. Suitable for organic growers. Apply as a cover spray and re-apply as necessary every 2-3 weeks.	VH Bee:H	R4
Emamectin (Proclaim Opti) Syngenta	6	Ingestion	3 NG	P-A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth / Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Heliothis (<i>Helicoverpa</i> spp.), Cluster Caterpillar (<i>Spodoptera litura</i>), Loopers (<i>Chrysodeixis</i> spp.) and Cabbage Centre Grub (<i>Hellula hydralis</i>).	M Bee:H	R3
Flubendiamide (Belt) Bayer	28	Ingestion	1	P-A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Cluster Caterpillar (<i>Spodoptera litura</i>), Potato Moth (<i>Phthorimaea operculella</i>) and Heliothis (<i>Helicoverpa</i> spp.).	L-M Bee:L	R4
Spinetoram (Success Neo) Corteva	5	Ingestion	3	P-A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth.	M Bee:H	R4
Spinosad (Entrust Organic) Corteva	5	Ingestion	3 G:14	P-A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth.	L Bee:L	R4
Indoxacarb (Avatar eVo) FMC	22A	Ingestion		P		Registered for control of various lepidoptera in brassica vegetables, leafy vegetables, Chinese leafy vegetables, fruiting vegetables, celery, cucurbits, sweet corn and pome fruit.	L Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Isocycloseram (Simodis Plinazolin) Syngenta	30	Ingestion		P		Registered for suppression of Heliothis in brassica vegetables, brassica leafy vegetables, cucurbits and fruiting vegetables.	H Bee:H	R4
Methoxyfenozide (Prodigy) Corteva	18	Insect Growth Regulator		P		Registered for control of a range of Lepidopteran pests in various vegetables including fruiting vegetables and lettuce.	VL Bee:VL	R4
Green Vegetable Bug (<i>Nezara viridula</i>) Priority: Low								
Green Vegetable Bug is rated as a low priority. They are a sporadic sucking pest that will migrate into crops from shade lines and vegetation along watercourses. Symptoms include lack of crop vigour and in severe cases can lead to reduced yield.								
Malathion	1B	Contact	3	A	ALL	Registered in carrots for control of Aphids, Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Green Vegetable Bug (<i>Nezara viridula</i>), Jassids, Leaf Hoppers, Rutherglen Bug (<i>Nysius vinitor</i>), Red Legged Earth Mite (not TAS) and Twenty-Eight-Spotted Ladybird (not TAS). Apply as a foliar spray when pest first appears. Retreatment interval not specified. Maximum of 4 applications per crop.	H Bee:H	R4
Trichlorfon	1B	Contact	2	A	ALL	Registered in vegetables for control of Cabbage White Butterfly, Cabbage Moth, Rutherglen Bug and Green Vegetable Bug . Apply as a foliar spray when pests are first seen. Use a retreatment interval of 7-10 days. Maximum number of applications per crop not specified.	H Bee:H	R3
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered for control of various Hemiptera species in macadamias, tropical & subtropical fruit (inedible peel) and olives.	L Bee:VL	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cotton Bollworm (<i>Helicoverpa armigera</i>) Native Budworm (<i>Helicoverpa punctigera</i>) Priority: Low Cotton Bollworm and Native Budworm are rated as a low priority. <i>Helicoverpa armigera</i> is generally regarded as the more serious pest because of its greater capacity to develop resistance to insecticides, broader host range, and persistence in cropping areas from year to year. Larvae feed on leaves but are most damaging when feeding on growing terminals, buds, flowers & fruit.								
<i>Bacillus thuringiensis</i> <i>subsp. kurstaki</i> (DiPel)	11A	Biological	NR	A	ALL	Registered in vegetables for control of Lepidoptera. Time spraying to coincide with egg hatch. Treatments per season not limited.	VL Bee:L	R4
Emamectin (Proclaim Opti) Syngenta	6	Ingestion	3 NG	A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth / Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Heliothis (<i>Helicoverpa</i> spp.), Cluster Caterpillar (<i>Spodoptera litura</i>), Loopers (<i>Chrysodeixis</i> spp.) and Cabbage Centre Grub (<i>Hellula hydralis</i>). Apply as a foliar spray at first signs of pest infestation. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	M Bee:H	R3
Flubendiamide (Belt) Bayer	28	Ingestion	1	A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Cluster Caterpillar (<i>Spodoptera litura</i>), Potato Moth (<i>Phthorimaea operculella</i>) and Heliothis (<i>Helicoverpa</i> spp.) Apply as a foliar spray when monitoring indicates pest thresholds have been reached. Use a retreatment interval of 7-14 days. Maximum of 3 applications per crop.	L-M Bee:L	R4
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in vegetables for control of Ants, Aphids, Caterpillars , Earwigs, Whitefly, Thrips and Leafhoppers. Suitable for organic growers. Apply as a cover spray and re-apply as necessary every 2-3 weeks.	VH Bee:H	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinetoram (Success Neo) Corteva	5	Ingestion	3	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth. Apply as a foliar spray when monitoring indicates pest thresholds have been reached. Use a retreatment interval of 7-14 days. Maximum of 4 applications per season.	M Bee:H	R4
Spinosad (Entrust Organic) Corteva	5	Ingestion	3 G:14	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth. Apply as a foliar spray when monitoring indicates pest thresholds have been reached. Use a retreatment interval of 7-14 days. Maximum of 4 applications per season.	L Bee:L	R4
<i>Clitoria ternatea</i> Extract (Sero-X) Growth Agriculture	-	Biological	NR	P		Registered for control of Cotton Bollworm and Native Budworm in cotton, lucerne and tomato.	L Bee:VL	R4
Indoxacarb (Avatar eVo) FMC	22A	Ingestion		P		Registered for control of Helicoverpa spp. in brassica vegetables, leafy vegetables, Chinese leafy vegetables, fruiting vegetables, celery, cucurbits, sweet corn and pome fruit.	L Bee:H	R3
Isocycloseram (Simodis Plinazolin) Syngenta	30	Ingestion		P		Registered for suppression of Heliothis in brassica vegetables, brassica leafy vegetables, cucurbits and fruiting vegetables.	H Bee:H	R4
Methoxyfenozide (Prodigy) Corteva	18	Insect Growth Regulator		P		Registered for control of Native Budworm in tomatoes, peppers, eggplant and okra.	VL Bee:VL	R4
Helicoverpa NPV (Vivus Max) AgBiTech	31	Biological		P		Registered for control of Helicoverpa spp. in potatoes, sweet corn, berryfruit, brassica vegetables, celery, cucurbits, fruiting vegetables, leafy vegetables, legume vegetables, ornamentals and pome fruit.	VL Bee:L	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Loopers (<i>Chrysodeixis</i> spp.) Priority: Low Loopers are rated as a low priority. Larvae are voracious leaf feeders but they do not usually inflict serious damage in carrots. They are easily controlled by insecticides when present in large numbers.								
<i>Bacillus thuringiensis</i> <i>subsp. kurstaki</i> (DiPel)	11A	Biological	NR	A	ALL	Registered in vegetables for control of Lepidoptera. Time spraying to coincide with egg hatch. Treatments per season not limited.	VL Bee:VL	R4
Emamectin (Proclaim Opti) Syngenta	6	Ingestion	3 NG	A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth, Cabbage White Butterfly, Heliothis, Cluster Caterpillar and Loopers . Apply as a foliar spray at first signs of pest infestation. Use a minimum retreatment interval of 7 days. Maximum of 4 applications per crop.	M Bee:H	R3
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in vegetables for control of Ants, Aphids, Caterpillars , Earwigs, Whitefly, Thrips and Leafhoppers. Suitable for organic growers. Apply as a foliar spray when pest is evident. Use a retreatment interval of 14-21 days. Maximum number of applications per crop not specified.	VH Bee:H	R4
Spinetoram (Success Neo) Corteva	5	Ingestion	3	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers , Helicoverpa and Potato Moth. Apply as a foliar spray when monitoring indicates pest thresholds have been reached. Use a retreatment interval of 7-14 days. Maximum of 4 applications per season.	M Bee:H	R4
Spinosad (Entrust Organic) Corteva	5	Ingestion	3 G:14	A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers , Helicoverpa and Potato Moth. Apply as a foliar spray when monitoring indicates pest thresholds have been reached. Use a retreatment interval of 7-14 days. Maximum of 4 applications per season.	L Bee:L	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flubendiamide (Belt) Bayer	28	Ingestion	1	P-A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Cluster Caterpillar (<i>Spodoptera litura</i>), Potato Moth (<i>Phthorimaea operculella</i>) and Heliothis (<i>Helicoverpa</i> spp.)	L-M Bee:L	R4
Indoxacarb (Avatar eVo) FMC	22A	Ingestion		P		Registered for control of various lepidoptera in brassica vegetables, leafy vegetables, Chinese leafy vegetables, fruiting vegetables, celery, cucurbits, sweet corn and pome fruit.	L Bee:H	R3
Isocycloseram (Simodis Plinazolin) Syngenta	30	Ingestion		P		Registered for suppression of Heliothis in brassica vegetables, brassica leafy vegetables, cucurbits and fruiting vegetables.	H Bee:H	R4
Methoxyfenozide (Prodigy) Corteva	18	Insect Growth Regulator		P		Registered for control of a range of Lepidopteran pests in various vegetables including fruiting vegetables and lettuce.	VL Bee:VL	R4
Lucerne Leafroller (<i>Merophyas divulsana</i>) Priority: Low								
Lucerne Leafroller is rated as a low priority. The larvae roll leaves up with webbing and then feed from the inside. Carrots are not a preferred host plant and control is usually not warranted.								
<i>Bacillus thuringiensis</i> <i>subsp. kurstaki</i> (DiPel)	11A	Biological	NR	A	ALL	Registered in vegetables for control of Lepidoptera. Time spraying to coincide with egg hatch. Treatments per season not limited.	VL Bee:L	R4
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in vegetables for control of Ants, Aphids, Caterpillars , Earwigs, Whitefly, Thrips and Leafhoppers. Suitable for organic growers. Apply as a cover spray and re-apply as necessary every 2-3 weeks.	VH Bee:H	R4
Emamectin (Proclaim Opti) Syngenta	6	Ingestion	3 NG	P-A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth / Cabbage Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Heliothis (<i>Helicoverpa</i> spp.), Cluster Caterpillar (<i>Spodoptera litura</i>), Loopers (<i>Chrysodeixis</i> spp.) and Cabbage Centre Grub (<i>Hellula hydralis</i>).	M Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flubendiamide (Belt) Bayer	28	Ingestion	1	P-A	ALL	Registered in root & tuber vegetables, including carrots, for control of Diamondback Moth (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>), Cluster Caterpillar (<i>Spodoptera litura</i>), Potato Moth (<i>Phthorimaea operculella</i>) and Heliothis (<i>Helicoverpa</i> spp.)	L-M Bee:L	R4
Spinetoram (Success Neo) Corteva	5	Ingestion	3	P-A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth. Registered for control of Leafrollers in avocados, tropical and sub-tropical fruit (inedible peel) and coffee.	M Bee:H	R4
Spinosad (Entrust Organic) Corteva	5	Ingestion	3 G:14	P-A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth.	L Bee:L	R4
Indoxacarb (Avatar eVo) FMC	22A	Ingestion		P		Registered for control of Leafrollers in leafy vegetables.	L Bee:H	R3
Isocycloseram (Simodis Plinazolin) Syngenta	30	Ingestion		P		Registered for suppression of Heliothis in brassica vegetables, brassica leafy vegetables, cucurbits and fruiting vegetables.	H Bee:H	R4
Methoxyfenozide (Prodigy) Corteva	18	Insect Growth Regulator		P		Registered for control of a range of Lepidopteran pests in various vegetables including fruiting vegetables and lettuce.	VL Bee:VL	R4
Root Lesion Nematode (<i>Pratylenchus</i> spp.) Priority: Low Root Lesion Nematode is rated as a low priority. They are microscopic, worm-like animals that can invade plant roots near the root tip. Affected plants have an unthrifty appearance and often show symptoms of stunting, wilting or chlorosis. Symptoms are most severe in young plants. Management options include nematicides, soil fumigation and crop rotation.								
1,3-Dichloropropene + Chloropicrin	8B	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of plant parasitic Nematodes, Symphylans, Wireworms, soil borne diseases (including <i>Fusarium</i> and <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , <i>Pythium</i>) and suppression of weeds. Restricted chemical. For use by professional and registered fumigators only.	-	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dazomet (Basamid)	8F	Soil Fumigant	NR	A	ALL	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , <i>Sclerotinia</i> , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmodiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp., Nematodes, plus insects, weeds and soil fungi. Apply granules to the soil surface and incorporate and seal the soil surface immediately. Do not plant into soil until a positive germination test has been conducted.	-	R4
Fluopyram (Velum Prime) Bayer	N-3	Contact	NR	A	ALL	Registered in root & tuber vegetables (excl. potatoes, sweet potatoes, aquatic root & tuber vegetables) for control of Root-Knot Nematode (<i>Meloidogyne</i> spp.) and Root Lesion Nematode (<i>Pratylenchus</i> spp.) Apply as a broadcast application 0-3 days before sowing and mechanically incorporate into the soil or apply within 1 week of sowing and irrigated immediately into the soil.	L Bee:L	R4
Metham Sodium	-	Fumigant	NR	A	ALL	Registered in food crops as a pre-plant fumigant for control of fungus diseases including <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , <i>Sclerotinia</i> , Club Root of crucifers and Nematodes. Applied as a soil injection, soil surface spray in front of a rotary tiller or through approved trickle irrigation systems.	-	R4
Fluazaindolizine (Salibro Reklamel) Corteva	N-UN	Contact	NR	P-A	ALL	Registered in root & tuber vegetables, including carrots, for control of Root-Knot Nematode (<i>Meloidogyne</i> spp.)	-	R4
Fluensulfone (Nimitz) Adama	-	Contact	NR	P-A	ALL	Registered in carrots for control of Root-Knot Nematode (<i>Meloidogyne</i> spp.)	L Bee:L	R4
Abamectin (Tervigo) Syngenta	N-2	Contact		P		Registered for control of Root Knot Nematode in fruiting vegetables, cucurbits, potato and sweet potato.	M Bee:H	R3
Cadusafos (Rugby)	1B	Contact		P		Registered for control of Nematodes in banana, citrus, ginger, sugar cane, tobacco and tomato.	H Bee:H	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cyclobutirfluram (Vaniva Tymirium) Syngenta	N-3	Contact		P		Registered for control of Root-Knot Nematode in fruiting vegetables and cucurbits.	L Bee:L	R4
Fenamiphos (Nemacur)	1B	Contact		P		Registered for control of Nematodes in aloe vera and bananas.	H Bee:H	R3
Oxamyl (Vydate) Corteva	1A	Contact		P		Registered for control of Nematodes in bananas, capsicum, tomatoes and sweet potatoes.	H Bee:H	R4
Terbufos (Counter)	1B	Contact		P		Registered for control of Burrowing Nematode and Spiral Nematode in bananas.	H Bee:H	R3
Onion Thrips (<i>Thrips tabaci</i>) Plague Thrips (<i>Thrips imaginis</i>) Tomato Thrips (<i>Frankliniella schultzei</i>) Western Flower Thrips (<i>Frankliniella occidentalis</i>) Priority: Low								
Thrips are rated as a low priority. Thrips are a rasping pest that are difficult to control with insecticides. Cultural measures including field hygiene should be used, as well as avoiding disruptive insecticides early season to preserve beneficials.								
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in vegetables for control of Ants, Aphids, Caterpillars, Earwigs, Whitefly, Thrips and Leafhoppers. Suitable for organic growers. Apply as a cover spray and re-apply as necessary every 2-3 weeks.	VH Bee:H	R4
Phorate	1B	Contact	70	A	ALL	Registered in carrots for control of Aphids, Carrot Fly, Thrips and Jassids. Apply granules as a band at sowing or to established plants in a 5cm band each side of the crop. Incorporate into the soil where possible or apply when rain is expected or overhead irrigation can be made.	H Bee:H	R2
Potassium Salts of Fatty Acids (Natrasoap)	-	Contact	NR	A	ALL	Registered in vegetables for control of Aphids, Thrips , Mealybug, Two Spotted Mites, Spider Mite and Whitefly. Apply as a foliar spray as need. Use a retreatment interval of 5-7 days. Maximum number of applications per crop not specified.	L Bee:L	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinetoram (Success Neo) Corteva	5	Ingestion	3	P-A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth. Registered for control of Western Flower Thrips in brassica vegetables, bulb vegetables, cucurbits, fruiting vegetables, leafy vegetables, legume vegetables, ornamentals and berryfruit.	M Bee:H	R4
Spinosad (Entrust Organic) Corteva	5	Ingestion	3 G:14	P-A	ALL	Registered in root and tuber vegetables, including carrots, for control of Light Brown Apple Moth, Loopers, Helicoverpa and Potato Moth. Registered for control of Western Flower Thrips in brassica vegetables, cucurbits, fruiting vegetables, leafy vegetables, legume vegetables, ornamentals, berryfruit, pome fruit and stone fruit.	L Bee:L	R4
Isocycloseram (Simodis) Syngenta	30	Ingestion		P		Registered for suppression of Plague Thrips (<i>Thrips imaginis</i>) in bulb vegetables, and Western Flower Thrips (<i>Frankliniella occidentalis</i>) and Plague Thrips (<i>Thrips imaginis</i>) in cucurbits and fruiting vegetables.	H Bee:H	R4
Orange Oil (Prev-Am) Oro Agri	-	Contact		P		Registered for suppression of various thrips species, including Onion Thrips (<i>Thrips tabaci</i>), Western Flower Thrips (<i>Frankliniella occidentalis</i>) and Tomato Thrips (<i>Frankliniella schultzei</i>) in fruiting vegetables, cucurbits, legume vegetables, berries, bulb vegetables, brassica vegetables, celery, herbs, apple and citrus.	VL Bee:VL	R4
Petroleum Oil	-	Contact		P		Registered for control of thrips in asparagus, beans, beet, corn, cucurbits, peppers, capsicums, radish, squash, tomatoes and cut flowers.	VL Bee:L	R4
Spirotetramat (Movento) Bayer	23	Ingestion		P		Registered for control of various thrips species, including Onion Thrips (<i>Thrips tabaci</i>), Western Flower Thrips (<i>Frankliniella occidentalis</i>), Plague Thrips (<i>Thrips imaginis</i>) and Tomato Thrips (<i>Frankliniella schultzei</i>) in green beans, celery, rhubarb, eggplant, peppers, tomatoes, herbs, lettuce, onions, bulb vegetables and grapes.	M Bee:VL	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Vegetable Weevil (<i>Listroderes difficilis</i>) White Fringed Weevil (<i>Naupactus leucoloma</i>) Priority: Low Vegetable Weevil and White Fringed Weevil are rated as a low priority. They are a sporadic pest that can cause minor leaf feeding damage but generally do not warrant control measures.								
Fipronil PER86665	2B	Contact	NR NG	A	ALL (excl. VIC)	Permitted in carrots for control of White Fringed Weevil (<i>Naupactus leucoloma</i>) and Symphylids (Class Symphyla). Apply as a broadcast spray to the soil surface and incorporate to a depth of 15cm prior to planting. Maximum of 1 application per crop.	M Bee:VH	R2
Indoxacarb (Avatar eVo) FMC	22A	Ingestion		P		Registered for control of Weevils in pome fruit and stone fruit.	L Bee:H	R3
Tetraniliprole (Vayego) Bayer	28	Ingestion		P		Registered for control of Sigastus Weevil in macadamia and control of Apple Weevil, Fuller's Rose Weevil and Garden Weevil in pome fruit and stone fruit.	M Bee:VH	R4
Wireworms (<i>Gonocephalum</i> spp., <i>Arachnodima</i> spp., <i>Agrypnus</i> spp.) Priority: Low Wireworms are rated as a low priority. Larvae attack germinating seeds, the hypocotyl, roots and at the surface of young plants resulting in seedling death and patchy plant stands. The adult beetles can also damage seedlings by chewing at or just above ground level. Symptoms can be confused with other establishment problems and may be worse if seedling development is slow due to climate or other factors. Bait sampling prior to planting should be used to determine the presence of soil pests in carrots. Clean fallows (free from weeds) generally cause pest insect numbers to decline. Infestations of wireworm larvae detected after crop emergence cannot be controlled with baiting or surface spraying. Therefore, this pest must be detected before planting for control actions to be effective.								
1,3-dichloropropene + Chloropicrin	8	Soil Fumigant	NR	A	ALL	Registered in vegetables for control of Wireworms . Leave soil undisturbed at least 7 days after treatment. Aerate for a minimum of 21 days before planting. For use by professional and registered fumigators only.	-	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Fipronil PER86665	2B	Contact	NR NG	P-A	ALL (excl. VIC)	Permitted in carrots for control of White Fringed Weevil (<i>Naupactus leucoloma</i>) and Symphylids (Class Symphyla). Registered for control of Wireworms in potatoes and sugarcane.	M Bee:VH	R2
Phorate	1B	Contact	70	P-A	ALL	Registered in carrots for control of Aphids, Carrot Fly, Thrips and Jassids. Registered for control of Wireworm in cotton and potatoes.	H Bee:H	R2
Bifenthrin (Talstar)	3A	Contact		P		Registered as an in-furrow spray at planting for control of Wireworms in cotton and sugarcane.	VH Bee:H	R3
Broflanilide (Cimegra) BASF	30	Contact & Ingestion		P		Registered in brassica vegetables and Chinese cabbage for control of Diamondback Moth. Broad spectrum activity on soil-dwelling pests including Wireworm .	H Bee:VH	R4
Clothianidin + Imidacloprid (Poncho Plus) Bayer	4A	Contact & Ingestion		P		Registered as a seed treatment for control of Wireworm in canola, forage brassicas, maize, sweet corn, sorghum and sunflower.	M Bee:M	R2
Fall Armyworm (<i>Spodoptera frugiperda</i>) Priority: Low								
Fall Armyworm is rated as a low priority. It is an exotic pest that is considered a potential threat that could affect most vegetable crops if present in large numbers. It is important to monitor crops for eggs and larvae of pest species by regular field scouting. Target sprays against mature eggs and newly hatched larvae before pests become entrenched.								
<i>Bacillus thuringiensis subsp. kurstaki</i> (DiPel)	11A	Biological	NR	A	ALL	Registered in vegetables for control of Lepidoptera. Time spraying to coincide with egg hatch. Treatments per season not limited.	VL Bee:L	R4
Spinosad (Entrust Organic) Corteva PER89870	5	Ingestion	3 G:14	A	ALL (excl. VIC)	Permitted in root & tuber vegetables for control of Fall Armyworm (<i>Spodoptera frugiperda</i>). Apply as a foliar spray targeting against eggs and newly hatched larvae before they become entrenched. Re-treatment interval not specified. Maximum of 4 applications per crop.	L Bee:L	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
<i>Spodoptera frugiperda</i> Multiple Nucleopolyhedrovirus (Fawligen) AgBiTech PER90820	31	Biological	NR	A	ALL	Permitted in root & tuber vegetables for control of Fall Armyworm (<i>Spodoptera frugiperda</i>). Maximum of 10 applications per crop. Minimum re-treatment interval 3 days.	VL Bee:VL	R4
<i>Spodoptera frugiperda</i> Multiple Nucleopolyhedrovirus (Spodovir Plus) Andermatt Group PER91477	31	Biological	NR	A	ALL	Permitted in root & tuber vegetables for control of Fall Armyworm (<i>Spodoptera frugiperda</i>). Maximum of 10 applications per crop. Minimum re-treatment interval 3 days.	VL Bee:VL	R4
Amorphous Silica (Abrade)	-	Contact		P		Permitted for control of Fall Armyworm in sweet corn.	L Bee:L	R4
Indoxacarb (Avatar eVo) FMC	22A	Ingestion		P		Permitted for control of Fall Armyworm in sweet corn.	L Bee:H	R3
Vegetable Leafminer (<i>Liriomyza sativae</i>) Serpentine Leafminer (<i>Liriomyza huidobrensis</i>) Priority: Low Liriomyza Leafminers are rated as a low priority. Dipteran Leafminers (<i>Liriomyza</i> spp.) are recent arrivals to Australia which can cause widespread damage to a range of crops. The larvae tunnel through leaf tissue, leading to reduced photosynthesis, leaf death or premature leaf death. They can cause significant economic loss through reduced yields when uncontrolled.								
Abamectin PER96481	6	Ingestion	14 NG	A	ALL (excl. VIC)	Permitted in root & tuber vegetables for suppression of Leafminers (<i>Liriomyza</i> spp.), including Vegetable Leafminer (<i>Liriomyza sativa</i>) and Serpentine Leafminer (<i>Liriomyza huidobrensis</i>). Apply as a foliar spray when leafminers first appear. Use a retreatment interval of 7-14 days. Maximum of 2 applications per crop.	M Bee:H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cyromazine (Diptex 150 WP) PER81867	17	IGR	7 NG	A	ALL	Permitted in root & tuber vegetables for control of <i>Liriomyza</i> species, including Vegetable Leafminer (<i>Liriomyza sativa</i>) and Serpentine Leafminer (<i>Liriomyza huidobrensis</i>). Apply as a foliar spray, commencing when leafminers first appear. Use a minimum retreatment interval of 7 days. Maximum of 6 applications per crop.	-	R4
Spinetoram (Success Neo) Corteva PER94451	5	Ingestion	3	A	ALL (excl. VIC)	Permitted in root and tuber vegetables for control of Liriomyza Leafminers , including Vegetable Leafminer (<i>Liriomyza sativa</i>), Pea Leafminer / Serpentine Leafminer (<i>Liriomyza huidobrensis</i>) & American Serpentine Leafminer (<i>Liriomyza trifolii</i>). Apply as a foliar spray, commencing when leafminers first appear. Use a retreatment interval of 7-14 days. Maximum of 4 applications per crop.	M Bee:H	R4
Spinosad (Entrust Organic) Corteva PER96806	5	Ingestion	3 G:14	A	ALL (excl. VIC)	Permitted in root & tuber vegetables, including carrot, for control of <i>Liriomyza</i> Leafminers, including Vegetable Leafminer (<i>Liriomyza sativa</i>), Pea Leafminer / Serpentine Leafminer (<i>Liriomyza huidobrensis</i>) & American Serpentine Leafminer (<i>Liriomyza trifolii</i>). Apply as a foliar spray, commencing when leafminers first appear. Use a minimum retreatment interval of 5 days. Maximum of 3 applications per crop.	L Bee:L	R4
Emamectin (Proclaim Opti) Syngenta	6	Ingestion	3 NG	P-A	ALL	Registered in root and tuber vegetables including carrots for control of Diamondback Moth, Cabbage White Butterfly, Heliothis, Cluster Caterpillar and Loopers. Permitted for control of <i>Liriomyza</i> species, including Vegetable Leafminer (<i>Liriomyza sativae</i>) in brassica vegetables.	M Bee:H	R3
Chlorantraniliprole (Coragen) FMC	28	Ingestion		P		Permitted for control of Liriomyza Leafminers in spinach and silverbeet.	L Bee:VL	R4

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cyantraniliprole (Benevia) FMC	28	Ingestion		P		Permitted for use in bulb vegetables, fruiting vegetables (all) and potatoes for control of <i>Liriomyza</i> species, including Vegetable Leafminer (<i>Liriomyza sativae</i>), Pea Leafminer/Serpentine Leafminer (<i>Liriomyza huidobrensis</i>) and American Serpentine Leafminer (<i>Liriomyza trifolii</i>).	M Bee:VH	R4
Isocycloseram (Simodis Plinazolin) Syngenta	30	Ingestion		P		Permitted for control of Liriomyza Leafminers in celery, babay leaf spinach, baby leaf lettuce, kale, open leaf lettuce, parsley, coriander, shallots, leek, tomato and capsicum.	H Bee:H	R4

4.3 Weeds in Carrot

4.3.1 Weed priorities

Common Name	Scientific Name
High	
Annual Ryegrass	<i>Lolium rigidum</i>
Carrot Weed	<i>Cotula australis</i>
Moderate	
Nutgrass	<i>Cyperus rotundus</i>
Low	
Potato Weed	<i>Galinsoga</i> spp.
Fumitory	<i>Fumaria</i> spp.
Marshmallow	<i>Malva parviflora</i>
Stinging Nettle	<i>Urtica</i> spp.
Cleavers	<i>Galium aparine</i> L.
Sowthistle	<i>Sonchus oleraceus</i>
Wild Radish	<i>Raphanus raphanistrum</i>

The high priority weeds are Annual Ryegrass and Carrot Weed. Herbicide options are listed in Appendix 3 which can be used in conjunction with various management practices such as soil fumigation, pre-crop spraying, spot spraying and mechanical controls.

Growers generally use a pre-plant weed control (general knockdown herbicides) to prepare the paddock. Growers then either alternate the herbicides used or use them in combination for effective weed control.

Resistance management

Specific resistance management strategies for high resistance risk (1 and 2) and moderate resistance risk (3, 4, 5, 6, 9, 10, 12, 13, 14, 15, 18, 19, 22, 23, 27, 29, 30, 31, 34 and 0) herbicide modes of action are available on the CropLife Australia webpage⁸.

⁸ <https://www.croplife.org.au/resources/programs/resistance-management/herbicide-resistance-management-strategies-2/>

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 6)	
***	High resistance risk	R1	Short-term risk: Critical concern over retaining access < 1 year
		R2	Medium-term risk: Maintaining access of significant concern <2-5 years
**	Moderate resistance risk	R3	Long-term: Potential issues associated with use - Monitoring required < 5 years
		R4	No current risk / concerns
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
Annual Ryegrass (<i>Lolium rigidum</i>) Priority: High							
Annual Ryegrass is rated as a high priority. Annual Ryegrass is 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) PER82459	1***	Carrots / Post-Emergent	Permitted in carrots for control of grass weeds, including Annual Ryegrass .	28	A	ALL	R4
Fluazifop-P (Fusilade)	1***	Carrots / Post-Emergent	Registered in carrots for control of grass weeds, including Annual Ryegrass .	49	A	ALL	R3
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Annual Ryegrass . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3
Paraquat + Diquat (SpraySeed)	22**	General Pre-Crop Spray	Registered as a pre-plant knockdown application for control of grass and broadleaf weeds.	NR	A	ALL	R1
Prometryn	5**	Carrots / Pre- Emergent	Registered in carrots for suppression of Annual Ryegrass , Barnyard Grass, Prairie Grass, Summer Grass and Crowsfoot Grass. Apply to bare moist soil within 2-3 days of planting.	NR	A	ALL	R4
Quizalofop-P-Ethyl	1***	Carrots / Post Emergent	Registered in carrots for control of grasses including Annual Ryegrass (<i>Lolium rigidum</i>). Apply post-emergence when weeds are actively growing.	70	A	ALL	R4
Sethoxydim (Sertin)	1***	Carrots / Post- Emergent	Registered in carrots for control of grass weeds, including Ryegrass . Apply post-emergence when majority of weeds are in the 2 to 6 leaf stage and are actively growing.	NR	A	QLD, NSW, WA & NT	R4
Trifluralin	3**	Carrots / Pre Emergent	Registered in carrots for control of grass weeds, including Annual Ryegrass . Apply to bare soil between 4 weeks and just before sowing. Requires mechanical incorporation within 4 hours of application.	NR	A	ALL	R4
Aclonifen (Emerger) Bayer	32**		Bayer is expected to seek registration for pre-emergent control of grass and broadleaf weeds in various crops. Registered in Europe for use in potatoes, legume vegetables and cereals.		P		R4
Dimethenamid-P (Outlook)	15**		Registered for pre-emergent control of grass and broadleaf weeds in sweet corn, beans, peas, pumpkins and kabocha.		P		R4
Metobromuron (Soletto) GroChem	5**		Registered for control of Annual Ryegrass in potatoes.		P		R4
Napropamide (Devrinol)	0**		Registered for control of Annual Ryegrass in almonds, grapevines, stone fruit, tomatoes and canola.		P		R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Nonanoic Acid (Beloukha)	-		Registered for control of Annual Ryegrass in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		R4
Norflurazon (Zoliar) AgNova	12**		Registered for control of Annual Ryegrass in citrus, grapes, nuts, stone & pome fruits.		P		R4
Carrot Weed (<i>Cotula australis</i>) Priority: High							
Carrot Weed is rated as a high priority. It is a low-growing annual broadleaf that is difficult to control due to a lack of herbicide options with selectivity in carrots.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Carrot Weed . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3
Paraquat + Diquat (SpraySeed)	22**	General Pre-Crop Spray	Registered as a pre-plant knockdown application for control of grass and broadleaf weeds.	NR	A	ALL	R1
Butafenacil	14**		Registered for control of Carrot Weed in wheat and fallow weed control.		P		R4
Flumioxazin (Chateau) Sumitomo	14**		Registered for control of Carrot Weed in lucerne and non-crop areas.		P		R4
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including Carrot Weed in Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		R4
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		R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Nutgrass (<i>Cyperus rotundus</i>) Priority: Moderate Nutgrass is rated as a moderate priority. It prefers damp, water-logged soils and can survive for years underground during dry times. Herbicide options are limited and unreliable. Improve soil drainage if possible.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds, and Nutgrass, as a pre-crop spray or fallow spray.	NR	A	ALL	R3
Cyhalofop-Butyl + Florpyrauxifen- Benzyl (Agixa Rinskor) Corteva	1*** + 4**		Registered for control of Nutgrass in rice.		P		R4
Halosulfuron-Methyl (Semptra)	2***		Registered for control of Nutgrass in turf and sugarcane.		P		R4
Norflurazon (Zoliar) AgNova	12**		Registered for control of Nutgrass in asparagus, citrus, grapes, nuts, stone & pome fruits.		P		R4
Potato Weed (<i>Galinsoga</i> spp.) Priority: Low Potato Weed is rated as a low priority. It is an annual broadleaf weed that is spread via seed, producing several generations in one year that can remain dormant for some time. It forms a dense mat, outcompeting newly germinating crop seedlings. It can be controlled by herbicides but ongoing management is critical as seed can survive long periods underground.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Potato Weed . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Linuron	5**	Carrots / Pre-Emergent & Post-Emergent	Registered in carrots for control of annual grass & broadleaf weeds, including Potato Weed . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	70	A	ALL	R4
Linuron PER95892	5**	Carrots / Snackables & Short Season Varieties / Pre-Emergent & Post-Emergent	Permitted in carrots (snackables & short season varieties) for control of annual grass & broadleaf weeds, including Potato Weed . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	28 NG	A	ALL	R4
Paraquat + Diquat (SpraySeed)	22**	General Pre-Crop Spray	Registered as a pre-plant knockdown application for control of grass and broadleaf weeds.	NR	A	ALL	R1
Prometryn	5**	Carrots / Post-Emergent	Registered in carrots for control of broadleaf weeds including Potato Weed . Apply when crop has at least one true leaf and weeds are young and actively growing.	NR	A	ALL	R4
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		R4
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including Potato Weed in Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		R4
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		R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fumitory (<i>Fumaria</i> spp.) Priority: Low Fumitory is rated as a low priority. Fumitory is an aggressive and competitive weed which develops a highly persistent seed bank. Requires ongoing management using an integrated weed management approach.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Fumitory . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3
Metribuzin PER80169	5**	Carrots / Pre- Emergent & Post- Emergent	Permitted in carrots for control of grass & broadleaf weeds including Fumitory , Stinging Nettle, Sowthistle and Wild Radish. Apply as either a pre-emergent or post-emergent application. Do not apply after crop has reached 4 leaf stage. Maximum of 2 applications per crop.	NR	A	QLD	R4
Paraquat + Diquat (SpraySeed)	22**	General Pre-Crop Spray	Registered as a pre-plant knockdown application for control of grass and broadleaf weeds.	NR	A	ALL	R1
Pendimethalin (Stomp)	3**	Carrots / Pre- Emergent	Registered in carrots for control of grass and broadleaf weeds, including Fumitory (<i>Fumaria</i> spp.) Apply as a post-plant pre-emergence surface treatment.	NR	A	ALL	R4
Prometryn	5**	Carrots / Post- Emergent	Registered in carrots for control of broadleaf weeds including Fumitory . Apply when crop has at least one true leaf and weeds are young and actively growing.	NR	A	ALL	R4
Dimethenamid-P (Outlook)	15**		Registered for control of grass and broadleaf weeds, including Fumitory in sweet corn, beans, peas, pumpkins and kabocha.		P		R4
Ethofumesate (Tramat)	15**		Registered for control of grass and broadleaf weeds, including Fumitory in beet crops, oilseed poppy and onions.		P		R4
Metobromuron (Soleto) GroChem	5**		Registered for control of Fumitory in potatoes.		P		R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	14**		Registered for control of Fumitories in onions.		P		R4
Marshmallow (<i>Malva parviflora</i>) Priority: Low Marshmallow is rated as a low priority. It is adapted to a wide variety of environments and highly competitive weed. Control with knockdown herbicides can be unreliable.							
Linuron	5**	Carrots / Pre-Emergent & Post-Emergent	Registered in carrots for control of annual grass & broadleaf weeds, including Marshmallow . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	70	A	ALL	R4
Linuron PER95892	5**	Carrots / Snackables & Short Season Varieties / Pre-Emergent & Post-Emergent	Permitted in carrots (snackables & short season varieties) for control of annual grass & broadleaf weeds, including Marshmallow . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	28 NG	A	ALL	R4
Flumioxazin (Chateau) Sumitomo	14**		Registered for control of Marshmallow in grapes, pome fruit, stone fruit, citrus, nut trees, olives, avocados and berries.		P		R4
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including Small Flowered Mallow in fallow, Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		R4
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		R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Stinging Nettle (<i>Urtica</i> spp.)							
Priority: Low							
Stinging Nettle is rated as a low priority. It is a soft herb whose leaves are sparsely covered with rigid, stinging hairs. Herbicide control options are limited.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Stinging Nettle . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3
Linuron	5**	Carrots / Pre- Emergent & Post- Emergent	Registered in carrots for control of annual grass & broadleaf weeds, including Stinging Nettle . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	70	A	ALL	R4
Linuron PER95892	5**	Carrots / Snackables & Short Season Varieties / Pre- Emergent & Post- Emergent	Permitted in carrots (snackables & short season varieties) for control of annual grass & broadleaf weeds, including Stinging Nettle . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	28 NG	A	ALL	R4
Metribuzin PER80169	5**	Carrots / Pre- Emergent & Post- Emergent	Permitted in carrots for control of grass & broadleaf weeds including Fumitory, Stinging Nettle , Sowthistle and Wild Radish. Apply as either a pre-emergent or post-emergent application. Do not apply after crop has reached 4 leaf stage. Maximum of 2 applications per crop.	NR	A	QLD	R4
Pendimethalin (Stomp)	3**	Carrots / Pre- Emergent	Registered in carrots for control of grass and broadleaf weeds, including suppression of Annual Nettles (<i>Urtica</i> spp.) Apply as a post-plant pre-emergence surface treatment.	NR	A	ALL	R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Prometryn	5**	Carrots / Post-Emergent	Registered in carrots for control of broadleaf weeds including Lesser Nettle . Apply when crop has at least one true leaf and weeds are young and actively growing.	NR	A	ALL	R4
Metamitron	5**		Metamitron is not registered in Australia. NZ registration for control of grass and broadleaf weeds, including Nettles , in fodder beet, red beet (beetroot), sugar beet and mangolds.		P		R4
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including Stinging Nettle in fallow, Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		R4
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds, including Stinging Nettle in Brassica vegetables and beans.		P		R4
Cleavers (<i>Galium aparine</i> L.) Priority: Low							
Cleavers are rated as a low priority. It is a fast-growing annual broadleaf weed that competes aggressively, forming dense masses of tangled vegetation in crop. Herbicide control is effective if it is targeted to young, actively-growing weeds.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Cleavers . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3
Paraquat + Diquat (SpraySeed)	22**	General Pre-Crop Spray	Registered as a pre-plant knockdown application for control of grass and broadleaf weeds.	NR	A	ALL	R1
Ethofumesate (Tramat)	15**		Registered for control of grass and broadleaf weeds, including Cleavers in beet crops and ryegrass pastures.		P		R4
Phenmedipham (Betanal) Bayer	5**		Registered for control of grass and broadleaf weeds, including Cleavers in beetroot.		P		R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Sowthistle (<i>Sonchus oleraceus</i>) Priority: Low							
Sowthistle is rated as a low priority. Sowthistle is prolific and widespread in all regions, and it is also prone to development of herbicide resistance. Timely herbicide control can be effective provided that weeds are targeted when they are young and actively growing.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Sowthistle . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3
Linuron	5**	Carrots / Pre- Emergent & Post- Emergent	Registered in carrots for control of annual grass & broadleaf weeds, including Sowthistle . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	70	A	ALL	R4
Linuron PER95892	5**	Carrots / Snackables & Short Season Varieties / Pre- Emergent & Post- Emergent	Permitted in carrots (snackables & short season varieties) for control of annual grass & broadleaf weeds, including Sowthistle . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	28 NG	A	ALL	R4
Metribuzin PER80169	5**	Carrots / Pre- Emergent & Post- Emergent	Permitted in carrots for control of grass & broadleaf weeds including Fumitory, Stinging Nettle, Sowthistle and Wild Radish. Apply as either a pre-emergent or post-emergent application. Do not apply after crop has reached 4 leaf stage. Maximum of 2 applications per crop.	NR	A	QLD	R4
Paraquat + Diquat (SpraySeed)	22**	General Pre-Crop Spray	Registered as a pre-plant knockdown application for control of grass and broadleaf weeds.	NR	A	ALL	R1
Pendimethalin (Stomp)	3**	Carrots / Pre- Emergent	Registered in carrots for control of grass and broadleaf weeds, including suppression of Sowthistle (<i>Sonchus oleraceus</i>) Apply as a post-plant pre-emergence surface treatment.	NR	A	ALL	R4

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Prometryn	5**	Carrots / Post-Emergent	Registered in carrots for control of broadleaf weeds including Sowthistle . Apply when crop has at least one true leaf and weeds are young and actively growing.	NR	A	ALL	R4
Cyanazine	5**		Registered for control of Sowthistle in peas, onions, potatoes and sweet corn.		P		R3
Glufosinate-Ammonium (Basta) BASF	10**		Registered for control of grass and broadleaf weeds including Sowthistle in berries, tomatoes, beans and fallow.		P		R3
Isoxaben (Gallery) Corteva	29**		Registered for control of Sowthistle in non-crop, forests, fencelines, tree fruit & nut orchards, vineyards, nursery & amenity tree plantings.		P		R4
Metobromuron (Soleto) GroChem	5**		Registered for control of Sowthistle in potatoes.		P		R4
Napropamide (Devrinol)	0**		Registered for control of Sowthistle in almonds, grapevines, stone fruit, tomatoes and canola.		P		R4
Nonanoic Acid (Beloukha)	-		Registered for control of Sowthistle in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		R4
Norflurazon (Zoliar) AgNova	12**		Registered for control of grass and broadleaf weeds including Sowthistle in asparagus, citrus, grapes, nuts, stone & pome fruits.		P		R4
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including Sowthistle in fallow, Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		R4
Wild Radish (<i>Raphanus raphanistrum</i>) Priority: Low							
Wild Radish is rated as a low priority. 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.							
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Registered for control of grass and broadleaf weeds as a pre-crop spray or fallow spray.	NR	A	ALL	R3

Active Ingredient (Trade Name)	Chemical Group	Crop / Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Permitted in carrots for control of grass and broadleaf weeds, including Wild Radish . Apply only with shielded sprayer or hooded spray nozzles. Do not apply to crops less than 20cm high. Minimum retreatment interval of 14 days. Maximum of 2 applications per crop.	NR	A	ALL (excl. VIC)	R3
Linuron	5**	Carrots / Pre- Emergent & Post- Emergent	Registered in carrots for control of annual grass & broadleaf weeds, including Wild Radish . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	70	A	ALL	R4
Linuron PER95892	5**	Carrots / Snackables & Short Season Varieties / Pre- Emergent & Post- Emergent	Permitted in carrots (snackables & short season varieties) for control of annual grass & broadleaf weeds, including Wild Radish . Apply either pre-emergence (immediately after planting but before the crop emerges) or post-emergence (crop has reached 4 true leaf stage).	28 NG	A	ALL	R4
Metribuzin PER80169	5**	Carrots / Pre- Emergent & Post- Emergent	Permitted in carrots for control of grass & broadleaf weeds including Fumitory, Stinging Nettle, Sowthistle and Wild Radish . Apply as either a pre-emergent or post-emergent application. Do not apply after crop has reached 4 leaf stage. Maximum of 2 applications per crop.	NR	A	QLD	R4
Paraquat + Diquat (SpraySeed)	22**	General Pre-Crop Spray	Registered as a pre-plant knockdown application for control of grass and broadleaf weeds.	NR	A	ALL	R1
Pendimethalin (Stomp)	3**	Carrots / Pre- Emergent	Registered in carrots for control of grass and broadleaf weeds, including suppression of Wild Radish (<i>Raphanus raphanistrum</i>) Apply as a post-plant pre-emergence surface treatment.	NR	A	ALL	R4
Prometryn	5**	Carrots / Post- Emergent	Registered in carrots for control of broadleaf weeds including Wild Radish . Apply when crop has at least one true leaf and weeds are young and actively growing.	NR	A	ALL	R4
Flumioxazin (Chateau) Sumitomo	14**		Registered for control of Wild Radish in grapes, pome fruit, stone fruit, citrus, nut trees, olives, avocados and berries.		P		R4

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 Wild Radish in citrus, grapes, almonds, pome fruit and stone fruit.		P		R4
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		R4

5. References

5.1 Information:

Australian Pesticide and Veterinary Medicines Authority	www.apvma.gov.au
APVMA Chemical review	https://apvma.gov.au/chemicals-and-products/chemical-review/listing
MRL Databases (DAFF)	https://www.agriculture.gov.au/agriculture-land/farm-food-drought/food/nrs/databases
APVMA Permit search	https://productsearch.apvma.gov.au/permits
APVMA Product search	https://productsearch.apvma.gov.au/products
AUSVEG	https://ausveg.com.au
Cotton Pest Management Guide 2025-26	https://www.cottoninfo.com.au/publications/cotton-pest-management-guide
CropLife Australia (resistance management)	https://www.croplife.org.au/resources/programs/resistance-management/
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 carrot

Appendix 2. Products available for control of insects and mites in carrot

Appendix 3. Products available for weed control in carrot

Appendix 4. Current permits for use in carrot

Appendix 5. Carrot Maximum Residue Limits (MRLs)

Appendix 6. Carrot Agrichemical Regulatory Risk Assessment

Appendix 1. Products available for disease control in carrot

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
1,3-dichloropropene + Chloropicrin	8B	Vegetables / Soil fumigant	Plant parasitic nematodes, symphylans, wireworms, soil borne diseases (including <i>Fusarium</i> , <i>Verticillium</i> wilts, <i>Rhizoctonia</i> , & <i>Pythium</i>) and suppression of weeds. <i>For use by professional and registered fumigators only.</i>	ALL	NR	R4
Azoxystrobin (Amistar)	11	Carrots	Powdery Mildew (<i>Erisiphe heraclei</i>) Sclerotinia Rot / White Mould (<i>Sclerotinia sclerotiorum</i>) Suppression of: Black Rot (<i>Alternaria radicina</i>)	ALL	21	R4
Azoxystrobin + Difenoconazole (Amistar Top)	11+3	Carrots	Leaf Blight (<i>Alternaria dauci</i> , <i>Cercospora carotae</i>) Powdery Mildew (<i>Erisiphe heraclei</i>)	ALL	7	R3
Boscalid (Filan) BASF	7	Root & Tuber Vegetables	Sclerotinia Rot (<i>Sclerotinia minor</i> , <i>S. sclerotiorum</i>)	ALL	7	R4
Chlorothalonil (Bravo)	M5	Carrots	Leaf Blight (<i>Alternaria dauci</i>)	ALL	7	R2
Copper	M1	Root & Tuber Vegetables, including Carrots	Downy Mildew (<i>Peronospora farinosa</i>) Rust (<i>Uromyces betae</i>) Leaf Spot (<i>Alternaria</i> , <i>Cercospora</i> , <i>Septoria</i>) Target Spot / Early Blight (<i>Alternaria solani</i>) Irish Blight / Late Blight (<i>Phytophthora infestans</i>)	ALL	1	R4
Dazomet (Basamid)	8F	General soil fumigant	Pre-plant fumigant in seed beds for control of soil fungi including <i>Pythium</i> , <i>Phytophthora</i> , <i>Sclerotinia</i> , <i>Sclerotium</i> , <i>Rhizoctonia</i> , <i>Verticillium</i> , <i>Plasmodiophora</i> , <i>Armillaria</i> and <i>Fusarium</i> spp. Nematodes, plus insects, weeds & soil fungi	ALL	NR	R4
Difenoconazole	3	Carrots	Leaf Spot (<i>Alternaria dauci</i> , <i>Cercospora carotae</i>)	ALL	7	R3

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Iodine	-	Root Crops	Post-Harvest Sanitiser – Bacteria and Fungi	ALL	NR	R4
Iprodione (Rovral) PER84955	2	Carrots	Suppression of Black Rot (<i>Alternaria radicina</i>)	ALL (excl. VIC)	NR NG	R4
Mancozeb	M3	Carrots	Cercospora Leaf Spot Alternaria Leaf Spot	ALL	7	R2
Mancozeb + Metalaxyl (Ridomil Gold MZ) Syngenta PER14045	M3 + 4	Carrots	<i>Pythium</i> spp. <i>Phytophthora</i> spp.	ALL (excl. VIC)	7	R2
Metalaxyl-M (Apron)	4	Carrots / Seed Treatment	Damping Off	ALL	NR	R4
Metham Sodium	-	Food Crops / Pre-Plant Fumigant	Fungal diseases including <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Phytophthora</i> , <i>Verticillium</i> , <i>Sclerotinia</i> and Club Root of crucifers & Nematodes	ALL	NR	R4
Metiram (Polyram)	M3	Carrots	Cercospora Leaf Spot (<i>Cercospora carotae</i>) Alternaria Leaf Spot (<i>Alternaria</i> spp.)	ALL	7	R2
Penthiopyrad (Fontelis) Corteva	7	Root & Tuber Vegetables, including Carrots	Early Blight (<i>Alternaria</i> spp.) Powdery Mildew (<i>Erysiphe</i> spp.)	ALL	7	R4
Phosphorous Acid PER14184	33	Carrots	Damping Off (<i>Pythium</i> spp., <i>Phytophthora</i> spp., <i>Rhizoctonia</i> spp., <i>Fusarium</i> spp.)	ALL (excl. VIC)	1	R4
Pydiflumetofen + Difenoconazole (Miravis Duo) Syngenta	7+3	Root Vegetables, including Carrots	Early Blight / Target Spot / Leaf Spot (<i>Alternaria</i> spp.) Powdery Mildew (<i>Erysiphe</i> spp., <i>Oidium</i> spp.) Cercospora Leaf Spot (<i>Cercospora</i> spp.)	ALL	7 NG	R3
<i>Streptomyces lydicus</i> WYEC108 (Actinovate) Novozymes Bioag	BM 02	Carrots	Suppression of: Powdery Mildew	ALL	NR	R4
		Vegetables	As a seed treatment for <i>Fusarium</i> , <i>Rhizoctonia</i> & <i>Pythium</i> Management			

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Sulphur	M2	Vegetables	Powdery Mildew Rust	ALL	NR	R4
Tebuconazole	3	Carrots	Suppression of: Powdery Mildew	ALL	21	R4
Thiram	M3	Carrots	Damping Off	QLD	7	R2
			Septoria Leaf Spot (<i>Septoria</i> spp.)	ALL		
Zineb	M3	Carrots	Cercospora Leaf Spot Alternaria Leaf Spot	ALL	7	R2

Appendix 2. Products available for control of insects and mites in carrot

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
1,3-dichloropropene + Chloropicrin	8	Vegetables	Soil borne pests including Nematodes. <i>For use by professional and registered fumigators only.</i>	ALL	NR	R4
Abamectin PER96481	6	Root & Tuber Vegetables	Suppression of Leaf Miners (<i>Liriomyza</i> spp.) including: Vegetable Leafminer (<i>Liriomyza sativae</i>) Serpentine Leafminer (<i>Liriomyza huidobrensis</i>)	ALL (excl. VIC)	14 NG	R3
Afidopyropen (Versys) BASF PER88430	9D	Carrots	Aphids including: Green Peach Aphid (<i>Myzus persicae</i>) Carrot Aphid (<i>Cavariella aegopodii</i>)	ALL (excl. VIC)	1	R4
<i>Bacillus thuringiensis subsp. kurstaki</i> (DiPel)	11A	Vegetables	Lepidoptera	ALL	NR	R4
Cyromazine (Diptex 150WP) PER81867	17	Root & Tuber vegetables	Liriomyza Species including: Vegetable Leafminer (<i>Liriomyza sativae</i>) Serpentine Leafminer (<i>Liriomyza huidobrensis</i>)	ALL	7 NG	R4
Dazomet (Basamid)	8F	Soil fumigant	Soil fungi, Nematodes, soil insects and weeds.	ALL	NR	R4
Emamectin (Proclaim Opti) Syngenta	6	Root & Tuber Vegetables including Carrot	Diamondback Moth / Cabbage Moth (<i>Plutella xylostella</i>) Cabbage White Butterfly (<i>Pieris rapae</i>) Heliothis (<i>Helicoverpa</i> spp.) Cluster Caterpillar (<i>Spodoptera litura</i>) Loopers (<i>Chrysodeixis</i> spp.) Cabbage Centre Grub (<i>Hellula hydralis</i>)	ALL	3 NG	R3
Emulsifiable Botanical Oil (Eco-Oil)	-	Vegetables	Greenhouse Whitefly	ALL	NR	R4
Fipronil PER86665	2B	Carrots	White Fringed Weevil (<i>Naupactus leucoloma</i>) Symphylids (Class Symphyla)	ALL (excl. VIC)	NR NG	R2

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Fluazaindolizine (Salibro Reklamel) Corteva	N-UN	Root & Tuber Vegetables including Carrot	Root Knot Nematode (<i>Meloidogyne</i> spp.)	ALL	NR	R4
Flubendiamide (Belt) Bayer	28	Root & Tuber Vegetables, including Carrots	Diamondback Moth (<i>Plutella xylostella</i>) Cabbage White Butterfly (<i>Pieris rapae</i>) Cluster Caterpillar (<i>Spodoptera litura</i>) Potato Moth (<i>Phthorimaea operculella</i>) Heliothis (<i>Helicoverpa</i> spp.)	ALL	1	R4
Fluensulfone (Nimitz) Adama	-	Carrots	Root Knot Nematode (<i>Meloidogyne</i> spp.)	ALL	NR	R4
Fluopyram (Velum Prime) Bayer	N-3	Root & Tuber Vegetables	Root Knot Nematode (<i>Meloidogyne</i> spp.) Root Lesion Nematode (<i>Pratylenchus</i> spp.)	ALL	NR	R4
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Vegetables	Ants, Aphids, Caterpillars, Earwigs, Whitefly, Thrips and Leafhoppers. Suitable for organic growers	ALL	1	R4
Imidacloprid PER10918	4A	Carrots	Aphids including Green Peach Aphid, Carrot Aphid, Fennel Aphid	ALL	7	R2
Iron EDTA Complex	-	Vegetables	Slugs & Snails	ALL	NR	R4
Malathion	1B	Carrots	Aphids Cabbage Moth (<i>Plutella xylostella</i>) Cabbage White Butterfly (<i>Pieris rapae</i>) Green Vegetable Bug (<i>Nezara viridula</i>) Jassids Leaf Hoppers Rutherglen Bug (<i>Nysius vinitor</i>)	ALL	3	R4
			Red Legged Earth Mite Twenty-Eight-Spotted Ladybird	ALL (excl. TAS)		
Metaldehyde	-	Vegetables	Slugs & Snails	ALL	7 NG	R4

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Metham Sodium	-	Pre-Plant Soil Fumigant	Plant parasitic Nematodes, weed seeds, and various fungal diseases	ALL	NR	R4
Phorate	1B	Carrots	Aphids Carrot Fly Thrips Jassids	ALL	70	R2
Potassium Salts of Fatty Acids (Natrashop)	-	Vegetables	Aphids, Thrips, Mealybug, Two Spotted Mites, Spider Mite and Whitefly	ALL	NR	R4
Propargite (Omite)	12C	Vegetables	Two-Spotted Mite Spider Mites (<i>Tetranychus</i> spp.)	ALL	7	R3
Pyriproxyfen (Distance Ant Bait) Sumitomo	7C	Vegetables	Invasive & Nuisance Ants	ALL	NR	R4
Spinetoram (Success Neo) Corteva	5	Root & Tuber Vegetables, including Carrots	Light Brown Apple Moth Loopers <i>Helicoverpa</i> spp. Potato Moth Tomato Potato Psyllid (<i>Bactericera cockerelli</i>)	ALL	3	R4
Spinetoram (Success Neo) Corteva PER94451	5	Root & Tuber Vegetables, including Carrots	Liriomyza Leafminers including: Vegetable Leafminer (<i>Liriomyza sativa</i>) Pea Leafminer / Serpentine Leafminer (<i>Liriomyza huidobrensis</i>) American Serpentine Leafminer (<i>Liriomyza trifolii</i>)	ALL (excl. VIC)	3	R4
Spinosad (Entrust Organic) Corteva	5	Root & Tuber Vegetables, including Carrots	Lightbrown Apple Moth Loopers Heliothis Potato Moth	ALL	3 G:14	R4

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Spinosad (Entrust Organic) Corteva PER96806	5	Root & Tuber Vegetables including Carrots	Leaf Miners (<i>Liriomyza</i> spp.) including: Vegetable Leaf Miner (<i>Liriomyza sativae</i>) Pea Leaf Miner/Serpentine Leaf Miner (<i>Liriomyza huidobrensis</i>) American Serpentine Leaf Miner (<i>Liriomyza trifolii</i>)	ALL (excl. VIC)	3 G:14	R4
Spinosad (Entrust Organic) Corteva PER89870	5	Root & Tuber Vegetables	Fall Armyworm (<i>Spodoptera frugiperda</i>)	ALL (excl. VIC)	3 G:14	R4
<i>Spodoptera frugiperda</i> Multiple Nucleopolyhedrovirus (Fawligen) AgBiTech PER90820	31	Root & Tuber Vegetables	Fall Armyworm (<i>Spodoptera frugiperda</i>)	ALL	NR	R4
<i>Spodoptera frugiperda</i> Multiple Nucleopolyhedrovirus (Spodovir Plus) Andermatt Group PER91477	31	Root & Tuber Vegetables	Fall Armyworm (<i>Spodoptera frugiperda</i>)	ALL	NR	R4
Sulfoxaflor (Transform) Corteva	4C	Root & Tuber Vegetables, including Carrots	Green Peach Aphid Tomato-Potato Psyllid Rutherglen Bug	ALL	7	R4
Sulphur	UN	Vegetables	Mites	ALL	NR	R4
Trichlorfon	1B	Vegetables	Cabbage White Butterfly Cabbage Moth Rutherglen Bug Green Vegetable Bug	ALL	2	R3

Appendix 3. Products available for weed control in carrot

Active Ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
1,3-dichloropropene + Chloropicrin	8	Vegetables	Plant parasitic Nematodes, Symphylans, Wireworms, soil borne diseases and suppression of weeds. <i>For use by professional and registered fumigators only.</i>	NR	ALL	R4
Clethodim (Select) PER82459	1***	Carrots / Post-Emergent	Grass Weeds including Annual Ryegrass (<i>Lolium rigidum</i>)	28	ALL	R4
Fluazifop-P (Fusilade)	1***	Carrots / Post-Emergent	Barnyard Grass Crowsfoot Grass Liverseed Grass Stinkgrass Annual (Wimmera) Ryegrass Annual Phalaris Barley Grass Brome Grasses Johnson Grass (seedling) <i>Panicum sp.</i> Paspalum Volunteer Cereals Wild Oats Green Summer Grass	49	ALL	R3
Glyphosate (Roundup)	9**	General Pre-Crop Spray	Grass and Broadleaf Weeds	NR	ALL	R3
Glyphosate (Roundup) PER13305	9**	Carrots / Shielded / Inter-Row Spray	Grass and Broadleaf Weeds	NR	ALL (excl. VIC)	R3

Active Ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Linuron	5**	Carrots	Annual Grass & Broadleaf Weeds such as: Amaranth Blackberry Nightshade Capeweed Chickweed Common Sowthistle Corn Spurry Deadnettle Doublegee / Threecornered Jack (Spiny Emex) Fat-Hen Hedge Mustards Heliotrope Marshmallow Paterson's Curse Pigweed Potato Weed Redshank Scarlet Pimpernel Stagger Weed Stinging Nettle Summer Grass Swinecress Variegated Thistle Wild Mustard Wild Radish Wild Turnip Winter Grass	70	ALL	R4
Linuron PER95892	5**	Carrots / Snackables & Short Season Varieties / Pre- Emergent & Post- Emergent	Annual Grass & Broadleaf Weeds	28 NG	ALL	R4

Active Ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Metribuzin PER80169	5**	Carrots / Pre- Emergent & Post- Emergent	Grass and Broadleaf Weeds including: Fumitory Stinging Nettle Sowthistle Wild Radish	NR	QLD	R4
Paraquat + Diquat (SpraySeed)	22***	General Pre-Crop Spray	Grass and Broadleaf Weeds	7	ALL	R1
Pendimethalin (Stomp)	3**	Carrots / Pre- Emergent	Awnless Barnyard Grass (<i>Echinochloa colona</i>) Bittercress (<i>Coronopus didymus</i>) Bladder Ketmia (<i>Hibiscus trionum</i>) Chickweed (<i>Stellaria media</i>) Deadnettle (<i>Lamium amplexicaule</i>) Fat Hen (<i>Chenopodium album</i>) Green Fat Hen (<i>Chenopodium murale</i>) Pigweed (<i>Portulaca oleracea</i>) Prickly Lettuce (<i>Lactuca serriola</i>) Shepherd's Purse (<i>Capsella bursa-pastoris</i>) Wireweed (<i>Polygonum aviculare</i>) Suppression of: Annual Nettles (<i>Urtica</i> spp.) Blackberry Nightshade (<i>Solanum nigrum</i>) Common Sowthistle (<i>Sonchus oleraceus</i>) Fumitory (<i>Fumaria</i> spp.) Indian Hedge Mustard (<i>Sisymbrium orientale</i>) Turnip Weed (<i>Rapistrum rugosum</i>) Wild Radish (<i>Raphanus raphanistrum</i>) Winter Grass (<i>Poa annua</i>)	NR	ALL	R4

Active Ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Prometryn	5**	Carrots / Post Emergent	Amaranth (Powell's, Slim and Redroot) Amsinkia Blackberry Nightshade Capeweed Charlock Chickweed Corn Gromwell Deadnettle Fumitory (Common, White and Denseflowered) Fat Hen Hedge Mustard Hexham Scent Lesser Nettle Mountain Sorrel Rough Poppy Three Cornered Jack Wild Radish Common Sowthistle Common Thornapple Green Amaranth Lesser Swinecress Pigweed Potato Weed Stinking Roger	NR	ALL	R4
		Carrots / Pre Emergent	Suppression of Annual Ryegrass, Barnyard Grass, Prairie Grass, Summer Grass, Crowsfoot Grass			
Prometryn PER12048	5**	Carrots	Broadleaf Weeds	NR NG	QLD	R4

Active Ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Quizalofop-P-Ethyl	1***	Carrots / Post Emergent	Annual Ryegrass (<i>Lolium rigidum</i>) Brome Grasses (<i>Bromus</i> spp.) Barley Grass (<i>Hordeum</i> spp.) Volunteer Barley Volunteer Wheat Wild Oats (<i>Avena</i> spp.) Awnless Barnyard Grass (<i>Echinochloa colona</i>) Barnyard Grass (<i>Echinochloa crusgalli</i>) Couch Grass (<i>Cynodon dactylon</i>) Dinebra (<i>Dinebra retroflexa</i>) Crowsfoot Grass (<i>Eleusine indica</i>) Foxtail Millet (<i>Setaria italica</i>) Columbus Grass (<i>Sorghum x almum</i>) Johnson Grass (<i>Sorghum halepense</i>) Liverseed Grass (<i>Urochloa panicoides</i>) Rhodes Grass (<i>Chloris gayana</i>) Stink Grass (<i>Eragrostis cilianensis</i>) Queensland Blue Grass (<i>Dichanthium sericeum</i>) Summer Grass (<i>Digitaria ciliaris</i>) Paspalum (<i>Paspalum dilatatum</i>) Kikuyu (<i>Pennisetum clandestinum</i>)	70	ALL	R4

Active Ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Sethoxydim (Sertin)	1***	Carrots / Post- Emergent	Annual Prairie Grass (seedling) Awnless Barnyard Grass Barnyard Grass <i>Bracharia windersii</i> Crowsfoot Grass <i>Dinebra retroflexa</i> Green Summer Grass Johnson Grass (seedling) Lesser Canary Grass (<i>Phalaris minor</i>) Liverseed Grass Paradoxa Grass (<i>Phalaris paradoxa</i>) Pigeon Grass / Foxtail Grass (<i>Setaria verticillata</i>) Ryegrass Stink Grass Summer Grass Volunteer Oats Volunteer Sorghum Volunteer Wheat Wild Oats	NR	QLD, NSW, WA & NT	R4

Active Ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Trifluralin	3**	Carrots / Pre Emergent	Annual Ryegrass Barnyard Grass Canary Grass Caltrop / Bullhead Yellow Vine Crab Grass Mossman River Grass / Innocent Grass Pigweed00 Redroot / Amaranthus Redshank / Prince of Wales Feather Summer Grass Wild Oats Winter Grass Wireweed (Hogweed) Columbus Grass (seedling) Guinea Grass (seedling) Johnson Grass (seedling) Liverseed Grass / Urochloa (seedling)	NR	ALL	R4

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

Appendix 4. Current permits for use in carrot

Permit No.	Description	Issued Date	Expiry Date	Permit Holder
PER86665 Version 5	Fipronil / Carrots / White Fringed Weevil, Symphylids	04-Jan-19	30-Sep-28	Hort Innovation
PER82459 Version 2	Clethodim / Carrots / Grass Weeds	19-Apr-17	30-Sep-26	Hort Innovation
PER81867 Version 3	Cyromazine (Diptex 150 WP) / Root & Tuber Vegetables / Liriomyza Leafminers	02-Dec-19	30-Sep-26	Hort Innovation
PER10918 Version 4	Imidacloprid / Carrot / Greenhouse Whitefly, Aphids	30-Jun-15	31-Oct-26	Hort Innovation
PER14045 Version 4	Mancozeb + Metalaxyl (Ridomil Gold MZ) / Carrots / Pythium, Phytophthora	01-Apr-13	31-Mar-27	Hort Innovation
PER91477 Version 4	<i>Spodoptera frugiperda</i> Multiple Nucleopolyhedrovirus (Spodovir Plus) / Root & Tuber Vegetables / Fall Armyworm	03-Nov-21	31-Mar-27	Andermatt Group AG
PER90820 Version 4	<i>Spodoptera frugiperda</i> Multiple Nucleopolyhedrovirus (Fawligen) / Root & Tuber Vegetables / Fall Armyworm	30-Mar-21	31-Mar-27	AgBiTech
PER94451	Spinetoram (Success Neo) / Various Vegetable & Herb Crops / Leaf Miners	05-Jul-24	31-Jul-27	Hort Innovation
PER84955 Version 2	Iprodione / Carrots / Sclerotinia, Black Rot, Grey Mould	12-Feb-18	30-Nov-27	Hort Innovation
PER88430 Version 3	Afidopyropen (Versys) / Carrots / Aphids	03-Jul-20	31-Jan-28	Hort Innovation
PER96481	Abamectin / Root & Tuber Vegetables / Leaf Miner	08-Aug-25	31-Jul-28	Hort Innovation
PER95892	Linuron / Carrots / Annual Broadleaf & Grass Weeds	09-Jan-26	31-Jan-29	EE Muir & Sons
PER80169 Version 4	Metribuzin / Carrots / Grass and Broadleaf weeds	03-Mar-15	28-Feb-29	Hort Innovation
PER13305 Version 7	Glyphosate (shielded sprayer) / Carrots / Broadleaf and grass weeds	28-May-12	30-Nov-29	Hort Innovation
PER14184 Version 4	Phosphorous Acid / Carrots / Damping Off	01-Jul-13	31-Mar-30	Hort Innovation
PER12048 Version 5	Prometryn / Carrot / Broadleaf Weeds	09-May-12	30-Apr-30	Hort Innovation
PER89870 Version 3	Spinosad (Entrust Organic) / Root & Tuber Vegetables / Fall Armyworm	21-Jul-20	31-Oct-30	Hort Innovation

Permit No.	Description	Issued Date	Expiry Date	Permit Holder
PER96806	Spinosad (Entrust Organic) / Various Vegetables & Herbs / Dipteran Leaf Miners	5-May-26	30-May-31	Hort Innovation

Appendix 5. Carrot Maximum Residue Limits (MRLs)

CODEX commodity groupings of root and tuber vegetables and subgroups:

VR 0075	Root and tuber vegetables
VR 2070	Root vegetables
VR 0577	Carrot
	Vegetables

Note: Major export markets for carrots include UAE, Saudi Arabia, Malaysia, Singapore and Qatar. Available information indicates that in the absence specific limits in legislation the most 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	Description	APVMA MRL mg/kg	Codex MRL mg/kg
2,2-DPA		Vegetables	*0.1	-
Abamectin	VR0075	Root and tuber vegetables	*0.01	-
Afidopyropen	VR 0577	Carrot	*0.01	-
Aldrin and Dieldrin	VR0075	Root and tuber vegetables	E0.1	E0.1
Azoxystrobin	VR0075	Root and tuber vegetables {except potato; sugar beet}	-	1
	VR 0577	Carrot	0.2	-
Bifenthrin	VR0075	Root and tuber vegetables	-	0.05
Bixafen	VR0075	Root and tuber vegetables	-	0.06
Boscalid	VR0075	Root and tuber vegetables	1	2
Carbaryl	VR 0577	Carrot	-	0.5
Chlorantraniliprole	VR0075	Root and tuber vegetables {except potato}	T0.5	0.02
	VR 0577	Carrot	-	0.08
Chlordane		Vegetables {except fruiting vegetables, cucurbits; sugar beet}	E0.02	-
Chlorothalonil	VR0075	Root and tuber vegetables {except horseradish}	-	0.3
	VR 0577	Carrot	7	-
Chlorpyrifos		Vegetables {except asparagus; brassica vegetables; cassava; celery; leek; peppers, sweet [capsicum]; potato; swede; sweet potato; taro; tomato}	T*0.01	-
Clothianidin	VR0075	Root and tuber vegetables	-	0.2
Cyantraniliprole	VR0075	Root and tuber vegetables {except potato}	-	0.05
Cycloxydim	VR 0577	Carrot	-	5
Cyhalothrin (includes lambda-cyhalothrin)	VR0075	Root and tuber vegetables		*0.01
Cypermethrins (including alpha- and zeta- cypermethrin)	VR0075	Root and tuber vegetables {except sugar beet}	-	*0.01
Cyprodinil	VR 0577	Carrot	-	1.5

Chemical	Codex	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Cyromazine	VR0075	Root and tuber vegetables	T1	-
DDT		Vegetables	E1	-
	VR 0577	Carrot	-	E0.2
Deltamethrin	VR 0577	Carrot	-	0.02
Diazinon		Vegetables	0.7	-
Diclofop-methyl		Vegetables	5	-
Dicofol		Vegetables {except cucumber; gherkin; tomato}	5	-
Difenoconazole	VR0075	Root and tuber vegetables {except celeriac}	0.5	-
	VR 0577	Carrot	-	0.2
Diquat		Vegetables {except beans; broad bean; lupin (dry); onion, bulb; peas; potato; soya bean (dry); sugar beet}	*0.05	-
Dithiocarbamates	VR 0577	Carrot	1	1
EPTC		Vegetables	*0.04	-
Emamectin	VR0075	Root and tuber vegetables {except potato}	*0.01	-
Fenamidone	VR 0577	Carrot	-	0.2
Fenvalerate	VR 0577	Carrot	T*0.01	-
Fipronil	VR0075	Root and tuber vegetables {except potato; sugar beet}	-	0.002
Fluazaindolizine	VR0075	Root and tuber vegetables	0.3	-
	VR 0577	Carrot	-	0.4
Fluazifop-p-butyl	VR0075	Root and tuber vegetables {except potato; sweet potato; taro; yam bean; yams}	1	-
	VR 0577	Carrot	-	0.6
Flubendiamide	VR0075	Root and tuber vegetables {except potato}	0.2	-
Fludioxonil	VR 0577	Carrot	-	1
Fluensulfone	VR0075	Root and tuber vegetables	2	3
	VR 0577	Carrot	-	4
Flumioxazin	VR 0577	Carrot	T*0.05	-
Fluopyram	VR0075	Root and tuber vegetables {except sweet potato}	0.2	-
	VR 0577	Carrot	-	0.4
Flupyradifurone	VR0075	Root and tuber vegetables {except potato}	-	0.7
Fluvalinate	VR 0577	Carrot	T*0.01	-
Fluxapyroxad	VR 0577	Carrot	-	1
Glufosinate Ammonium	VR 0577	Carrot	-	0.05
Glyphosate	VR0075	Root and tuber vegetables	*0.1	-
Heptachlor	VR 0577	Carrot	E0.2	-
Imidacloprid	VR0075	Root and tuber vegetables	-	0.5
	VR 0577	Carrot	T0.05	-
Inorganic Bromide		Vegetables {except peppers, sweet [capsicum]}	20	-
Iprodione	VR 0577	Carrot	T0.5	-

Chemical	Codex	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Isopyrazam	VR 0577	Carrot	-	0.15
Kresoxim-Methyl		Beetroot	-	*0.05
Lindane		Vegetables	E2	-
Linuron	VR 0577	Carrot	T0.1	-
Malathion	VR 0577	Carrot	0.5	-
Maleic Hydrazide	VR 0577	Carrot	T40	-
Mefentrifluconazole	VR 2070	Root vegetables {except sugar beet}	-	0.5
Metalaxyl		Vegetables {except asparagus; beetroot; bulb vegetables [alliums]; fruiting vegetables, cucurbits; leafy vegetables; peppers; podded pea (young pods) [snow and sugar snap peas]; tomato}	T0.1	-
	VR 0577	Carrot	-	*0.02
Metaldehyde		Vegetables	1	-
Methiocarb		Vegetables	0.1	-
Methomyl	VR0075	Root and tuber vegetables	1	-
Methoxyfenozide	VR 0577	Carrot	-	0.5
Methyl Bromide		Vegetables {except cucumber; peppers}	T*0.05	-
Metribuzin	VR 0577	Carrot	T0.05	-
Myclobutanil	VR0075	Root and tuber vegetables	-	0.06
Oxamyl	VR 0577	Carrot	-	*0.01
Paraquat	VR0075	Root and tuber vegetables	-	0.05
		Vegetables {except potato, pulses}	*0.05	-
Pendimethalin	VR0577	Carrot	T0.3	0.5
Penthiopyrad	VR0075	Root and tuber vegetables {except potato}	2	-
	VR 0577	Carrot	-	0.6
Permethrin	VR 0577	Carrot	-	0.1
Phorate	VR 0577	Carrot	0.5	-
Phosphine	VR0075	Root and tuber vegetables	T*0.01	-
Phosphorous acid	VR0075	Root and tuber vegetables {except potato}	T100	-
Piperonyl Butoxide		Vegetables	8	-
Pirimicarb	VR0075	Root and tuber vegetables	-	0.05
		Vegetables {except celeriac; celery; leafy vegetables; onion, welsh; pulses; shallot; spring onion; sweet corn (corn-on-the-cob)}	1	-
Prometryn		Vegetables	*0.1	-
Propargite		Vegetables	3	-
Propazine	VR 0577	Carrot	*0.1	-
Prosulfocarb	VR 0577	Carrot	T*0.01	-

Chemical	Codex	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Pydiflumetofen	VR0075	Root and tuber vegetables {except potato}	0.3	-
	VR 2070	Root vegetables	-	0.3
Pyraclostrobin	VR 2070	Root vegetables {except sugar beet}	-	0.5
Pyrethrins	VR0075	Root and tuber vegetables	-	*0.05
		Vegetables	1	-
Pyrimethanil	VR 0577	Carrot	-	1
Quizalofop-ethyl	VR 0577	Carrot	*0.02	-
Quizalofop-P-tefuryl	VR 0577	Carrot	*0.02	-
Sethoxydim	VR0075	Root and tuber vegetables	1	-
Spinetoram	VR0075	Root and tuber vegetables	0.02	-
Spinosad	VR0075	Root and tuber vegetables	0.02	-
Spirotetramat	VR 0577	Carrot	-	0.04
Sulfoxaflor	VR0075	Root and tuber vegetables {except potato}	0.05	0.03
	VR 0577	Carrot	-	0.05
Tebuconazole	VR 0577	Carrot	T0.5	0.4
Thiamethoxam	VR0075	Root and tuber vegetables	T0.7	0.3
Tolclofos-methyl	VR0574	Beetroot	*0.01	-
Trichlorfon		Vegetables {except beetroot; brussels sprouts; cape gooseberry; cauliflower; celery; egg plant, thai; leafy vegetables; pepino; peppers; pulses (dry); sweet corn (corn- on-the-cob)}	0.1	-
Trifloxystrobin	VR 0577	Carrot	-	0.1
Trifluralin	VR 0577	Carrot	0.5	-
Uniconazole-P	VR 0577	Carrot	T*0.01	-

NOTE: MRLs are constantly under review and subject to change. Check for current MRLs and do not rely on the values stated above.

* Indicates that an MRL is at the Limit of Quantitation (LOQ)

T =Temporary MRL

E = The MRL is based on extraneous residues

Sources: APVMA MRLs: Agricultural and Veterinary Chemicals Code (MRL Standard) Instrument 2023. Compilation 13. Prepared 11 March 2026. CODEX MRLs: CODEX Alimentarius International Food Standards database (April 2026), <http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/>

Appendix 6: Carrot Agrichemical Regulatory Risk Assessment

Carrot Agrichemical Regulatory Risk Assessment

November 2025

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 require 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 to ensure compliance, as 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. Consequently, 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 carrot in Australia, as well as assisting with any current initiatives aimed at identifying and addressing pest management deficiencies.

R0	Use no longer approved
R1	Short-term: Critical concern over retaining access < 1 year
R2	Medium-term: Maintaining access of significant concern <2-5 years
R3	Long-term: Potential issues associated with use – Monitoring required < 5 years
R4	No current risk/concerns

INSECTICIDES/MITICIDES/NEMATOCIDES - Insect and other pests

Blue text = new APVMA approved uses

ACTIVE CONSTITUENT	MoA Group	Pest	Risks and Comments
AFIDOPYROPEN	9D	Permit PER88430 for the control of Aphids; Carrot aphid; Green peach aphid	Australia: No current concerns. Permit PER88430 Expiry date: 31/01/2028 EU: Not approved
<i>Bacillus thuringiensis</i>	11A	Armyworm Cotton bollworm Native budworm Cabbage moth Cabbage white butterfly Loopers Lightbrown apple moth Vine moth	Australia: No current concerns. USA: Under Registration Review (scheduled)
CHLORPYRIFOS	1B	--	Australia: The chemical review was completed in September 2024. Most uses in horticultural crops were removed. After 30 September 2025, products with previously approved labels must not be supplied. The only remaining approved use is in Brassica crops as specified on current labels. EU: Not approved Canada: Cancelled USA: Agricultural uses cancelled. Very few registrations as Restricted Use Pesticide.
CYROMAZINE	17	Liriomyza species, including: Vegetable Leafminer Serpentine Leafminer	Australia: No current concerns. EU: Not approved

ACTIVE CONSTITUENT	MoA Group	Pest	Risks and Comments
DIAZINON	1B	--	Australia: APVMA made a Final Decision on 2024 . After 10 September 2025, crop uses are no longer approved. Codex: All MRLs deleted EU: Not approved Canada: Cancelled USA: Under Registration Review (scheduled)
EMAMECTIN	6	Diamondback Moth (Cabbage Moth) (<i>Plutella xylostella</i>), Cabbage White Butterfly (<i>Pieris rapae</i>) Heliothis (<i>Helicoverpa</i> spp.) Cluster caterpillar (<i>Spodoptera litura</i>) Loopers (<i>Chrysodeixis</i> spp.) Cabbage Centre Grub (<i>Hellula Hydralis</i>)	Australia: APVMA Nominated for targeted spray drift reconsideration EU: Approved, candidate for substitution. UK: Withdrawn (2024).
FIPRONIL	2B	Permit PER86665 for the control of White fringed weevil and Symphylids	Australia: APVMA: Currently under review . Proposed Regulatory decision expected by April 2026. Permit PER86665 Expiry date: 30/09/2026 EU: Not approved USA: Under Registration Review (scheduled)
FLUAZAINDOLIZINE	N-UN	Root Knot Nematode (<i>Meloidogyne</i> spp.)	Australia: No current concerns. Codex MRL: 0.4 mg/Kg EU: Pending
FLUBENDIAMIDE	28	Cabbage white butterfly; Cluster caterpillar; Diamondback (Cabbage) moth; Helicoverpa; Potato moth (Leafminer)	Australia: No current concerns. EU: Not approved UK: Withdrawn (2024).
FLUENSULFONE	5	Root knot nematode	Australia: No current concerns. Codex MRL: 4 mg/Kg

ACTIVE CONSTITUENT	MoA Group	Pest	Risks and Comments
IMIDACLOPRID	4A	PER10918 for the control of greenhouse whitefly and aphids	Australia: APVMA: Currently under review . Proposed regulatory decisions expected between December2025 to October2026. Permit PER10918 Expiry date: 31/10/2026 EU: Not approved Canada: Very few uses allowed in greenhouses and seed treatment. USA: Under Registration Review (scheduled)
MALATHION	1B	Aphids, Cabbage moth, Cabbage white butterfly, Green vegetable bug , Jassids, Leaf hoppers, Rutherglen bug, Thrips	Australia: The final regulatory decision was published in an APVMA Special Gazette on 2 May 2024 . Labels have been varied. Products bearing previously approved labels must not be supplied after 1 May 2026. UK: Withdrawn (2025). Canada: In re-evaluation USA: Under Registration Review (scheduled)
PHORATE	1B	Aphids; Carrot aphid; Jassids; Thrips	Australia: APVMA reconsideration. Prioritised to be commenced by 2026 . EU: Not approved Canada: In re-evaluation USA: Under Registration Review (scheduled)
PROPARGITE	12C	Two-spotted mites; Spider mites	Australia: APVMA reconsideration. Prioritised to be commenced by 2029 . EU: Not approved Canada: Cancelled USA: Under Registration Review (scheduled)
PYRIPROXYFEN	7C	Ants	Australia: No current concerns.
SPINETORAM	5	Caterpillars; Helicoverpa; Lightbrown apple moth; Loopers; Potato moth (Leafminer)	Australia: No current concerns. EU: Not approved UK: Withdrawn (2024). Canada: In re-evaluation
SPINETORAM	5	Leaf miners	Australia: No current concerns. EU: Not approved UK: Withdrawn (2024). Canada: In re-evaluation

ACTIVE CONSTITUENT	MoA Group	Pest	Risks and Comments
SPINETORAM	5	PER94451- Dipteran leaf miners	Australia: No current concerns. Permit PER94451 Expiry date: 31/07/2027 EU: Not approved UK: Withdrawn (2024). Canada: In re-evaluation
SPINOSAD	5	PER96806 - Dipteran leaf miners	Australia: No current concerns. Permit PER96806 Expiry date: 30/05/2031 Canada: In re-evaluation
SPODOPTERA FRUGIPERDA NPV		PER90820 - Fall Armyworm	Australia: No current concerns Permit PER90820 Expiry date: 31/03/2027
SULFOXAFLOX	4C	Green peach aphid	Australia: No current concerns. Codex MRL: 0.05 mg/Kg
TRICHLORFON	1B	Cabbage white butterfly; Cabbage moth; Green vegetable bug; Rutherglen bug	Australia: APVMA nominated for reconsideration after 2029. EU: Not approved Canada: Cancelled USA: Under Registration Review (scheduled)

FUNGICIDES – Disease Control

Active Constituent	MoA Group	Pest	Risks And Comments
AZOXYSTROBIN	11	Black rot; Sclerotinia rot; Alternaria leaf spot; Leaf spot Permit PER93402 for Leaf blight; Powdery mildew	Australia: No current concerns. Canada: In re-evaluation Permit PER93402 Expiry date: 31/05/2027

Active Constituent	MoA Group	Pest	Risks And Comments
BOSCALID	7	Sclerotinia rot	Australia: No current concerns. Canada: In re-evaluation
CHLOROTHALONIL	M5	Alternaria leaf spot	Australia: APVMA reconsideration. Prioritised to be commenced by 2028. EU: Not approved Canada: In re-evaluation USA: Under Registration Review (scheduled)
COPPER	M1	Alternaria leaf spot; Cercospora leaf spot; Leaf diseases/spots; Leaf spot; Septoria leaf spot	Australia: No current concerns.
DIFENOCONAZOLE	3	Alternaria leaf spot; Leaf spot; Powdery mildew	Australia: APVMA nominated for reconsideration after 2029. Permit PER93402 Expiry date: 31/05/2027 Codex MRL: 0.2 mg/Kg EU: Approved, candidate for substitution. Canada: In re-evaluation
IODINE	M	Postharvest bactericide	Australia: No current concerns. Canada: Cancelled
IPRODIONE	2	Suppression only: Sclerotinia, Black rot & Grey Mould	Australia: No current concerns. Permit PER84955 Expiry date: 30/11/2027 EU: Not approved USA: Under Registration Review (scheduled)
MANCOZEB	M3	Alternaria leaf spot; Cercospora leaf spot; Leaf diseases/spots; Septoria leaf spot; Powdery mildew	Australia: APVMA reconsideration. Prioritised to be commenced by 2027. EU: Not approved UK: Withdrawn (2024). USA: Under Registration Review (scheduled)

Active Constituent	MoA Group	Pest	Risks And Comments
MANCOZEB + METALAXYL	M3 + 4	Permit PER14045 for the control of <i>Phytophthora</i> soil fungus (Dieback); Pythium diseases: soil borne	Permit PER14045 Expiry date: 31/03/2027 MANCOZEB Australia: APVMA reconsideration. Prioritised to be commenced by 2027. EU: Not approved UK: Withdrawn (2024). USA: Under Registration Review (scheduled) METALAXYL Australia: No current concerns. Codex MRL: 0.02 mg/Kg EU: Approved, candidate for substitution. Canada: In re-evaluation
METALAXYL	4	Damping off; Phytophthora soil fungus (Dieback); Pythium diseases: soil borne	Australia: No current concerns. Codex MRL: 0.02 mg/Kg EU: Approved, candidate for substitution. Canada: In re-evaluation
METIRAM	M3	Alternaria leaf spot; Leaf spot	Australia: APVMA reconsideration. Prioritised to be commenced by 2027. EU: Not approved Canada: Only approved for foliar applications in potato crops.
PENTHIOPYRAD	7	Alternaria leaf spot; Powdery mildew	Australia: No current concerns. Codex MRL: 0.6 mg/Kg
PHOSPHOROUS (PHOSPHONIC) ACID	P07 (33)	Damping off and downy mildew	Australia: No current concerns. Permit PER14184 Expiry date: 31/03/2030

Active Constituent	MoA Group	Pest	Risks And Comments
PYDIFLUMETOFEN DIFENOCONAZOLE	7 + 3	Early blight; Powdery mildew; Cercospora leaf spot	DIFENOCONAZOLE Australia: APVMA nominated for reconsideration after 2029. Codex MRL: 0.2 mg/Kg EU: Approved, candidate for substitution. Canada: In re-evaluation PYDIFLUMETOFEN Australia: No current concerns. EU: Pending Canada: In re-evaluation
TEBUCONAZOLE	3	Powdery mildew (<i>Erysiphe heraclei</i>) suppression only	Australia: APVMA: Removed from nomination list - maintain watching brief Codex MRL: 0.4 mg/Kg EU: Approved, candidate for substitution. Canada: In re-evaluation USA: Under Registration Review (scheduled)
THIRAM	M3	Damping off	Australia: APVMA reconsideration. Prioritised to be commenced by 2027. EU: Not approved Canada: Only approved for seed treatment.
ZINEB	M3	Alternaria leaf spot; Cercospora leaf spot	Australia: APVMA reconsideration. Prioritised to be commenced by 2027. EU: Not approved Canada: Cancelled
DIFENOCONAZOLE	3	Leaf blight; Powdery mildew	Australia: APVMA nominated for reconsideration after 2029. Codex MRL: 0.2 mg/Kg EU: Approved, candidate for substitution. Canada: In re-evaluation

HERBICIDES – Weed Control

Active Constituent	MoA Group	Risks and Comments
CLETHODIM	1	Australia: No current concerns. Permit PER82459 Expiry date: 30/09/2026
DIQUAT	22	Australia: APAPVMA: Currently under review . Publication of the final regulatory decision is now expected in Mid 2026. EU: Not approved USA: No agricultural uses allowed. Aquatic herbicide.
FLUAZIFOP-P PRESENT AS THE BUTYL ESTER	1	Australia: APVMA Nominated for targeted spray drift reconsideration Canada: Cancelled
GLYPHOSATE	9	Australia: APVMA Nominated for targeted spray drift reconsideration Permit PER13305 Expiry date: 30/11/2029 USA: Under Registration Review (scheduled)
LINURON	5	Australia: No current concerns. EU: Not approved
METRIBUZIN	5	Australia: No current concerns. Permit PER80169 Expiry date: 28/02/2029 EU: Not approved Canada: In re-evaluation USA: Under Registration Review (scheduled)
PARAQUAT	22	Australia: APVMA: Currently under review . Publication of the final regulatory decision is now expected in Mid 2026. Candidate chemical recommended to be listed to Rotterdam Convention. EU: Not approved Canada: Cancelled USA: Restricted use

Active Constituent	MoA Group	Risks and Comments
PENDIMETHALIN	3	Australia: No current concerns. Codex MRL: 0.5 mg/Kg EU: Approved, candidate for substitution. Canada: In re-evaluation USA: Under Registration Review (scheduled)
PROMETRYN	5	Australia: No current concerns. Permit PER12048 Expiry date: 30/04/2030 EU: Not approved
QUIZALOFOP-ETHYL	1	Australia: No current concerns. Canada: Cancelled
SETHOXYDIM	1	Australia: No current concerns. EU: Not approved Canada: Phase-Out
TRIFLURALIN	3	Australia: No current concerns. EU: Not approved Canada: In re-evaluation USA: Under Registration Review (scheduled)
QUIZALOFOP-P-TEFURYL	1	Australia: No current concerns.

FUMIGANTS – Mixed Function

Active Constituent	Use	Risks and Comments
CHLOROPICRIN + 1,3-DICHLOROPROPENE	Control of soil borne diseases, plant parasitic Nematodes, Symphylans and Wireworms	CHLOROPICRIN Australia: No current concerns. EU: Not approved USA: Restricted use 1,3-DICHLOROPROPENE Australia: No current concerns. EU: Pending Canada: Cancelled
DAZOMET	Control of bacterial spot (<i>Xanthomonas</i> spp.) (suppression only). Soil insects and nematodes	Australia: No current concerns. USA: Under Registration Review (scheduled)
ETHANEDINITRILE	Soil borne pathogens, nematodes and weeds	Australia: No current concerns.
METHAM PRESENT AS SODIUM SALT	Germinating weeds and soil-borne fungus diseases	Australia: No current concerns.

PLANT REGULATORS AND OTHERS – Plant regulators, post-harvest treatments, rodenticides and others.

Active Constituent	Use	Risks and Comments
1-METHYLCYCLOPROPENE	Improve fruit quality post-harvest.	Australia: No current concerns

Funding statement: MT24008 –Regulatory Support & Response Co-ordination. This *multi-industry* project has been funded by Hort Innovation, using *industry research and development levies* and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

Disclaimer

Horticulture Innovation Australia Limited (Hort Innovation) makes no representations and expressly disclaims all warranties (to the extent permitted by law) about the accuracy, completeness, or currency of information in MT24008 – Regulatory Support & Response Co-ordination. Reliance on any information provided by Hort Innovation is entirely at your own risk. Hort Innovation is not responsible for, and will not be liable for, any loss, damage, claim, expense, cost (including legal costs) or other liability arising in any way, including from any Hort Innovation or other person's negligence or otherwise from your use or non-use of MT24008 – Regulatory Support & Response Co-ordination, or from reliance on information contained in the material or that Hort Innovation provides to you by any other means.

Legal notice

Copyright © Horticulture Innovation Australia Limited 2025

Copyright subsists in Ag-Chemical Update. Horticulture Innovation Australia Limited (Hort Innovation) owns the copyright, other than as permitted under the Copyright ACT 1968 (Cth). The Ag-Chemical Update (in part or as a whole) cannot be reproduced, published, communicated or adapted without the prior written consent of Hort Innovation. Any request or enquiry to use the Ag-Chemical Update should be addressed to:

Communications Manager

Hort Innovation

Level 7, 141 Walker Street

North Sydney NSW 2060

Australia

Email: communications@horticulture.com.au

Phone: 02 8295 2300