

Berry

Strategic Agrichemical Review Process (SARP)

February 2024

Hort Innovation
Project – MT23001

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

SARP Service Provider:
AGK Services

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

Date of report:
February 2024

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1. Summary

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

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

Alternative pesticides should ideally be selected for benefits of:

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

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

1.1 Diseases

The high priority diseases are:

Disease	Strawberry	Blueberry	Raspberry	Blackberry
Grey Mould (*Botrytis cinerea*)	H	H	H	H
Phytophthora Root Rot (*Phytophthora* spp.)	M	M	H	H
Fruit Rot (*Cladosporium* spp.)	M	M	M	H
Powdery Mildew (*Podosphaera* spp.)	H	L	M	M
Crown Rot (*Colletotrichum gloeosporioides*)	H	L	M	M
Downy Mildew (*Peronospora* spp.)	M	L	M	H
Charcoal Crown Rot (*Macrophomina phaseolina*)	H	L	L	L
Blueberry Rust (*Thekopsora minima*)	L	H	L	L
Stem Blight (*Neofusicoccum* spp., *Lasiodiplodia* spp. and *Botryosphaeria dothidea*)	L	H	L	L

1.2 Insects and other pests

The high priority insects and mites are:

Insects & Other Pests	Strawberry	Blueberry	Raspberry	Blackberry
Two Spotted Mite (*Tetranychus urticae*)	H	L	H	H
Broad Mite (*Polyphagotarsonemus latus*)	L	M	M	H
Red Berry Mite (*Acalitus essigi*)	L	L	M	H
Western Flower Thrips (*Frankliniella occidentalis*)	H	M	H	H
Green Vegetable Bug (*Nezara viridula*)	M	M	H	H
Rutherglen Bug (*Nysius vinitor*)	M	M	H	H
Green Stink Bug (*Chinavia hilaris*)	L	M	H	H
Green Mirid (*Creontiades dilutus*)	H	M	H	H
Brown Mirid (*Creontiades pacificus*)	M	M	H	H
Crop Mirid (*Sidnia kinbergi*)	M	M	H	H
Leafhoppers / Jassids (Cicadellidae)	M	M	H	M
Light Brown Apple Moth (*Epiphyas postvittana*)	M	H	M	H
Loopers (*Chrysodeixis* spp.)	M	H	H	H
Queensland Fruit Fly (*Bactrocera tryoni*)	H	M	H	H
Strawberry Aphid (*Chaetosiphon fragaefolii*)	H	L	L	L
Green Peach Aphid (*Myzus persicae*)	M	M	M	H
Leaf and Bud Nematode (*Aphelenchoides ritzemabosi*)	H	L	M	M
Chilli Thrips (*Scirtothrips dorsalis*)	M	H	M	H

1.3 Weeds

The high priority weeds are:

Weeds	Priority
Fumitory (*Fumaria officinalis*)	H
Flickweed (*Cardamine hirsuta*)	H

1.4 Plant Growth Regulators

The high priority Plant Growth Regulator issues are:

PGR Priorities	Strawberry	Blueberry	Raspberry	Blackberry
Improve fruit quality	M	M	H	H
Promote fruit set	M	H	M	M

2. The Australian Berry Industry

2.1 Blueberries

Blueberry production is centred in the northern New South Wales region of Coffs Harbour. Most of the production in this region occurs over the summer months. Several other blueberry production regions across Australia allow for close to year-round availability.

Production for the year ending June 2022 was 19,608 tonnes. The value of production was worth $407.1 million while the wholesale value of fresh supply was $503.8 million.

Blueberry Harvest Season by State[1]

State	21/22 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
New South Wales	16,785												
Tasmania	1,176												
Queensland	735												
Western Australia	422												
Victoria	392												
South Australia	98												
Availability Legend			High			Medium			Low			None	

Blueberry production has been growing strongly in recent years, with increasing domestic consumption underpinning demand and continued favourable prices for growers. Export volumes are low but growing over time, with 3% of total production going to fresh export in 2021/22. Another 9% went to processing and 88% went into domestic fresh supply. Australia is a net importer of blueberries, with most imports coming from New Zealand. Exports are focused into South East Asia, with 55% going to Hong Kong and 37% to Singapore in the year ending June 2022.

A significant proportion of blueberries are grown under protected cropping, usually in polytunnels with open ends. In some cases, the tunnels can be deskinned at key times during the growing season. There is also an increasing trend for growing in substrate rather than in ground. Pots can be located on a hard floor or on benches to allow better control of drainage.

2.2 Raspberries & Blackberries

Raspberries and blackberries are commonly referred to as Rubus *spp*. They are grown across a wide and diverse range of conditions in Australia. Major producing regions include South East Queensland; North Coast, Central and Southern Tableland regions in New South Wales; Yarra Valley in Victoria; Northern and Southern Tasmania; Adelaide Hills in South Australia; and Gin Gin and the Great Southern Region in Western Australia.

Production for the year ending June 2022 was 9,631 tonnes and was valued at $205.4 million. The wholesale value of fresh supply was $240.2 million with $221.4 million distributed into retail and $18.8 million into food service.

[1] Hort Innovation (2023). Australian Horticulture Statistics Handbook 2021/22. [online] Available at: https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/australian-horticulture-statistics-handbook/

Fresh Rubus Berry Harvest Season by State[1]

State	21/22 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Tasmania	2,766												
Victoria	2,480												
New South Wales	2,193												
Queensland	1,526												
Western Australia	477												
South Australia	191												
Availability Legend			High			Medium			Low			None	

Seasonality by Rubus Berry type

State	21/22 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Raspberries	6,428												
Blackberries	2,156												
Other	39												
Availability Legend			High			Medium			Low			None	

Blackberry and Raspberry production has been stable in recent years. There is considerable scope for fresh grown berries to displace frozen imports. Export volumes are low, with less than 1% of total production going to fresh export in 2021/22. Another 9% went to processing and 91% went into domestic fresh supply.

Production of rubus berries in Australia occurs in two different types of farming systems. These systems and their contribution to production are Polyhouses & Tunnels 80% and Conventional 20%.

There is very limited international trade of Blackberries and Raspberries. Australian export volumes are very small, with the two major destinations being Singapore and Sri Lanka. For the year ending June 2022, an additional 8,939 tonnes of frozen Rubus berries were imported, while 21 tonnes were exported.

2.3 Strawberries

Strawberries are grown in most states in Australia, although the major producing areas are Queensland (Sunshine Coast / Wide Bay) and Victoria (Yarra Valley). Year-round availability is made possible through the different regions.

For the year ending June 2022, 68,311 tonnes were produced with 7% sent for processing and 4% going to the fresh export market. The value of production was $416.8 million while the wholesale value of fresh supply was $464.5 million. Fresh exports go to several destinations, with 88% of exports in 2021/22 spread between the following 5 countries: Thailand, Singapore, New Zealand, Malaysia and UAE.

Strawberries are purchased by 71% of Australian households, and with fresh production available year-round they are an everyday part of many Australian diets.

Fresh Strawberry Seasonality by State[1]

State	21/22 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Queensland	28,691												
Victoria	24,251												
Western Australia	7,173												
South Australia	4,782												
Tasmania	2,732												
New South Wales	683												
Availability Legend			High			Medium			Low			None	

Production of strawberries in Australia occurs in two different types of farming systems. These systems and their contribution to production are Polyhouses & Tunnels 9% and Conventional 91%. Techniques are utilised to promote earliness of harvest to meet market demands during the switch between winter and summer production areas. Strawberry runner production is an important part if this, with plants transplanted as runners in the early part of the season.

The strawberry industry is very intensive and requires significant labour inputs, particularly for planting and harvesting operations. Strawberry runners are produced by specialised growers. Runners enable fruit growers to use transplants and reduce the time to produce the first harvest. The use of crop protection products in runner crops can impact on resistance strategies for the strawberry industry. Communication between runner growers and fruit growers is important to ensure that appropriate product rotation is used.

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 Berry 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 Berry industry regarding pesticide access, Hort Innovation has undertaken the current project to develop the first Strategic Agrichemical Review Process (SARP) for berries.

The SARP process identifies diseases, insect pests and weeds of major concern to the Berry 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 Berry 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 berries but attempts to prioritise the major problems.

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

https://www.planthealthaustralia.com.au/industries/

3.2 Minor use permits and registration

From a pesticide access perspective, the APVMA classifies blueberries and rubus berries as minor crops, and strawberries as a major crop. They all fit within the APVMA Crop Group 004: Berries and other small fruits. Blueberries fit within the Subgroup 004B: Bush berries, Rubus berries fit within the Subgroup 004A: Cane berries and strawberries fit within the Subgroup 004E: Low growing berries. Access to minor use permits can be achieved for berries as long as a reasonable justification is provided in accordance to the APVMA's minor use guidance (https://apvma.gov.au/node/10931). Possible justification for future permit applications could be based on:

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

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

3.3 Methods

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

Process of Review	Activity / Date
Industry survey	Preparation and circulation of online industry survey to update priority pests and identify priority control gaps. Survey released: 6 November 2023 Survey closed: 22 December 2023 An industry workshop was conducted on the 22 November 2023 to supplement the information received in the online survey.
SARP data updated via a desktop audit	Updated registrations and permits Updated MRL tables Updated available and potential pesticides against low, moderate and high priority pests, including an assessment of their suitability Included information on regulatory risks from MT20007
Captured industry input	Collated and analysed survey results Consolidated and incorporated industry needs and insights

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

4. Diseases, pests and weeds of Berries

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

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

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

4.1 Diseases of Berries

4.1.1 Disease priorities

Disease	Strawberry	Blueberry	Raspberry	Blackberry
Grey Mould (*Botrytis cinerea*)	H	H	H	H
Phytophthora Root Rot (*Phytophthora* spp.)	M	M	H	H
Fruit Rot (*Cladosporium* spp.)	M	M	M	H
Powdery Mildew (*Podosphaera* spp.)	H	L	M	M
Crown Rot (*Colletotrichum gloeosporioides*)	H	L	M	M
Downy Mildew (*Peronospora* spp.)	M	L	M	H
Charcoal Crown Rot (*Macrophomina phaseolina*)	H	L	L	L
Blueberry Rust (*Thekopsora minima*)	L	H	L	L
Stem Blight (*Neofusicoccum* spp., *Lasiodiplodia* spp. and *Botryosphaeria dothidea*)	L	H	L	L
Root & Crown Rot (*Phytophthora nicotianae*)	M	M	M	M
Black Root Rot (*Pythium* spp., *Fusarium* spp., *Rhizoctonia* spp.)	M	M	M	M
Anthracnose (*Colletotrichum simondsii*)	M	M	M	M
Fusarium Wilt (*Fusarium oxysporum*)	M	L	M	M
Leather Rot / Phytophthora fruit rot (*Phytophthora* spp.)	M	L	M	M
Rhizoctonia Root Rot (*Rhizoctonia* spp.)	M	L	M	M
Crown Gall (*Agrobacterium tumefaciens*)	L	M	L	M
Septoria Leaf Spot (*Septoria* spp.)	M	M	L	M
Yellow Rust (*Phragmidium rubidaei*)	L	L	M	M
Spur Blight (Didymella applanata)	L	L	M	M
Fusarium Crown Rot (*Fusarium oxysporum f.s.p. fragariae - Fof*)	M	L	L	L
Leaf Blotch / Stem-End Rot (*Gnomoniopsis fructicola*)	M	L	L	L
Transit Rot (*Rhizopus stolonifer*)	M	L	L	L
Alternaria Rot (*Alternaria* spp.)	M	L	L	L
Phomopsis Blight (*Phomopsis vaccinii*)	L	M	L	L
Botryosphaeria Stem Canker (*Botryosphaeria corticis*)	L	M	L	L
Bacterial Canker (*Pseudomonas syringae*)	L	L	L	L
Pestalotia Leaf Spot & Fruit Rot (N*eopestalotiopsis* sp)	M	M	L	L

Grey Mould is a high priority disease in all types of berries, although the availability of new fungicide options has assisted in the management of this disease in recent years. There are several other high priority diseases for specific types of berries, including Powdery Mildew, Crown Rot and Charcoal Crown Rot in strawberries, Blueberry Rust and Stem Blight in

blueberries, Phytophthora Root Rot in Rubus berries and Fruit Rot and Downy Mildew in blackberries.

Blueberry Rust is the most important disease of blueberries in Australia, being rated as a high priority in all growing regions. The disease is present in all states, including Tasmania which was thought to be rust free until recent years. Consideration was given to eradicating the disease from Tasmania, however this was deemed impractical and it is proving manageable with a combination of cultural controls and fungicides. Rust infections require long periods of leaf wetness, so pruning to maintain an open canopy is important, as well as orchard hygiene to remove diseased wood and leaves as sources of new infection.

Extended periods of wet, cool conditions can lead to outbreaks of Grey Mould during flowering and through to harvest. It can lead to fruit rot after harvest although the infection always occurs in the field during flowering. Pruning to keep an open canopy will assist to reduce the risk of infection. A planned program of fungicides is required to manage the disease during periods of high infection risk.

Grey Mould is the most important disease of Rubus berries in Australia. It is particularly dominant in priority for blackberries, but it is also the most important disease in raspberries. Phytophthora has increased in importance recently and attention should be paid to sourcing disease-free planting material, managing water quality and the strategic use of fungicides to prevent infection and spread.

Downy Mildew is predominantly an issue in blackberries and is becoming more significant. Cultural practices such as maintaining good airflow are critical. Fruit Rot is a significant post-harvest issue in raspberries.

Disease control in strawberries faces several challenges. The length of the season and the continuous threat of major diseases, particularly Powdery Mildew, requires availability of a large range of fungicides with different modes of action. Product rotation is critical to ensure that fungicide groups are not overused to protect against the development of fungicide resistance. Strawberries need protection against Powdery Mildew for the whole crop cycle which is up to 6 and 7 months in some regions. Continuous fruiting and harvest of the crop presents an additional issue because fungicides need to have a 1 day withholding period or less. Crops grown under protected cropping are also more prone to disease infections. Some protected cropping systems allow for covers to be removed during the season to enable more effective pest and disease management.

The need for disease protection extends to the runner production nurseries as well. An integrated approach is recommended across the industry to ensure that disease-free runners are planted, and that appropriate fungicide rotation is practiced across the whole production system.

In controlling fungal and bacterial diseases, the industry should be mindful of resistance management. CropLife Australia has a resistance management strategy and users must refer to it before using any product:

https://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: Critical concern over retaining access
P	Potential - a possible candidate to pursue for registration or permit	R2	Medium-term: Maintaining access of significant concern
P-A	Potential, already approved in the crop for another use	R3	Long-term: Potential issues associated with use - Monitoring required

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

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Flower Blight / Grey Mould *(Botrytis cinerea)* **Priority: High**							
Flower Blight is rated as a high priority in all berry types. *Botrytis cinerea* causes serious losses when the weather is wet and cool for several consecutive days. Blossoms are the most susceptible tissue, turning brown when infected. Developing berries also become infected, but few rot in the field before harvest. A range of control measures are required including keeping an open canopy, avoiding excessive nitrogen use, in-crop fungicides, cooling berries rapidly after harvest and using sulphur pads in stacked trays post-harvest.							
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	A	ALL	Registered in berries for the control of **Botrytis Blight & Fruit Rot / Grey Mould**, and the suppression of Anthracnose Fruit Rot, Phomopsis Fruit Rot and Rhizopus Fruit Rot. Apply as a preventative treatment from beginning of bloom until harvest. Apply as part of a spray program, using up to 6 applications at 5-7 day intervals, particularly when weather conditions favour disease infection.	-
Azoxystrobin (Amistar)	11	Protectant / Curative	1	A	ALL	Registered in Rubus for control of Anthracnose (*Elsinoe veneta*) and **Botrytis** (*Botrytis cinerea*) and Cladosporium (*Cladosporium cladosporiodes*). Begin applications at the onset of disease. Apply a maximum of 3 applications per season, using a minimum retreatment interval of 14 days.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacillius amyloliquefaciens (Serifel) BASF	BM01	Biological	NR	A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of **Grey Mould** (*Botrytis cinerea*). Apply preventatively prior to the development of disease. Use a retreatment interval of 3-14 days (strawberries) or 7 days (other berries). Maximum number of applications per season not specified.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	A	ALL	Registered in strawberries for control of **Botrytis** (*Botrytis cinerea*). Commence applications at the early flowering stage. Use a retreatment interval of 5-10 days. Maximum number of applications per season not specified.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer PER88058	BM02	Biological	NR	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of **Botrytis Grey Mould** (*Botrytis* spp.) Begin applications prior to disease development and repeat at 5-10 day intervals as part of a preventative spray program before disease symptoms are visible. Maximum number of applications per season not specified.	-
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of **Grey Mould**, Anthracnose, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, Phomopsis and Powdery Mildew, and suppression of Rust, and permitted in blueberries for control of **Grey Mould** and Anthracnose and the suppression of Rust. Use preventatively. Commence applications from the white bud stage onwards and when conditions favour disease infection. Apply maximum 3 applications within an annual production cycle. Consecutive treatments should be applied 7-14 days apart. Do not apply more than 2 consecutive applications.	-
Captan	M4	Protectant	1	A	ALL	Registered in strawberries for control of **Grey Mould** (*Botrytis cinerea*), Gloeosporium Fruit Rot, Phytophthora Root Rot (*Phytophthora nicotianae* var. *parasitica*), Black Spot / Anthracnose (*Colletotrichum acutatum*), Scorch (*Diplocarpon earlianum*) and Leaf Blight (*Dendrophoma obscurans*). Apply every 10 days commencing at blossom stage. Maximum of 5 applications per season.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Captan PER13958	M4	Protectant	1	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of Cane Spot, Spur Blights, **Botrytis Flower & Fruit Rot** and Anthracnose. First application should occur after the green tip spray and then repeat every 10-14 days until the season ends. Do not make more than 5 applications per year.	-
Chlorothalonil (Bravo) PER14449	M5	Protectant	28	A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of **Grey Mould**, Rusts, Downy Mildew and Septoria Leaf Spot. Apply when conditions favour disease starting at early bloom, using a retreatment interval of 7-14 days Maximum of 3 applications per season.	R3
Chlorothalonil (Bravo) PER91300	M5	Protectant	28	A	ALL (excl. VIC)	Permitted in blueberries for control of **Grey Mould** and Rust. Apply when conditions favour the disease, then repeat at 7-14 day intervals. Do not apply more than 3 sprays per year.	R3
Copper (Cu) present as Copper Ammonium Acetate	M1	Protectant	1	A	VIC, SA, TAS & WA	Registered in strawberries for control of Leaf Spot (*Mycosphaerella musicola*) and **Grey Mould** (*Botrytis cinerea*). Spray when plants are established and repeat every 7-10 days. Maximum number of applications per season not specified.	-
Copper (Cu) present as Cuprous Oxide	M1	Protectant	1	A	VIC, SA, TAS & WA	Registered in strawberries for control of Leaf Spot and **Grey Mould**. Spray when plants are established and repeat every 7-10 days. Maximum number of applications per season not specified.	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative	3	A	ALL	Registered in strawberries for control of Crown & Petiole Rot (*Colletotrichum gloeosporioides*) and **Grey Mould** (*Botrytis cinerea*). Use as part of a protectant spray program during flowering. Use a retreatment interval of 7-10 days. Maximum of 3 applications per season.	R3
Cyprodinil + Fludioxinil (Switch) Syngenta PER84891	9+12	Protectant / Curative	7	A	ALL (excl. VIC)	Permitted in blueberries for control of **Grey Mould** and Anthracnose. Apply as a protectant treatment at the first signs of infection or at early stages of flower, fruit or foliage development prior to, or at the onset of disease. Do not exceed a maximum of 4 applications per season, with no more than 2 applications sequentially (7-14 days apart) before using another fungicide from a different MoA group for 2 applications.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Cyprodinil + Fludioxinil (Switch) Syngenta PER14422	9+12	Protectant / Curative	7	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of **Grey Mould** (*Botrytis cinerea*). Apply as a protectant spray at the first signs of infection or at white bud. Maximum of 4 applications per season, with no more than 2 consecutive applications at a retreatment interval of 7-14 days. Do not apply more than 2 consecutive applications. Maximum number of applications per season not specified.	R3
Fenhexamid (Teldor) Bayer	17	Protectant	NR	A	ALL	Registered in strawberries for control of **Grey Mould** (*Botrytis cinerea*). Apply when conditions favour disease. Use a retreatment interval of 7-10 days. Maximum number of applications per season not specified.	-
			1			Registered in blackberries and raspberries for control of **Grey Mould** (*Botrytis cinerea*). Apply when conditions favour disease. Use a retreatment interval of 7-10 days. Maximum of 4 applications per season, with no more than 2 consecutive applications.	
Fenhexamid (Teldor) Bayer PER86489	17	Protectant	1	A	ALL (excl. VIC)	Permitted in blueberries for control of **Grey Mould**. Reduce background levels by removing plant debris and rotted fruit. Apply at first signs of infection or at white bud. Do not exceed a maximum of 4 applications per season with not more than 2 applications sequentially before using a fungicide from a different MoA group. Allow a minimum retreatment interval of 7-10 days between consecutive applications.	-
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant	1	A	ALL	Registered in strawberries for control of **Grey Mould** (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca macularis*). Use as part of a program of protectant fungicides during flowering. Use a retreatment interval of 7-10 days. Maximum of 3 applications per season, with no more than 2 consecutive.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative	1	A	ALL	Registered in strawberries for control of **Grey Mould** (*Botrytis cinerea*). Apply prior to disease onset as part of a preventative program. Use a retreatment interval of 7-14 days. Maximum of 2 applications per season.	-
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant / Curative	1	A	ALL	Registered in strawberries and cane berries (incl. raspberries, blackberries, dewberries) for control of **Grey Mould** (*Botrytis cinerea*). Apply prior to disease onset as part of a preventative program. Use a retreatment interval of 7-14 days. Maximum of 2 applications per season.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Ipflufenoquin (Migiwa Kinoprol) AgNova	52	Protectant	1	A	ALL	Registered in strawberries for control of **Grey Mould** (*Botrytis cinerea*). Apply before first sign of disease. Use a retreatment interval of 7-10 days. Maximum of 3 applications per season and do not use consecutive sprays.	1
Iprodione (Ippon 500 Aquaflo)	2	Protectant / Curative	1	A	NSW, QLD, TAS & WA	Registered in blueberries for control of **Grey Mould**. Apply every 10-14 days from flowering. Treatments per season not limited.	R2
					ALL	Registered in raspberries and strawberries for control of **Grey Mould**. In raspberries, spray at 10% blossom and full bloom. For fruit protection, apply 2-3 weeks pre-harvest. In strawberries, apply as part of a program of protectant fungicides during flowering. Do not use more than 2 consecutive sprays. Maximum number of applications per season not specified.	
Isofetamid (Kenja) AgNova	7	Protectant	NR	A	ALL	Registered in Low growing berries incl. strawberries, cane berries incl. raspberries & blackberries, and bush berries incl. blueberries & currants for control of **Grey Mould** (*Botrytis cinerea*). Apply as part of a program of protectant fungicides from flowering. Use a retreatment interval of 7-10 days. Maximum of 2 applications per crop.	-
Mancozeb PER13958	M3	Protectant	7	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of **Grey Mould**, Rust and Mildew. Apply early bloom and repeat at 10-14 day intervals. Continue spraying until threat of disease is past. Treatments per season not limited.	R2
Penthiopyrad (Fontelis) Corteva	7	Protectant	NR	A	ALL	Registered in strawberry for control of **Grey Mould** (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca* spp.) Begin applications prior to disease development and continue on a 7-10 day interval. Maximum of 3 applications per season, with no more than 2 consecutive.	-
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Protectant	NR	A	ALL	Registered in berries incl. blackberries, blueberries, raspberries & strawberries (field & protected cropping) for control of **Grey Mould** (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca aphanis*). Apply as a protective treatment when conditions favour infection. Use a retreatment interval of 7-10 days. Maximum of 6 applications per season.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of **Grey Mould** (*Botrytis cinerea*) and in strawberries for control of **Grey Mould** (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). Begin applications before the onset of disease symptoms. Use a retreatment interval of 7-10 days. Maximum of 2 applications per season.	R3
Pyrimethanil (Scala) Bayer	9	Protectant / Curative	1	A	ALL	Registered in strawberries for control of **Grey Mould** (*Botrytis cinerea*). Commence applications during flowering, using a retreatment interval of 7-10 days. Do not use more than 2 consecutive sprays and follow the Croplife resistance management strategy for Botrytis in strawberries.	-
Pyrimethanil (Scala) Bayer PER13958	9	Protectant / Curative	1	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of **Grey Mould**. Applications should be made when conditions favour disease development. Do not use more than 1 application per season.	-
Sodium Metabisulphite (Sulphur Dioxide Pads) PER13955	M	Post-Harvest Treatment	1	A	ALL (excl. VIC)	Permitted for use as a post-harvest treatment in blueberries for the control of **Grey Mould**. Blueberries are packed by arranging 12 trays each comprising 12 punnets in a layer up to a maximum of 21 layers. Place 1 pad on top of every layer arranged in a spiralling manner throughout the stack. The whole pallet stack is sealed in plastic and stored under refrigerated conditions. Pads are to be placed so that they do not contact the fruit. Do not exceed 3 months storage. Pallet stack is to be labelled as per permit conditions to warn supply chain handlers of the pads presence and of the refrigeration requirement. Blueberries must be removed from sealed wrap at least 1 day before sale.	-
Thiram	M3	Protectant	2	A	ALL (excl. NSW)	Registered in strawberries for control of Black Spot (*Colletotrichum acutatum*) and **Grey Mould** (*Botrytis cinerea*). Apply as a protectant spray at flowering and then at 10-14 day intervals. Maximum number of applications not specified.	R2
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 ***Botrytis*** in fruiting vegetables, grapes, strawberries and ornamentals.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Eugenol + Geraniol + Thymol (Novellus) Eden Research PLC	1	Protectant & Curative		P		Registered for control of **Botrytis** in grapes.	-
Fenpyrazamine (Prolectus) Sumitomo	17	Protectant & Curative		P		Registered for **Botrytis** control in grapes. US registration for control of **Botrytis** in almonds, berries, lettuce, pistachios and ornamentals.	-
Phytophthora Root Rot (*Phytophthora* spp.) **Priority: High**							
Phytophthora is rated as a high priority in raspberries and blackberries, and as a moderate priority in strawberries and blueberries. Phytophthora is a widespread soil-borne pathogen that thrives in poorly drained soil and warm temperatures. Young roots are especially susceptible to infection. Severe infections can lead to severe necrosis of roots and subsequent yellowing and wilting of above ground plant parts. Plants can eventually die. Management includes site selection to ensure good drainage, improving soil organic matter, careful irrigation management and fungicide treatments.							
Captan	M4	Protectant	1	A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*), Gloeosporium Fruit Rot, **Phytophthora Root Rot** (*Phytophthora nicotianae* var. *parasitica*), Black Spot / Anthracnose (*Colletotrichum acutatum*), Scorch (*Diplocarpon earlianum*) and Leaf Blight (*Dendrophoma obscurans*). Apply every 10 days commencing at blossom stage. Maximum of 5 applications per season.	-
Metalaxyl-M (Ridomil Gold 25G) PER13958	4	Protectant / Curative	48	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of ***Phytophthora* spp.** Apply directly to the soil and water in. Treatments per season not limited.	-
Oxathiapiprolin (Zorvec Enicade) Corteva PER91060	49	Protectant	1	A	ALL	Permitted in blackberry and raspberry (staff & contracted growers of Driscolls only) for control of **Phytophthora Root Rot** (*Phytophthora* spp.) Apply at first sign of infection. Incorporate by irrigation within 24 hours of application. Use a minimum retreatment interval of 7 days. Maximum of 2 applications (high rate) or 4 applications (low rate) per season.	-
Phosphorous Acid PER13958	33	Protectant / Curative	NR	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of ***Phytophthora* spp.** Apply as a foliar spray. Apply a maximum of 3 applications when new growth is 200-300mm high, 1 week prior to first flower and 1 month prior to leaf fall in autumn.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Phosphorous Acid PER80064	33	Protectant / Curative	NR	A	ALL (excl. VIC)	Permitted in strawberries (post-planting only) for control of **Crown Rot** (*Phytophthora* spp.) Apply as a foliar spray, starting after establishment and at weekly intervals for 2-3 weeks. Maximum of 4 applications per season.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide)	BM01	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Mandipropamid (Revus) Syngenta	40	Curative / Protectant		P		Registered for control of Downy Mildew in grapes, lettuce, leafy vegetables and oilseed poppies. US registration for control of **Phytophthora** in various crops, including as a foliar application for protection of citrus from Phytophthora Root Rot.	-
Fruit Rot (*Cladosporium* spp.) **Priority: High**							
Fruit Rot is rated as a high priority in blackberries and as a moderate priority in raspberries, blueberries, and strawberries. Fruit Rot is primarily a post-harvest storage disease. Infections usually do not cause damage to the fruit, but the mycelial growth makes it unappealing and unmarketable. Fruit Rot is commonly associated with fruit that is sunburned or has suffered other damage.							
Azoxystrobin (Amistar)	11	Protectant / Curative	1	A	ALL	Registered in Rubus for control of Anthracnose (*Elsinoe veneta*) and Botrytis (*Botrytis cinerea*) and **Cladosporium** (*Cladosporium cladosporiodes*). Begin applications at the onset of disease. Apply a maximum of 3 applications per season, using a minimum retreatment interval of 14 days.	-
Bromo Chloro Dimethyl Hydantoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit as a post-harvest treatment for **external rot** causing organisms. Post-harvest spray or dip. Minimum contact time 60 seconds. Can also be used as a general disinfectant for equipment.	-
Chlorine	-	Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit as a post-harvest treatment for bacteria and fungi. Post-harvest spray. Must make contact with the fruit for at least 30 seconds. Can also be used as a general disinfectant for equipment.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Iodine	M	Post-Harvest Sanitiser	NR	A	ALL	Registered in berries as a post-harvest treatment for control of bacteria and fungi. Dip the fruit for a minimum of 1 minute.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of ***Cladosporium* spp.** in grapes.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	P-A	ALL	Registered in strawberries for control of Botrytis (*Botrytis cinerea*). Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of ***Cladosporium* spp.** in grapes.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of ***Cladosporium*** in tree nuts, stone fruit and bulb vegetables.	-
Penthiopyrad (Fontelis) Corteva	7	Protectant	NR	P-A	ALL	Registered in strawberry for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca* spp.) Registered for control of **Scab (*Cladosporium carpophilum*)** in stone fruit.	-
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	11+7	Curative / Protectant		P		Registered in almonds, cherries and macadamia for control of various leaf diseases, including for control of Freckle and Scab (***Cladosporium* spp.**) in almonds.	-
Pydiflumetofen + Difenonazole (Miravis Duo) Syngenta	7+3	Protectant & Curative		P		Registered for control of various diseases in fruiting vegetables, cucurbits, root vegetables, celery and peanuts. US registration for control of **Scab** in stone fruit and tree nuts.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Powdery Mildew (*Podosphaera aphanis*) **Priority: High**							
Rated as a high priority in strawberries, as a moderate priority in raspberries and blackberries, and as a low priority in blueberries. Powdery Mildew control requires the use of a season-long protectant fungicide program. The length of the growing season presents challenges in having enough alternate modes of action to provide a sustainable fungicide program for the entire season.							
Bupirimate (Nimrod) Adama	8	Curative & Protectant / **Strawberry runner production only**	NG	A	QLD, SA	Registered in strawberry runners for control of **Powdery Mildew**. Apply a maximum of 4 foliar applications per season of bupirimate or other Group 8 fungicides with a minimum re-treatment interval of 7 days. Do not apply consecutively. Do not apply to fruit producing strawberry plants.	-
Cyflufenamid (Flute) AgNova	U6	Curative & Protectant / Field Grown & Protected Crops	NR	A	ALL	Registered in strawberries and strawberry runners for control of **Powdery Mildew**. Apply before first signs of disease or when conditions are conducive to disease development. Apply at 7-10 day intervals. Do not apply as consecutive sprays or apply more than 2 sprays per crop in fruiting crops. Apply a maximum of 2 treatments per season in strawberry runners, with at least 2 treatments from different Mode of Action groups between them. In addition, a minimum of 2 sprays from different Mode of Action Groups should be made between the last Flute application and digging.	-
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant	1	A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*) and **Powdery Mildew** (*Sphaerotheca macularis*). Use as part of a program of protectant fungicides during flowering. Use a retreatment interval of 7-10 days. Maximum of 3 applications per season, with no more than 2 consecutive.	-
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant / Curative	1	A	ALL	Registered in strawberries for control of **Powdery Mildew** (*Sphaerotheca macularis*). Apply prior to disease onset as part of a preventative program. Use a retreatment interval of 7-14 days. Maximum of 2 applications per season.	-
Myclobutanil (Systhane) Corteva	3	Protectant & Curative	NR	A	ALL	Registered in strawberries for control of **Powdery Mildew**. Commence spraying before disease appears and apply at 7-10 day intervals. Do not apply more than 2 successive Group 3 fungicides. Treatments per season not limited.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Penthiopyrad (Fontelis) Corteva	7	Protectant	NR	A	ALL	Registered in strawberries for control of Grey Mould and **Powdery Mildew**. Begin applications prior to disease development and continue on 7-10 day spray intervals. DO NOT apply more than 2 sequential applications of Group 7 fungicides and do not use more than 5.25 L/ha (3 sprays) in total for the season.	-
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Protectant	NR	A	ALL	Registered in berries incl. blackberries, blueberries, raspberries & strawberries (field & protected cropping) for control of Grey Mould (*Botrytis cinerea*) and **Powdery Mildew** (*Sphaerotheca aphanis*). Apply as a protective treatment when conditions favour infection. Use a retreatment interval of 7-10 days. Maximum of 6 applications per season.	-
Potassium Bicarbonate (EcoCarb)	M2	Curative	NR	A	ALL	Registered in strawberries for control of **Powdery Mildew**. Begin application at first sign of disease and repeat application at 7-10 day intervals. Potassium Bicarbonate is a contact fungicide so complete and thorough coverage of all plant surfaces must be achieved to ensure effective disease control. Treatments per season not limited.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant & Curative	1 NG	A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*) and **Powdery Mildew** (*Podosphaeria aphanis*). Begin applications before the onset of disease symptoms. Use a retreatment interval of 7-10 days. Maximum of 2 applications per season.	R3
Quinoxyfen (Legend) Corteva PER14577	13	Protectant / **Strawberry runner production only**	NR	A	ALL (excl. VIC)	Permitted in strawberries for control of **Powdery Mildew**. Apply as a foliar spray after transplanting. DO NOT apply more than 2 consecutive applications with the second application at an interval of 7-10 days. DO NOT apply to fruit producing strawberry plants.	-
Streptomyces lydicus (Actinovate)	BM 02	Protectant	NR	A	ALL	Registered in strawberries for the suppression of **Powdery Mildew** and Phytophthora. Application prior to onset of disease season. Apply as part of a program alternating with other products.	-
Sulfur (Thiovit Jet) Syngenta	M2	Protectant	NR	A	NSW, WA	Registered in strawberries for control of **Powdery Mildew**. Apply when the disease is first noted, then at 10-14 day intervals during humid weather. DO NOT spray when temperature exceeds 24 deg C. DO NOT apply 21 days before or after an oil spray and do not mix with oil sprays. Treatments per season not limited.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Triadimenol (Bayfidan) Bayer PER13958	3	Protectant & Curative	7	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of **Powdery Mildew**. Apply at first sign of disease or as a protectant treatment starting after green tip. Use a retreatment interval of 10-14 days. Maximum number of applications per season not specified.	R3
Trifloxystrobin (Flint) Bayer	11	Protectant & Curative	1	A	ALL	Registered in strawberries for control of **Powdery Mildew**. Apply as part of a program when conditions favour disease development from early flowering onwards. DO NOT apply consecutive treatments, including from 1 season to the next. DO NOT allow sprays intervals to exceed 10 days and DO NOT apply more than 3 applications per season.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). 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.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	P-A	ALL	Registered in strawberries for control of Botrytis (*Botrytis cinerea*). Permitted for control of **Powdery Mildew** in eggplant. US registration for control of **Powdery Mildew** in cucurbits, grapes, pome fruit, stone fruit and strawberries.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Powdery Mildew** in almond, Brassica leafy vegetables, cucurbits, grapes, hops, dry and succulent beans, stone fruit and sunflower.	-
Isofetamid (Kenja) ISK / AgNova	7	Protectant & Curative	NR	P-A	ALL	Registered in strawberries for control of Botrytis Grey Mould. US registration for control of Grey Mould, **Powdery Mildew** and Anthracnose in low-growing berries.	-
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.	-

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.	-
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. US registration for control of Leaf Spot, **Powdery Mildew**, Anthracnose and Grey Mould in strawberries.	**-**
Hydrogen Peroxide + Peroxyacetic Acid (Peratec Plus)	M	Protectant		P		Registered for control of **Powdery Mildew** in grapes, fruiting vegetables, cucurbits and potatoes.	-
Isopyrazam (Seguris) Syngenta	7	Protectant		P		Registered for control of **Powdery Mildew** in apples.	-
Mefentrifluconazole (Belanty) BASF	3	Protectant & Curative		P		Registered for control of **Powdery Mildew** in grapes, control of Black Spot and **Powdery Mildew** and suppression of Alternaria in apples, control of Blossom Blight and suppression of Leaf Rust, Shot Hole and Hull Rot in almonds, control of Husk Spot in macadamias, control of **Powdery Mildew** and Gummy Stem Blight in cucurbits, and control of **Powdery Mildew** and Target Spot in fruiting vegetables.	-
Metrafenone (Vivando) BASF	U8	Protectant		P		Registered for control of **Powdery Mildew** in cucurbits and grapes.	-
Pyriofenone (Kusabi) ISK	50			P		Registered for control of **Powdery Mildew** in cucurbits and grapes. US registration for control of **Powdery Mildew** in berry fruit.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Crown Rot (*Colletotrichum gloeosporioides*) **Priority: High**							
Rated as a high priority in strawberries, as a moderate priority in raspberries and blackberries, and as a low priority in blueberries. The pathogen prefers warmer temperatures so its incidence can vary with the seasonal conditions. Some weed species are known to be hosts and potential sources of infection. Therefore, it is important to ensure that disease and weed-free transplants are used.							
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	A	ALL	Registered in berries for the control of Botrytis Blight & Fruit Rot / Grey Mould, and the suppression of **Anthracnose Fruit Rot**, Phomopsis Fruit Rot and Rhizopus Fruit Rot. Apply as a preventative treatment from beginning of bloom until harvest. Apply as part of a spray program, using up to 6 applications at 5-7 day intervals, particularly when weather conditions favour disease infection.	-
Azoxystrobin (Amistar)	11	Protectant / Curative	1	A	ALL	Registered in Rubus for control of **Anthracnose** (*Elsinoe veneta*) and Botrytis (*Botrytis cinerea*). Begin applications at the onset of disease. Apply a maximum of 3 applications per season, using a minimum retreatment interval of 14 days.	-
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of Grey Mould, **Anthracnose**, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, Phomopsis and Powdery Mildew, and suppression of Rust, and permitted in blueberries for control of Grey Mould and **Anthracnose** and the suppression of Rust. Use preventatively. Commence applications from the white bud stage onwards and when conditions favour disease infection. Apply maximum 3 applications within an annual production cycle. Consecutive treatments should be applied 7-14 days apart. Do not apply more than 2 consecutive applications.	-
Captan	M4	Protectant	1	A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*), Gloeosporium Fruit Rot, Phytophthora Root Rot (*Phytophthora nicotianae* var. *parasitica*), **Black Spot / Anthracnose** (*Colletotrichum acutatum*), Scorch (*Diplocarpon earlianum*) and Leaf Blight (*Dendrophoma obscurans*). Apply every 10 days commencing at blossom stage. Maximum of 5 applications per season.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Captan PER13958	M4	Protectant	1	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of Cane Spot, Spur Blights, Botrytis Flower & Fruit Rot and **Anthracnose**. First application should occur after the green tip spray and then repeat every 10-14 days until the season ends. Do not make more than 5 applications per year.	-
Copper (Cu) present as Copper Hydroxide PER84176	M1	Protectant	1	A	ALL (excl. VIC)	Permitted in blueberries for control of **Anthracnose** and Blueberry Rust. Apply as a foliar application at first sign of disease. Apply at 10-14 day intervals while conditions favour disease development. Treatments per season not limited.	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative	3	A	ALL	Registered in strawberries for control of **Crown & Petiole Rot** (*Colletotrichum gloeosporioides*) and Grey Mould (*Botrytis cinerea*). Use as part of a protectant spray program during flowering. Use a retreatment interval of 7-14 days. Maximum of 3 applications per season.	R3
Cyprodinil + Fludioxinil (Switch) Syngenta PER84891	9+12	Protectant / Curative	7	A	ALL (excl. VIC)	Permitted in blueberries for control of Grey Mould and **Anthracnose**. Apply as a protectant treatment at the first signs of infection or at early stages of flower, fruit or foliage development prior to, or at the onset of disease. Do not exceed a maximum of 4 applications per season, with no more than 2 applications sequentially (7-14 days apart) before using another fungicide from a different MoA group for 2 applications.	R3
Prochloraz (Octave)	3	Protectant & Curative **Strawberry runner production only**	NR	A	QLD, WA	Registered in **strawberry runners** for control of **Colletotrichum Crown Rot / Stolon Rot**. Apply as a foliar spray on a 7-14 day interval. DO NOT apply to strawberries grown for fruit production. Treatments per season not limited.	R3
Pyraclostrobin (Cabrio) PER14483	11	Protectant & Curative **Strawberry runner production only**	NR	A	QLD, TAS & VIC	Permitted in **strawberry runners** for control of **Crown or Petiole Rot**. For use in the tissue culture (TC) and foundation nurseries only. For the TC nursery, spraying should begin 1 month after establishment. For the foundation nurseries, application should begin when the plants have 2-3 new leaves. Apply no more than 2 consecutive sprays of Cabrio at 10-14 day intervals. DO NOT apply more than 5 applications per crop.	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Thiram	M3	Protectant	2	A	ALL (excl. NSW)	Registered in strawberries for control of **Black Spot** (*Colletotrichum acutatum*) and Grey Mould (*Botrytis cinerea*). Apply as a protectant spray at flowering and then at 10-14 day intervals. Maximum number of applications not specified.	R2
Bacillus amyloliquefaciens (Serenade Opti) Bayer	BM 02	Protectant / Biological	NR	P-A	ALL	Registered in strawberries for control of Botrytis. Registered for control of ***Colletotrichum* spp.** in avocado and mango.	**-**
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Anthracnose** in almonds, cucurbits and tree nuts.	-
Isofetamid (Kenja) ISK / AgNova	7	Protectant & Curative	NR	P-A	ALL	Registered in strawberries for control of Botrytis Grey Mould. US registration for control of Grey Mould, Powdery Mildew and **Anthracnose** in low-growing berries.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of **Anthracnose** in grape and small fruit vine climbing (except fuzzy kiwifruit), lemon & lime, low-growing berries, specific tree nuts, almonds and bushberries.	R3
BLAD (Problad Plus)	BM 01	Biological		P		Registered in stone fruit for suppression of Brown Rot. US registration for control of **Anthracnose** in grapes and strawberries.	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. US registration for control of Leaf Spot, Powdery Mildew, **Anthracnose** and Grey Mould in strawberries. US registration for control of Grey Mould, Powdery Mildew and **Anthracnose** in strawberries.	-
Mefentrifluconazole (Belanty) BASF	3	Protectant & Curative		P		Registered for control of Powdery Mildew in grapes, control of Black Spot and Powdery Mildew and suppression of Alternaria in apples, control of Blossom Blight and suppression of Leaf Rust, Shot Hole and Hull Rot in almonds, control of Husk Spot in macadamias, control of Powdery Mildew and Gummy Stem Blight in cucurbits, and control of Powdery Mildew and Target Spot in fruiting vegetables. US registration for control of **Anthracnose** in fruiting vegetables and tree nuts.	-
Downy Mildew (*Peronospora* spp.) **Priority: High**							
Downy Mildew is rated as a high priority in blackberries, as a moderate priority in raspberries and strawberries, and as a low priority in blueberries. The disease rarely infects raspberries but has been seen in wet seasons for crops grown in low lying fields with poor airflow. The disease favours warm, humid conditions and is most prevalent during wet weather with temperatures between 18-22^{o}C. Ensure good canopy airflow to reduce periods of leaf wetness. Remove and destroy infected pruning's to reduce inoculum build-up.							
Chlorothalonil (Bravo) PER14449	M5	Protectant	28	A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of Grey Mould, Rusts, **Downy Mildew** and Septoria Leaf Spot. Apply when conditions favour disease starting at early bloom, using a retreatment interval of 7-14 days Maximum of 3 applications per season.	R3
Fluopicolide & Propamocarb Hydrochloride (Infinito) Bayer PER93024	43+28	Protectant	1	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of **Downy Mildew** (*Peronospora* spp.) Commence applications when conditions favour infection. Use a retreatment interval of 7-10 days. Maximum of 3 applications per season. Hort Innovation is generating data to support a label extension for control of Downy Mildew in blueberries.	-
Mancozeb PER13958	M3	Protectant	7	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of Grey Mould, Rust and **Mildew**. Apply early bloom and repeat at 10-14 day intervals. Continue spraying until threat of disease is past. Treatments per season not limited.	R2

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Metalaxyl-M + Mancozeb (Ridomil Gold MZ) Syngenta PER84973	4+M3	Protectant	14	A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of **Downy Mildew**. Apply a maximum of 2 applications when conditions favour disease development. Apply at 14 day intervals from bud burst to pre-flowering, reducing to 10 day intervals from tight cluster to early fruit formation. Continue the program using Non-Group 4 fungicides with protectant activity. Apply a maximum of 4 applications within an annual production cycle.	R2
Copper (Cu) present as Copper Hydroxide PER14443	M1	Protectant	NR	P-A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of Rust and Leaf Spot. Copper is registered for control of **Downy Mildew** in various fruit and vegetable crops.	-
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Protectant	NR	P-A	ALL	Registered in berries incl. blackberries, blueberries, raspberries & strawberries (field & protected cropping) for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca aphanis*). US registration for control of **Downy Mildew** in ornamentals.	-
Acibenzolar-S-Methyl (Actigard Plant Activator) Syngenta	P01	Protectant		P		Registered in tomatoes for the suppression of Bacterial Speck, Bacterial Spot, Bacterial Canker and Powdery Mildew. US registration for control of **Downy Mildew** in brassica leafy vegetables and leafy vegetables, and suppression of **Downy Mildew** in cucurbits and bulb onions.	-
Azoxystrobin + Oxathiapiprolin (Orondis Flexi) Syngenta	11+49	Curative / Protectant		P		Registered for control of **Downy Mildew** in bulb vegetables, brassica vegetables, cucurbits, lettuce, endive, leafy vegetables and poppies.	-
Cyazofamid (Ranman) ISK/UPL	21	Curative / Protectant		P		Registered for control of **Downy Mildew** in brassica vegetables, brassica leafy vegetables, poppies, nursery stock and basil.	-
Dimethomorph + Ametoctradin (Zampro) AgNova/BASF	40+45	Protectant		P		Registered for control of **Downy Mildew** in grapevines.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluoxapiprolin (Xivana Prime 20SC) Bayer	49	Protectant & Curative		P		Registered for control of **Downy Mildew** in grapevines.	-
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. US registration for suppression of **Downy Mildew** in bulb vegetables, cucurbits and leafy vegetables.	-
Hydrogen Peroxide + Peroxyacetic Acid (Peratec Plus)	M	Protectant		P		Registered for control of **Downy Mildew** in grapes, brassica vegetables and allium vegetables.	-
Mandipropamid (Revus) Syngenta	40	Curative / Protectant		P		Registered for control of **Downy Mildew** in grapes, lettuce, leafy vegetables and oilseed poppies.	-
Oxathiapiprolin (Zorvec Enicade) Corteva	49	Curative / Protectant		P		Registered for control of **Downy Mildew** in bulb vegetables, brassicas, cucurbits, leafy vegetables and poppies.	-
Oxathiapiprolin + Mancozeb (Zorvec Enibel) Corteva	49+M3	Protectant		P		Registered for control of **Downy Mildew** in bulb vegetables.	R2
Propamocarb Hydrochloride + Fluopicolide (Infinito)	28+43	Protectant		P		Registered for control of **Downy Mildew** in brassica vegetables, bulb vegetables, cucurbits, leafy vegetables, lettuce and poppies.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Charcoal Crown Rot (*Macrophomina phaseolina*) **Priority: High**							
Rated as a high priority in strawberries, and as a low priority in all other berry types. Charcoal Crown Rot is a soil-borne disease and symptoms appear when plants are subjected to stress from weather, soil condition or heavy fruit load. Fumigation is the only chemical control available and cultural controls such as disease tolerant cultivars, crop rotation and reducing stress in the plant can play an important part of managing the disease.							
1,3-Dichloropropene + Chloropicrin (Telone C-35)	8B	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil Borne Diseases including Fusarium and Verticillium Wilts, Rhizoctonia and Pythium. ***For use by professional and registered fumigators only.***	**-**
Chloropicrin (Agrocelhone NE Soil Fumigant)	-	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil-Borne Fungus Diseases and Bacteria. ***For use by professional and registered fumigators only.***	**-**
Ethanedinitrile (EDN Fumigas)	-	Fumigant	NR	A	ALL	Registered in strawberries and **strawberry runners** for pre-planting control of Soil Borne Pathogens (*Bipolaris sorokiniana, Fusarium acuminatum, Fusarium oxysporum, Phytophthora cactorum, Phytophthora cryptogea, Pythium sulcatum, Pythium ultimum, Rhizoctonia fragariae, Rhizoctonia solani, Sclerotium rolfsii,* ***Macrophomina phaseolina***), nematodes and weeds. ***For use by licensed fumigators or approved persons only.***	**-**
Metham PER82024	-	Fumigant	NR	A	ALL (excl. VIC)	Permitted in blueberries for control of germinating weed seeds and soil borne pathogens, including **Charcoal Rot**. Apply through trickle irrigation to moist soil under plastic mulch at 5-8 weeks prior to planting. Flush all lines and equipment with clean water after use. Puncture plastic 2 weeks after treatment to allow dissipation of metham.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Blueberry Rust *(Thekopsora minima)* **Priority: High**							
Blueberry Rust is rated as a high priority in blueberries and as a low priority in all other berry types. Infection occurs as a result of extended periods of leaf wetness, resulting in leaf spots which can spread and become necrotic over time. In severe cases, leaf drop can occur and whole plants can be defoliated. Lesions can also form on fruit, reducing berry quality and marketability. Control is achieved by maintaining an open canopy in conjunction with fungicide applications.							
Azoxystrobin (Amistar) PER89953	11	Protectant / Curative	1	A	ALL (excl. VIC)	Permitted in blueberries for suppression of **Blueberry Rust** (*Thekopsora minima*), Stem Blight & Dieback (*Neofusicocum* spp. / *Botryosphaeria* spp.), and Twig Blight (*Phomopsis* spp. / *Pestalotiopsis* spp.) Begin applications prior to disease development and continue with a 7-14 day retreatment interval. Maximum of 3 applications per crop, and no more than 2 consecutive applications.	-
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of Grey Mould, Anthracnose, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, Phomopsis and Powdery Mildew, and suppression of Rust, and permitted in blueberries for control of Grey Mould and Anthracnose and the suppression of **Rust**. Use preventatively. Commence applications from the white bud stage onwards and when conditions favour disease infection. Apply maximum 3 applications within an annual production cycle. Consecutive treatments should be applied 7-14 days apart. Do not apply more than 2 consecutive applications.	-
Chlorothalonil (Bravo) PER91300	M5	Protectant	28	A	ALL (excl. VIC)	Permitted in blueberries for control of Grey Mould and **Rust**. Apply when conditions favour the disease, then repeat at 7-14 day intervals. Do not apply more than 3 sprays per year.	R3
Copper (Cu) present as Copper Hydroxide PER84176	M1	Protectant	1	A	ALL (excl. VIC)	Permitted in blueberries for control of Anthracnose and **Blueberry Rust**. Apply as a foliar application at first sign of disease. Apply at 10-14 day intervals while conditions favour disease development. Treatments per season not limited.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Dithianon (Dragon) PER82601	M9	Protectant	H:21 NG	A	ALL (excl. VIC)	Permitted in blueberries for control of **Blueberry Rust**. Apply only to field-grown crops. Apply at first sign of rust infection on leaves and continue while weather is conducive to infection. Make a maximum of 3 applications per season, with minimum 21 day retreatment interval.	-
Mancozeb PER13958	M3	Protectant	7	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of Grey Mould, **Rust** and Mildew. Apply early bloom and repeat at 10-14 day intervals. Continue spraying until threat of disease is past. Treatments per season not limited.	R2
Polyoxin D Zinc Salt (Intervene) Nufarm PER92997	19	Protectant	NR	A	ALL (excl. VIC)	Permitted in blueberry for suppression of **Blueberry Rust**. Apply as a protective treatment using a minimum retreatment interval of 7 days. Maximum of 6 applications per season.	-
Propiconazole (Tilt) PER14740	3	Protectant / Curative	3	A	ACT, NSW, QLD, SA, TAS & WA	Permitted in blueberries for control of **Blueberry Rust**. Apply at first sign of infection on leaves and continue at 14 day intervals while the weather is favourable for infection. Treatments per season not limited.	R3
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological / Protectant	NR	P-A	ALL	Registered for control of Botrytis in grapes and strawberries. US registration for control of **Rust** in brassica leafy vegetables, corn, pome fruit and tree nuts.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological / Protectant	NR	P-A	ALL	Registered in various fruit crops, including strawberries, for control and suppression of various diseases. US registration for control of **Rust** in pome fruit.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Rust** in bulb vegetables, stone fruit and sunflower.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of **Rust** in bulb vegetables.	R3
Isopyrazam (Seguris) Syngenta	7	Protectant		P		Registered for control of **Rust** in almonds.	-
Stem Blight (*Neofusicoccum* spp., *Lasiodiplodia* spp. and *Botryosphaeria dothidea*) **Priority: High**							
Blueberry Rust is rated as a high priority in blueberries and as a low priority in all other berry types. Infection starts in the branches and in severe cases it progresses into the base of the plant, resulting in systemic branch dieback over a period of weeks or months, eventually killing the plant. Infection enters the plant through wounds, including herbicide injury, pruning wounds and insect damage, or natural openings such as growth cracks, leaf scars, stem pores and root to root contact. Symptoms may not appear until the plant becomes stressed. Management should include the use of disease-free planting material, avoiding stress and plant injury and ensuring good irrigation and nutrition practices and strict orchard hygiene. Infected plant parts should be pruned out and removed from the orchard.							
Azoxystrobin (Amistar) PER89953	11	Protectant / Curative	1	A	ALL (excl. VIC)	Permitted in blueberries for suppression of Blueberry Rust (*Thekopsora minima*), **Stem Blight & Dieback** (*Neofusicocum* spp. / *Botryosphaeria* spp.), and Twig Blight (*Phomopsis* spp. / *Pestalotiopsis* spp.) Begin applications prior to disease development and continue with a 7-14 day retreatment interval. Maximum of 3 applications per crop, and no more than 2 consecutive applications.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Botryosphaeria Dieback** and Macrophomina Rot (***Botryosphaeria dothidea***) in grapes and Bot Rot (***Botryosphaeria dothidea***) in pome fruit.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	P-A	ALL	Registered in strawberries for control of Botrytis (*Botrytis cinerea*). Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). Registered for suppression of Stem End Rot (*Botryosphaeria* spp.) in avocado. US registration for control of Bot Rot (***Botryosphaeria dothidea***) in pome fruit.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of **Botryosphaeria Blight** (*Botryosphaeria* spp.) in pistachio.	R3
Mefentrifluconazole (Belanty) BASF	3	Protectant & Curative		P		Registered for control of Powdery Mildew in grapes, control of Black Spot and Powdery Mildew and suppression of Alternaria in apples, control of Blossom Blight and suppression of Leaf Rust, Shot Hole and Hull Rot in almonds, control of Husk Spot in macadamias, control of Powdery Mildew and Gummy Stem Blight in cucurbits, and control of Powdery Mildew and Target Spot in fruiting vegetables. US registration for control of Panicle and Shoot Blight (***Botryosphaeria dothidea***) in tree nuts, and Black Rot (***Botryosphaeria obtusa***) and White Rot (***Botryosphaeria dothidea***) in pome fruit.	-
Root and Crown Rot (*Phytophthora nicotianae*) **Priority: Moderate**							
Root and Crown Rot is rated as a moderate priority in all berry types. Phytophthora infections can occur when plants are waterlogged, particularly in warm weather. Ensuring good drainage in the field and the use of clean planting material is critical.							
1,3-Dichloropropene + Chloropicrin (Telone C-35)	8B	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil Borne Diseases including Fusarium and Verticillium Wilts, Rhizoctonia and Pythium. ***For use by professional and registered fumigators only.***	**-**
Captan	M4	Protectant	1	A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*), Gloeosporium Fruit Rot, **Phytophthora Root Rot** (*Phytophthora nicotianae* var. *parasitica*), Black Spot / Anthracnose (*Colletotrichum acutatum*), Scorch (*Diplocarpon earlianum*) and Leaf Blight (*Dendrophoma obscurans*). Apply every 10 days commencing at blossom stage. Maximum of 5 applications per season.	-
Chloropicrin (Agrocelhone NE Soil Fumigant)		Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil-Borne Fungus Diseases and Bacteria. ***For use by professional and registered fumigators only.***	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Ethanedinitrile (EDN Fumigas)	-	Fumigant	NR	A	ALL	Registered in strawberries and **strawberry runners** for pre-planting control of Soil Borne Pathogens (*Bipolaris sorokiniana, Fusarium acuminatum, Fusarium oxysporum, Phytophthora cactorum, Phytophthora cryptogea, Pythium sulcatum, Pythium ultimum, Rhizoctonia fragariae, Rhizoctonia solani, Sclerotium rolfsii, Macrophomina phaseolina*), nematodes and weeds. ***For use by licensed fumigators or approved persons only.***	-
Mancozeb + Metalaxyl-M (Ridomil Gold MZ) Syngenta	M3+4	Protectant **Strawberry runner production only**	7	A	ALL	Registered in non-fruiting strawberries for control of Eye Spot, Leaf Blight, **Root Rot** and Scorch. Apply as a combined dip for runners after digging. Use only in Strawberry Runner Approval Schemes.	R2
Metalaxyl-M (Ridomil Gold) Syngenta & Phosphorous Acid PER13697	4+33	Protectant **Strawberry runner production only**	NR	A	QLD	Permitted in strawberry runners for control of **Root & Crown Rot**. Before planted, runners are dipped in a phosphorous acid solution for 15-30 minutes. Four and eight weeks after establishment apply foliar applications of phosphorous acid. At 'pre-runner digging', three applications of phosphorous acid are applied at 7 day intervals with the final spray being as close to digging as possible The first application of Metalaxyl-M is applied during or immediately after planting. The second application is applied through trickle irrigation, or over the top of the plants after establishment. One further application of Metalaxyl-M can be made through the season following extended wet weather through trickle irrigation, or over the top of the plants.	-
Metalaxyl-M (Ridomil Gold 25G) PER13958	4	Protectant / Curative	48	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of ***Phytophthora* spp.** Apply directly to the soil and water in. Treatments per season not limited.	-
Phosphorous Acid PER13958	33	Protectant / Curative	NR	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of ***Phytophthora* spp.** Apply as a foliar spray. Apply a maximum of 3 applications when new growth is 200-300mm high, 1 week prior to first flower and 1 month prior to leaf fall in autumn.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Phosphorous Acid PER80064	33	Protectant / Curative	NR	A	ALL (excl. VIC)	Permitted in strawberries (post-planting only) for control of **Crown Rot** (*Phytophthora* spp.) Apply as a foliar spray, starting after establishment and at weekly intervals for 2-3 weeks. Maximum of 4 applications per season.	-
Streptomyces lydicus (Actinovate)	BM 02	Protectant	NR	A	ALL	Registered in strawberries for the suppression of Powdery Mildew and **Phytophthora**. Application prior to onset of disease season. Apply as part of a program alternating with other products.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Oxathiapiprolin (Zorvec Enicade) Corteva PER91060	49	Protectant	1	P-A	ALL	Permitted in blackberry and raspberry (staff & contracted growers of Driscolls only) for control of **Phytophthora** Root Rot (*Phytophthora* spp.)	-
Mandipropamid (Revus) Syngenta	40	Protectant & Curative		P		Registered for control of Downy Mildew in grapes, lettuce, leafy vegetables, and oilseed poppies. US registration for control of **Phytophthora** in various crops, including as a foliar application for protection of citrus from Phytophthora Root Rot.	-
Oxathiopiprolin (Zorvec Enicade) Corteva	49	Protectant & Curative		P		Registered for control of Downy Mildew in bulb vegetables, brassicas, cucurbits, leafy vegetables and poppies. US registration for control of **Phytophthora Canker and Brown Rot** in citrus.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Black Root Rot (*Pythium* spp.*, Fusarium* spp.*, Rhizoctonia* spp.) **Priority: Moderate**							
Black Root Rot is rated as a moderate priority in all berry types. Black Root Rot is caused by a complex of pathogens. The relative abundance of these may vary in any one location. The disease is favoured by a lack of crop rotation leading to build up of the pathogen in the soil over several seasons. Fumigation is effective in reducing the incidence of Black Root Rot.							
1,3-Dichloropropene + Chloropicrin (Telone C-35)	8B	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of including **Fusarium** and Verticillium Wilts, **Rhizoctonia** and **Pythium**. Apply as either a broadacre or a row treatment and place at least 20cm below the soil surface. Allow at least 14 days after application before planting. ***For use by professional and registered fumigators only.***	**-**
Chloropicrin (Agrocelhone NE Soil Fumigant)	-	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil-Borne Fungus Diseases and Bacteria. ***For use by professional and registered fumigators only.***	**-**
Ethanedinitrile (EDN Fumigas)	-	Fumigant	NR	A	ALL	Registered in strawberries and **strawberry runners** for pre-planting control of Soil Borne Pathogens (*Bipolaris soroikiniana,* ***Fusarium acuminatum****,* ***Fusarium oxysporum****, Phytophthora cactorum, Phytophthora cryptogea,* ***Pythium sulcatum****,* ***Pythium ultimum****,* ***Rhizoctonia fragariae****,* ***Rhizoctonia solani****, Schlerotium rolfsi, Macrophomina phaseolina*), nematodes and weeds. ***For use by licensed fumigators or approved persons only.***	**-**
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of ***Fusarium*** **spp.,** ***Pythium*** **spp.** & ***Rhizoctonia solani*** in legume vegetables, oilseeds, soybean, strawberry, root & tuber vegetables, artichoke, asparagus, brassica leafy vegetables, bulb vegetables, citrus, cucurbits, corn and fruiting vegetables.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for suppression of ***Rhizoctonia* spp.** in brassica leafy vegetables.	-
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 (Bion) for control of Damping Off caused by ***Rhizoctonia solani***, ***Pythium*** and ***Fusarium* sp.** in cotton.	-
Anthracnose (*Colletotrichum simondsii*) **Priority: Moderate**							
Anthracnose is rated as a moderate priority in all berry types. The disease is favoured in moist, warm conditions, with spores released through the spring and summer from infected plant material that has overwintered on the farm. Flowering is the most critical time for infection. Infected fruit remain symptom free until berries ripen, initially as shrivelling or sunken lesions and developing into orange-pink spore masses on ripe fruit. Management includes strict orchard hygiene, pruning to maintain canopy ventilation and the use of fungicides during flowering to prevent infection.							
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	A	ALL	Registered in berries for the control of Botrytis Blight & Fruit Rot / Grey Mould, and the suppression of **Anthracnose Fruit Rot**, Phomopsis Fruit Rot and Rhizopus Fruit Rot. Apply as a preventative treatment from beginning of bloom until harvest. Apply as part of a spray program, using up to 6 applications at 5-7 day intervals, particularly when weather conditions favour disease infection.	-
Azoxystrobin (Amistar)	11	Protectant / Curative	1	A	ALL	Registered in Rubus for control of **Anthracnose** (*Elsinoe veneta*) and Botrytis (*Botrytis cinerea*). Begin applications at the onset of disease. Apply a maximum of 3 applications per season, using a minimum retreatment interval of 14 days.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of Grey Mould, **Anthracnose**, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, Phomopsis and Powdery Mildew, and suppression of Rust, and permitted in blueberries for control of Grey Mould and **Anthracnose** and the suppression of Rust. Use preventatively. Commence applications from the white bud stage onwards and when conditions favour disease infection. Apply maximum 3 applications within an annual production cycle. Consecutive treatments should be applied 7-14 days apart. Do not apply more than 2 consecutive applications.	-
Captan	M4	Protectant	1	A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*), Gloeosporium Fruit Rot, Phytophthora Root Rot (*Phytophthora nicotianae* var. *parasitica*), **Black Spot / Anthracnose** (*Colletotrichum acutatum*), Scorch (*Diplocarpon earlianum*) and Leaf Blight (*Dendrophoma obscurans*). Apply every 10 days commencing at blossom stage. Maximum of 5 applications per season.	-
Captan PER13958	M4	Protectant	1	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of Cane Spot, Spur Blights, Botrytis Flower & Fruit Rot and **Anthracnose**. First application should occur after the green tip spray and then repeat every 10-14 days until the season ends. Do not make more than 5 applications per year.	-
Copper (Cu) present as Copper Hydroxide PER84176	M1	Protectant	1	A	ALL (excl. VIC)	Permitted in blueberries for control of **Anthracnose** and Blueberry Rust. Apply as a foliar application at first sign of disease. Apply at 10-14 day intervals while conditions favour disease development. Treatments per season not limited.	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative	3	A	ALL	Registered in strawberries for control of **Crown & Petiole Rot** (*Colletotrichum gloeosporioides*) and Grey Mould (*Botrytis cinerea*). Use as part of a protectant spray program during flowering. Use a retreatment interval of 7-14 days. Maximum of 3 applications per season.	R3
Cyprodinil + Fludioxinil (Switch) Syngenta PER84891	9+12	Protectant / Curative	7	A	ALL (excl. VIC)	Permitted in blueberries for control of Grey Mould and **Anthracnose**. Apply as a protectant treatment at the first signs of infection or at early stages of flower, fruit or foliage development prior to, or at the onset of disease. Do not exceed a maximum of 4 applications per season, with no more than 2 applications sequentially (7-14 days apart) before using another fungicide from a different MoA group for 2 applications.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Thiram	M3	Protectant	2	A	ALL (excl. NSW)	Registered in strawberries for control of **Black Spot** (*Colletotrichum acutatum*) and Grey Mould (*Botrytis cinerea*). Apply as a protectant spray at flowering and then at 10-14 day intervals. Maximum number of applications not specified.	R2
Bacillus amyloliquefaciens (Serenade Opti) Bayer	BM 02	Protectant / Biological	NR	P-A	ALL	Registered in strawberries for control of Botrytis. Registered for control of ***Colletotrichum* spp.** in avocado and mango.	**-**
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Anthracnose** in almonds, cucurbits and tree nuts.	-
Isofetamid (Kenja) ISK / AgNova	7	Protectant & Curative	NR	P-A	ALL	Registered in strawberries for control of Botrytis Grey Mould. US registration for control of Grey Mould, Powdery Mildew and **Anthracnose** in low-growing berries.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of **Anthracnose** in grape and small fruit vine climbing (except fuzzy kiwifruit), lemon & lime, low-growing berries, specific tree nuts, almonds and bushberries.	R3
BLAD (Problad Plus)	BM 01	Biological		P		Registered in stone fruit for suppression of Brown Rot. US registration for control of **Anthracnose** in grapes and strawberries.	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. US registration for control of Leaf Spot, Powdery Mildew, **Anthracnose** and Grey Mould in strawberries. US registration for control of Grey Mould, Powdery Mildew and **Anthracnose** in strawberries.	**-**
Mefentrifluconazole (Belanty) BASF	3	Protectant & Curative		P		Registered for control of Powdery Mildew in grapes, control of Black Spot and Powdery Mildew and suppression of Alternaria in apples, control of Blossom Blight and suppression of Leaf Rust, Shot Hole and Hull Rot in almonds, control of Husk Spot in macadamias, control of Powdery Mildew and Gummy Stem Blight in cucurbits, and control of Powdery Mildew and Target Spot in fruiting vegetables. US registration for control of **Anthracnose** in fruiting vegetables and tree nuts.	-
Fusarium Wilt (*Fusarium oxysporum*) **Priority: Moderate**							
Rated as a moderate priority in strawberries, raspberries and blackberries, and as a low priority in blueberries. Symptoms appear after the crop is established at which time control is not possible. Pre-Plant fumigation is important in reducing infection. Cultivars with disease tolerance are available and crop rotation can help to reduce the incidence of spores in the soil.							
1,3-Dichloropropene + Chloropicrin (Telone C-35)	8B	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil Borne Diseases including **Fusarium** and Verticillium Wilts, Rhizoctonia and Pythium. ***For use by professional and registered fumigators only.***	**-**
Chloropicrin (Agrocelhone NE Soil Fumigant)	-	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil-Borne Fungus Diseases and Bacteria. ***For use by professional and registered fumigators only.***	**-**
Ethanedinitrile (EDN Fumigas)	-	Fumigant	NR	A	ALL	Registered in strawberries and **strawberry runners** for pre-planting control of Soil Borne Pathogens (*Bipolaris sorokiniana, Fusarium acuminatum,* ***Fusarium oxysporum****, Phytophthora cactorum, Phytophthora cryptogea, Pythium sulcatum, Pythium ultimum, Rhizoctonia fragariae, Rhizoctonia solani, Sclerotium rolfsii, Macrophomina phaseolina*), nematodes and weeds. ***For use by licensed fumigators or approved persons only.***	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of ***Fusarium* spp**. in legume vegetables, oilseeds, soybean, strawberry, root & tuber vegetables, artichoke, asparagus, brassica leafy vegetables, bulb vegetables, citrus, cucurbits, corn and fruiting vegetables.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
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 (Bion) for control of Damping Off caused by *Rhizoctonia solani*, *Pythium* and ***Fusarium* sp.** in cotton.	-
Leather Rot / Phytophthora Fruit Rot (*Phytophthora* spp.) **Priority: Moderate**							
Rated as a moderate priority in strawberries, raspberries and blackberries, and as a low priority in blueberries. Phytophthora commonly causes root and crown rot, but it can also impact the above-ground parts of the plant in warm, moist conditions. Strategies to control PRR will assist in protecting against leather rot. Pre-plant fumigation, removal of dead plant residues and maintaining adequate drainage are the best control measures. No fungicides are available specifically for leather rot.							
1,3-Dichloropropene + Chloropicrin (Telone C-35)	8B	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil Borne Diseases including Fusarium and Verticillium Wilts, Rhizoctonia and Pythium. ***For use by professional and registered fumigators only.***	**-**
Chloropicrin (Agrocelhone NE Soil Fumigant)	-	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil-Borne Fungus Diseases and Bacteria. ***For use by professional and registered fumigators only.***	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Metalaxyl-M (Ridomil Gold 25G) PER13958	4	Protectant / Curative	48	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of ***Phytophthora* spp.** Apply directly to the soil and water in. Treatments per season not limited.	-
Phosphorous Acid PER13958	33	Protectant / Curative	NR	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of ***Phytophthora* spp.** Apply as a foliar spray. Apply a maximum of 3 applications when new growth is 200-300mm high, 1 week prior to first flower and 1 month prior to leaf fall in autumn.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Captan	M4	Protectant	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*), Gloeosporium Fruit Rot, **Phytophthora** Root Rot (*Phytophthora nicotianae* var. *parasitica*), Black Spot / Anthracnose (*Colletotrichum acutatum*), Scorch (*Diplocarpon earlianum*) and Leaf Blight (*Dendrophoma obscurans*).	-
Metalaxyl-M (Ridomil Gold) Syngenta & Phosphorous Acid PER13697	4	Protectant / Strawberry Runners	NR	P-A	QLD	Permitted in strawberry runners for control of Root & Crown Rot. Metalaxyl-M is registered for control of Phytophthora in asparagus and pineapples.	**-**
Oxathiapiprolin (Zorvec Enicade) Corteva PER91060	49	Protectant	1	P-A	ALL	Permitted in blackberry and raspberry (staff & contracted growers of Driscolls only) for control of **Phytophthora** Root Rot (*Phytophthora* spp.)	-
Mandipropamid (Revus) Syngenta	40	Curative / Protectant		P		Registered for control of Downy Mildew in grapes, lettuce, leafy vegetables and oilseed poppies. US registration for control of **Phytophthora** in various crops, including as a foliar application for protection of citrus from Phytophthora Root Rot.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Rhizoctonia Root Rot (*Rhizoctonia* spp.) **Priority: Moderate**							
Rated as a moderate priority in strawberries, raspberries and blackberries, and as a low priority in blueberries. It is a common soil-borne disease that can cause poor crop vigour and in severe cases will kill plants. Fumigation is the only control currently available.							
Metham PER82024	-	Fumigant	NR	A	ALL (excl. VIC)	Permitted in blueberries for control of germinating weed seeds and soil borne pathogens, including **Rhizoctonia**. Apply through trickle irrigation to moist soil under plastic mulch at 5-8 weeks prior to planting. Flush all lines and equipment with clean water after use. Puncture plastic 2 weeks after treatment to allow dissipation of metham.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of *Fusarium* spp., *Pythium* spp. & ***Rhizoctonia solani*** in legume vegetables, oilseeds, soybean, strawberry, root & tuber vegetables, artichoke, asparagus, brassica leafy vegetables, bulb vegetables, citrus, cucurbits, corn and fruiting vegetables.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	44	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative	3	P-A	ALL	Registered in strawberries for control of Crown & Petiole Rot (*Colletotrichum gloeosporioides*) and Grey Mould (*Botrytis cinerea*). Registered in nursery stocks and ornamentals for control of **Rhizoctonia**.	R3
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for suppression of **Rhizoctonia** in brassica leafy greens.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
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 (Bion) for control of Damping Off caused by ***Rhizoctonia solani***, *Pythium* and *Fusarium* sp. in cotton.	-
Crown Gall (*Agrobacterium tumefaciens*) **Priority: Moderate**							
Crown Gall is rated as a moderate priority in blueberries and blackberries, and as a low priority in strawberries and raspberries. Galls form at the bases of canes or on major roots. The bacterium enters through natural or mechanical wounds on stems and roots and induces gall formation. Management techniques include planting disease-free nursery stock, removing infected plants, minimising wounding and maintaining an acid soil pH.							
Agrobacterium radiobacter (NoGall) PER13150	-	Biological	NR	A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of **Crown Gall** (*Agrobacterium tumefaciens*). Completely immerse root systems in solution before planting.	-
Agrobacterium radiobacter (NoGall) PER89523	-	Biological	NR	A	ALL (excl. VIC)	Permitted in blueberries for control of **Crown Gall** (*Agrobacterium tumefaciens*). Completely immerse root systems in solution before planting.	-
Septoria Leaf Spot (*Septoria* spp.) **Priority: Moderate**							
Septoria Leaf Spot is rated as a moderate priority in strawberries, blueberries and blackberries, and as a low priority in raspberries. The disease causes small brown leaf spots and lesions on succulent stems. Infection generally appears mid to late season and is favoured by wet weather. The pathogen will overwinter in infected plant tissue. Management strategies include avoiding overhead irrigation, pruning to maintain good canopy ventilation and orchard hygiene. No fungicides are available although incidental control may be achieved by the regular rust control program.							
Chlorothalonil (Bravo) PER14449	M5	Protectant	28	A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of Grey Mould, Rusts, Downy Mildew and **Septoria Leaf Spot**. Apply when conditions favour disease starting at early bloom, using a retreatment interval of 7-14 days Maximum of 3 applications per season.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	P-A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of Grey Mould, Anthracnose, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, Phomopsis and Powdery Mildew, and suppression of Rust, and permitted in blueberries for control of Grey Mould and Anthracnose and the suppression of Rust. US registration for control of ***Septoria* spp.** in berries and celery.	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative	3	P-A	ALL	Registered in strawberries for control of Crown & Petiole Rot (*Colletotrichum gloeosporioides*) and Grey Mould (*Botrytis cinerea*). US registration for control of **Septoria** in celery.	R3
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Septoria** in dry and succulent beans and pistachio.	-
Metalaxyl-M + Mancozeb (Ridomil Gold MZ) Syngenta PER84973	4+M3	Protectant	14	P-A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of Downy Mildew. Registered for control of **Septoria** in cucurbits and lettuce.	R2
Penthiopyrad (Fontelis) Corteva	7	Protectant	NR	P-A	ALL	Registered in strawberry for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca* spp.) Registered for control of **Septoria** in lowbush blueberry, fruiting vegetables, leafy greens, leaf petiole group, legume vegetables and tree nuts.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of **Septoria** in cucurbits, fruiting vegetables, grape and small fruit vine climbing (except fuzzy kiwifruit), leaf petiole vegetables, leafy greens, potato, specific tree nuts and tuberous & corm vegetables.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant & Curative		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. US registration for control of **Septoria** in leafy vegetables.	**-**
Yellow Rust (*Phragmidium rubidaei*) **Priority: Low**							
Yellow Rust is rated as a moderate priority in raspberries and blackberries, and as a low priority in strawberries and blueberries. Yellow Rust has declined in importance in recent years with newer varieties less susceptible to infection. The use of long cane production and shorter production cycles has also reduced exposure to rust. The disease is favoured by prolonged wet conditions in spring, and severe infestations will lead to total defoliation of the canes. Maintaining an open canopy is important to promote airflow and several fungicide options are available to use during periods of high infection risk.							
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of Grey Mould, Anthracnose, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, Phomopsis and Powdery Mildew, and suppression of **Rust**, and permitted in blueberries for control of Grey Mould and Anthracnose and the suppression of Rust. Use preventatively. Commence applications from the white bud stage onwards and when conditions favour disease infection. Apply maximum 3 applications within an annual production cycle. Consecutive treatments should be applied 7-14 days apart. Do not apply more than 2 consecutive applications.	-
Chlorothalonil PER14449	M5	Protectant	28	A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of Grey Mould, **Rusts**, Downy Mildew and Septoria Leaf Spot. Apply when conditions favour disease, then repeat at 7-14 day intervals. Do not use more than 3 applications per year.	R2
Copper (Cu) present as Copper Hydroxide PER14443	M1	Protectant	NR	A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of **Rust** and Leaf Spot. Use 1 application only. Canes must not be bearing fruit at the time of application.	-
Copper (Cu) present as Copper Oxychloride (Coppox) Grochem	M1	Protectant	NR	A	ALL	Registered in *Rubus* spp. (including raspberries and blackberries) for control of **Rust** and Leaf Spot, and in raspberries for control of Anthracnose, **Rust** and Spur Blight. In *Rubus* spp., apply one application only and canes must not be bearing fruit at the time of application. In raspberries, apply at bud movement, just prior to blossom, repeat at petal fall and after harvest.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Mancozeb PER13958	M3	Protectant	7	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & Blueberries for control of Grey Mould, **Rust** and Mildew. Apply early bloom and repeat at 10-14 day intervals. Treatments per season not limited.	R2
Myclobutanil (Systhane) PER92308	3	Protectant / Curative	1	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of **Yellow Rust** (*Phragmidium rubi-idaei*). Begin foliar applications as early as bud break when new growth is 3-4 inches or at first sign of yellow rust pustules. Use a retreatment interval of 10-14 days. Maximum of 3 applications per season.	R3
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological / Protectant	NR	P-A	ALL	Registered for control of Botrytis in grapes and strawberries. US registration for control of **Rust** in brassica leafy vegetables, corn, pome fruit and tree nuts.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological / Protectant	NR	P-A	ALL	Registered in various fruit crops, including strawberries, for control and suppression of various diseases. US registration for control of **Rust** in pome fruit.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Rust** in bulb vegetables, stone fruit and sunflower.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of **Rust** in bulb vegetables.	R3
Isopyrazam (Seguris) Syngenta	7	Protectant		P		Registered for control of **Rust** in almonds.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Spur Blight (*Didymella applanata*) **Priority: Low**							
Spur Blight is rated as a moderate priority in raspberries and blackberries, and as a low priority in strawberries and blueberries. Spur Blight can cause premature leaf drop on side branches and may kill buds on canes. General farm hygiene and keeping good air circulation are key control measures.							
Captan PER13958	M4	Protectant	1	A	ALL (excl. VIC)	Permitted in *Rubus* spp., *Ribes* spp. & blueberries for control of Cane Spot, **Spur Blights**, Botrytis Flower & Fruit Rot and Anthracnose. First application should occur after the green tip spray and then repeat every 10-14 days until the season ends. Do not make more than 5 applications per year.	-
Azoxystrobin (Amistar)	11	Protectant / Curative	1	P-A	ALL	Registered in Rubus for control of Anthracnose (*Elsinoe veneta*) and Botrytis (*Botrytis cinerea*) and Cladosporium (*Cladosporium cladosporiodes*). Registered for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative	3	P-A	ALL	Registered in strawberries for control of Crown & Petiole Rot (*Colletotrichum gloeosporioides*) and Grey Mould (*Botrytis cinerea*). US registration for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	R3
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). Registered for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	-
Metalaxyl-M + Mancozeb (Ridomil Gold MZ) Syngenta PER84973	4+M3	Protectant	14	P-A	ALL (excl. VIC)	Permitted in *Rubus* spp. for control of Downy Mildew. Registered for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	R2
Penthiopyrad (Fontelis) Corteva	7	Protectant	NR	P-A	ALL	Registered in strawberry for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca* spp.) Registered for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	R3
Azoxystrobin + Oxathiapiprolin (Orondis Flexi) Syngenta	11+49	Curative / Protectant		P		Registered for control of Downy Mildew in bulb vegetables, brassica vegetables, cucurbits, lettuce, endive, leafy vegetables and poppies. Registered for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	-
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	11+7	Curative / Protectant		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. US registration for control of Gummy Stem Blight (***Didymella*** *bryoniae*) in cucurbits.	-
Fusarium Crown Rot (*Fusarium oxysporum f.s.p. fargariae – Fof*) **Priority: Low**							
Rated as a moderate priority in strawberries, and as a low priority in all other berry types. Fumigation is the only chemical control available and cultural controls are limited. There is some variation in susceptibility between cultivars and general hygiene and irrigation practices will assist in managing the disease.							
1,3-Dichloropropene + Chloropicrin (Telone C-35)	8B	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil Borne Diseases including **Fusarium** and Verticillium Wilts, Rhizoctonia and Pythium. ***For use by professional and registered fumigators only.***	**-**
Chloropicrin (Agrocelhone NE Soil Fumigant)	-	Fumigant	NR	A	ALL	Registered in strawberries for pre-planting control of Soil-Borne Fungus Diseases and Bacteria. ***For use by professional and registered fumigators only.***	**-**
Ethanedinitrile (EDN Fumigas)	-	Fumigant	NR	A	ALL	Registered in strawberries and **strawberry runners** for pre-planting control of Soil Borne Pathogens (*Bipolaris soroikiniana, Fusarium acuminatum,* ***Fusarium oxysporum****, Phytophthora cactorum, Phytophthora cryptogea, Pythium sulcatum, Pythium ultimum, Rhizoctonia fragariae, Rhizoctonia solani, Schlerotium rolfsi, Macrophomina phaseolina*), nematodes and weeds. ***For use by licensed fumigators or approved persons only.***	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of ***Fusarium* spp**. in legume vegetables, oilseeds, soybean, strawberry, root & tuber vegetables, artichoke, asparagus, brassica leafy vegetables, bulb vegetables, citrus, cucurbits, corn and fruiting vegetables.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM 02	Biological Soil Ameliorant	NR	P-A	ALL	Available in berries for application to soil to improve bioavailability of soil resources to horticultural crops.	-
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 (Bion) for control of Damping Off caused by *Rhizoctonia solani*, *Pythium* and ***Fusarium* sp.** in cotton.	-
Leaf Blotch / Stem-End Rot (*Gnomoniopsis fructicola*) **Priority: Low**							
Rated as a moderate priority in strawberries, and as a low priority in all other berry types. Crop hygiene is critical for managing Leaf Blotch. Fungicide control can be unreliable, particularly if sources of infection (previous crop residues) have not been removed from fields prior to planting.							
Fluazinam (Gem) Adama PER83871	29	Protectant **Strawberry runner production only**	NR	A	QLD	Permitted in strawberry runners for control of **Leaf Blotch**. Apply after transplanting when conditions favour disease development. Apply a maximum of 4 foliar applications per season, with a minimum re-treatment interval of 7 – 10 days. DO NOT use more than 2 consecutive applications. DO NOT apply to fruit producing strawberry plants. For use in strawberry runner crops only.	**-**

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Transit Rot (*Rhizopus stolonifer*) **Priority: Low**							
Rated as a moderate priority in strawberries, and as a low priority in all other berry types. Rhizopus can lead to post-harvest spoilage of strawberries. Infections can enter the fruit through wounds and is predominant in warm, moist conditions. Limited options are available for controlling the disease. Post-Harvest hygiene is a key strategy in reducing infections.							
Aureobasidium pullulans (Botector) Nufarm	-	Biological / Protectant	NR	A	ALL	Registered in strawberries for control of Botrytis Blight & Fruit Rot / Grey Mould and suppression of Anthracnose Fruit Rot, Phomopsis Fruit Rot and **Rhizopus Fruit Rot**. Apply as a preventative foliar treatment from beginning of bloom until harvest. Use up to 6 applications at 5-7 day intervals.	-
Bromo Chloro Dimethyl Hydantoin (BCDMH)	-	Sanitiser	NR	A	ALL	Registered in fruit & vegetables for control of bacteria and fungi by post-harvest surface sterilisation of fruit using spray or dip. Minimum contact 60 seconds.	-
Chlorine	M	Sanitiser	NR	A	ALL	Registered in fruit & vegetables for control of bacteria and fungi as a post-harvest spray. Minimum contact 30 seconds.	-
Fludioxonil (Scholar) Syngenta	12	Post-Harvest Treatment		P		Registered as a post-harvest dip for control of ***Rhizopus stolonifera*** in stone fruit.	R3
Alternaria Rot / Post-Harvest (*Alternaria* spp.*)* **Priority: Low**							
Rated as a moderate priority in strawberries, and as a low priority in all other berry types. Infection occurs in crop, but symptoms are not observed until after harvest. First symptoms are sunken lesions on the berries which develop into a grey-green mass of mycelium and dark green spores on the surface of the berries. Management should include strict farm hygiene, maintaining good canopy ventilation and rapid cooling of fruit after harvest in combination with post-harvest treatments.							
Bromo Chloro Dimethyl Hydantoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit & vegetables for control of bacteria and **fungi** by post-harvest surface sterilisation of fruit using spray or dip. Minimum contact 60 seconds.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Chlorine		Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit & vegetables for control of bacteria and **fungi** as a post-harvest spray. Minimum contact 30 seconds.	-
Iodine		Post-Harvest Treatment	NR	A	ALL	Registered in berries for sanitation of **post-harvest decay and diseases**. Dip fruit for a minimum of 1 minute.	-
Azoxystrobin (Amistar)	11	Protectant / Curative	1	P-A	ALL	Registered in Rubus for control of Anthracnose (*Elsinoe veneta*) and Botrytis (*Botrytis cinerea*) and Cladosporium (*Cladosporium cladosporiodes*). Registered for control of **Alternaria** in brassica leafy vegetables, brassica vegetables, carrots, nursery stock, potatoes, tomatoes (except greenhouse), citrus, passionfruit and pistachio.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Alternaria** in cucurbits, fruiting vegetables, grapes, pome fruit, stone fruit, tobacco, root & tuber vegetables, tree nuts, artichoke, asparagus, berries & small fruits, brassica leafy vegetables, bulb vegetables and citrus.	-
Bacillus amyloliquefaciens strain QST 713 (Serenade Opti) Bayer	BM 02	Biological / Protectant	NR	P-A		Registered in strawberries for control of Botrytis. US registration for control of **Alternaria** in berries, brassica vegetables, bulb vegetables, citrus, fruiting vegetables, grapes, herbs / spices, root/tuber & corm vegetables, stone fruit and tree nuts.	**-**
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	P-A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of Grey Mould, Anthracnose, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, Phomopsis and Powdery Mildew, and suppression of Rust, and permitted in blueberries for control of Grey Mould and Anthracnose and the suppression of Rust. Registered for control of **Alternaria** in apples.	-
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca macularis*). Registered for control of **Alternaria** in capsicum, chilli, eggplant, okra and tomato.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). Registered for control of **Alternaria** in citrus and passionfruit.	-
Penthiopyrad (Fontelis) Corteva	7	Protectant	NR	P-A	ALL	Registered in strawberry for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Sphaerotheca* spp.) Registered for control of **Alternaria** in pome fruit, onions, fruiting vegetables and root & tuber vegetables.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). Registered for control of **Alternaria** in potato.	R3
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	11+7	Curative / Protectant		P		Registered in almonds, cherries and macadamia for control of various leaf diseases. Registered for control of **Alternaria** in almonds.	-
Mefentrifluconazole (Belanty) BASF	3	Protectant & Curative		P		Registered for control of Powdery Mildew in grapes, control of Black Spot and Powdery Mildew and suppression of **Alternaria** in apples, control of Blossom Blight and suppression of Leaf Rust, Shot Hole and Hull Rot in almonds, control of Husk Spot in macadamias, control of Powdery Mildew and Gummy Stem Blight in cucurbits, and control of Powdery Mildew and **Target Spot** in fruiting vegetables.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Phomopsis Blight (*Phomopsis vaccinii*) **Priority: Low**							
Phomopsis Blight is rated as a moderate priority in blueberries, and as a low priority in all other berry types. The disease has the potential to cause large impacts on yield, by causing premature ripening of fruit, death of stems or whole plants, and rotted fruit. The disease causes necrotic lesions to form on the bud shortly after green tip. These lesions can spread and cause the infected buds to die. Leaf spots can develop later in the season and a fruit rot can also develop at harvest. Management includes strict orchard hygiene and removal of infected plant material, avoiding overhead irrigation, the use of resistant varieties, and timely harvest.							
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	A	ALL	Registered in berries for the control of Botrytis Blight & Fruit Rot / Grey Mould, and the suppression of Anthracnose Fruit Rot, **Phomopsis Fruit Rot** and Rhizopus Fruit Rot. Apply as a preventative treatment from beginning of bloom until harvest. Apply as part of a spray program, using up to 6 applications at 5-7 day intervals, particularly when weather conditions favour disease infection.	-
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	Protectant / Curative	3	A	ALL (excl. VIC)	Permitted in Rubus & Rubus hybrids for control of Grey Mould, Anthracnose, Alternaria Leaf Spot & Fruit Rot, Leaf Spot & Blotch, Monilinia Blight, **Phomopsis** and Powdery Mildew, and suppression of Rust, and permitted in blueberries for control of Grey Mould and Anthracnose and the suppression of Rust. Use preventatively. Commence applications from the white bud stage onwards and when conditions favour disease infection. Apply maximum 3 applications within an annual production cycle. Consecutive treatments should be applied 7-14 days apart. Do not apply more than 2 consecutive applications.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1	P-A	ALL	Registered in strawberries for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Phomopsis** in grapes.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Botryosphaeria Stem Canker (*Botryosphaeria corticis*) **Priority: Low**							
Botryosphaeria Stem Canker is rated as a moderate priority in blueberries, and as a low priority in all other berry types. The fungus overwinters in infected canes and current season stems are infected in spring. Initial symptoms are small lesions on succulent stems, which can develop into large swollen cankers. Stems may be girdled and killed as these cankers grow over the course of the growing season. Control should include removal of infected canes and general orchard hygiene practices. Fungicides are generally ineffective.							
Azoxystrobin (Amistar) PER89953	11	Protectant / Curative	1	A	ALL (excl. VIC)	Permitted in blueberries for suppression of Blueberry Rust (*Thekopsora minima*), **Stem Blight & Dieback** (*Neofusicocum* spp. / *Botryosphaeria* spp.), and Twig Blight (*Phomopsis* spp. / *Pestalotiopsis* spp.) Begin applications prior to disease development and continue with a 7-14 day retreatment interval. Maximum of 3 applications per crop, and no more than 2 consecutive applications.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of **Botryosphaeria Dieback** and Macrophomina Rot (***Botryosphaeria dothidea***) in grapes and Bot Rot (***Botryosphaeria dothidea***) in pome fruit.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	P-A	ALL	Registered in strawberries for control of Botrytis (*Botrytis cinerea*). Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). Registered for suppression of Stem End Rot (*Botryosphaeria* spp.) in avocado. US registration for control of Bot Rot (***Botryosphaeria dothidea***) in pome fruit.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative	1 NG	P-A	ALL	Registered in berries incl. raspberries, blackberries, blueberries, dewberries & currants for control of Grey Mould (*Botrytis cinerea*) and in strawberries for control of Grey Mould (*Botrytis cinerea*) and Powdery Mildew (*Podosphaeria aphanis*). US registration for control of **Botryosphaeria Blight** (*Botryosphaeria* spp.) in pistachio.	R3

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, control of Black Spot and Powdery Mildew and suppression of Alternaria in apples, control of Blossom Blight and suppression of Leaf Rust, Shot Hole and Hull Rot in almonds, control of Husk Spot in macadamias, control of Powdery Mildew and Gummy Stem Blight in cucurbits, and control of Powdery Mildew and Target Spot in fruiting vegetables. US registration for control of Panicle and Shoot Blight (***Botryosphaeria dothidea***) in tree nuts, and Black Rot (***Botryosphaeria obtusa***) and White Rot (***Botryosphaeria dothidea***) in pome fruit.	-
Bacterial Canker (*Pseudomonas syringae*) **Priority: Low**							
Bacterial Canker is rated as a low priority in all berry types. The disease overwinters in stems and buds and will infect spring growth through plant wounds caused by pruning or weather damage. Can be particularly severe in young plants because the wood is succulent and more susceptible to disease. Cankers form on the canes and buds in the canker are killed. Cultural controls are required to manage the disease, including pruning out diseased wood, avoiding late summer nitrogen applications and maintaining strict hygiene to avoid spreading the pathogen within the orchard.							
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P-A	ALL	Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of ***Pseudomonas* spp.** in berries & small fruits, fruiting vegetables, leafy vegetables, stone fruit, tobacco and tree nuts.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM02	Biological	NR	P-A	ALL	Registered in strawberries for control of Botrytis (*Botrytis cinerea*). Registered in strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). Registered for suppression of Stem End Rot (*Botryosphaeria* spp.) in avocado. US registration for control of ***Pseudomonas* spp.** in berries, cucurbits, fruiting vegetables and stone fruit.	-
Copper	M1	Protectant		P		Registered in various crops for control of bacterial diseases.	-
Acibenzolar-S-Methyl (Actigard Plant Activator) Syngenta	P01	Protectant	NR	P		Registered for the suppression of Bacterial Speck (***Pseudomonas syringae***) in tomatoes.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pestalotia Leaf Spot & Fruit Rot (*Neopestalotiopsis sp.*) **Priority: Low**							
Rated as a moderate priority in strawberries and blueberries, and as a low priority in raspberries and blackberries. Pestalotia affects the roots, crown, leaves, and fruit and can cause complete collapse of the plant. Control options are limited.							
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative	3	P-A	ALL	Registered in strawberries for control of Crown & Petiole Rot (*Colletotrichum gloeosporioides*) and Grey Mould (*Botrytis cinerea*). There are no registrations in place but Switch has proven effective in early trial work in the US.	R3

4.2 Insect and other pests of Berries

4.2.1 Insect and other pest priorities

Insects & Other Pests	Strawberry	Blueberry	Raspberry	Blackberry
Two Spotted Mite (*Tetranychus urticae*)	H	L	H	H
Cyclamen Mite (*Phytonemus pallidus*)	M	L	M	M
Broad Mite (*Polyphagotarsonemus latus*)	L	M	M	H
Red Berry Mite (*Acalitus essigi*)	L	L	M	H
Western Flower Thrips (*Frankliniella occidentalis*)	H	M	H	H
Plague Thrips (*Thrips imaginis*)	M	M	M	M
Onion Thrips (*Thrips tabaci*)	M	M	M	M
Green Vegetable Bug (*Nezara viridula*)	M	M	H	H
Rutherglen Bug (*Nysius vinitor*)	M	M	H	H
Green Stink Bug (*Chinavia hilaris*)	L	M	H	H
Cottonseed Bug (*Oxycarenus luctuosus*)	L	L	M	M
Green Mirid (*Creontiades dilutus*)	H	M	H	H
Brown Mirid (*Creontiades pacificus*)	M	M	H	H
Crop Mirid (*Sidnia kinbergi*)	M	M	H	H
Lygus / Lygaeid Bugs (Lygaeidae)	M	L	M	M
Leafhoppers / Jassids (Cicadellidae)	M	M	H	M
Light Brown Apple Moth (*Epiphyas postvittana*)	M	H	M	H
Native Budworm (*Helicoverpa punctigera*)	M	M	M	M
Cotton Bollworm (*Helicoverpa armigera*)	M	M	M	M
Loopers (*Chrysodeixis* spp.)	M	H	H	H
Queensland Fruit Fly (*Bactrocera tryoni*)	H	M	H	H
Strawberry Aphid (*Chaetosiphon fragaefolii*)	H	L	L	L
Green Peach Aphid (*Myzus persicae*)	M	M	M	H
Melon Aphid (*Aphis gossypii*)	L	L	L	M
Apple Dimpling Bug (*Campylomma liebknechti*)	L	L	M	M
Snails & Slugs (*Helix aspersa*, *Cernuella virgate*)	M	M	M	M
Leaf and Bud Nematode (*Aphelenchoides ritzemabosi*)	H	L	M	M
Root-Knot Nematode (*Meloidogyne* spp.)	M	L	L	M
Root-Lesion Nematode (*Pratylenchus* spp.)	M	L	L	M
Greenhouse Whitefly (*Trialeurodes vaporariorum*)	M	M	M	M
Cutworm (*Agrostis* spp.)	M	M	M	M

Insects & Other Pests	Strawberry	Blueberry	Raspberry	Blackberry
Red-Shouldered Leaf Beetle (*Monolepta australis*)	L	M	M	M
Garden Weevil (*Phlyctinus callosus*)	L	M	L	M
Elephant Weevil (*Orthorhinus cylindrirostris*)	L	M	L	L
Scarab Beetle / African Black Beetle (*Heteronychus arator*)	M	M	L	L
Ants (Formicidae)		M		
Chilli Thrips (*Scirtothrips dorsalis*)	M	H	M	H
Six Spotted Mite (*Eotetranychus sexmaculatus*)		M		
Mealybugs (Pseudococcidae)		M		
Scale (Coccoidea)		M		
Stem Girdler Moth		M		M
Earwigs	M			

Berries are impacted by a wide variety of insect and other pests, with different types of berries having slightly different species that are high priority.

The pests identified as a high priority in blueberries are Light Brown Apple Moth and Loopers. A broad range of mites, thrips, bugs, mirids and caterpillars are high priority in Rubus berries, as well as Queensland Fruit Fly. Strawberries also have a broad range of insect pest priorities, including Two Spotted Mite, Western Flower Thrips, Green Mirids, Strawberry Aphid, Leaf & Bud Nematode and Queensland Fruit Fly.

Queensland Fruit Fly are most active in warm, humid conditions and after rain. Adults lay their eggs in maturing and ripe fruit on bushes and sometimes in fallen fruit. A combination of control methods is required to manage Fruit Fly, including population monitoring with traps, male annihilation technology, protein bait sprays and strict orchard hygiene practices.

It is important to take an Integrated Pest Management (IPM) Approach to pest control in berries. The diversity of insects that will attack these crops mean that a planned, strategic approach is required. A range of control measures should be used, including cultural controls, biological controls and insecticides. Beneficial insects such as predators, parasitoids and pollinators should be encouraged and can be introduced artificially if required. Insecticide choice should be made with regard to preserving the beneficial insects that play an important role in the crop.

Bees also play an important role as pollinators of berries. Extra care should be taken with insect control measures used at flowering time, to avoid impacting on pollinators. Always refer to the pesticide label for guidance about preserving bees.

The diverse range of insect and mite pests in berries necessitates careful planning with resistance management. There are several pest strategies that apply to berries on the CropLife website[2].

[2] www.croplife.org.au/resources/programs/resistance-management/

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

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Two Spotted Mite *(Tetranychus urticae)* **Priority: High**								
Rated as a high priority in strawberries, raspberries and blackberries, and as a low priority in blueberries. Two Spotted Mites have many alternate hosts. Heavy infestations will cause poor plant health and can lead to large yield reductions. An Integrated Pest Management approach is particularly important for this pest, including the preservation of beneficial arthropods in the crop and cultural measures such as minimising dust.								
Abamectin	6	Ingestion	7	A	ALL	Registered in blackberries and raspberries for control of Queensland Fruit Fly and **Two-Spotted Mite**. Apply as a foliar application using a minimum retreatment interval of 28 days. Maximum of 2 applications per season.	M Bee:H	-
			3			Registered in strawberries for control of **Two-Spotted Mite**. Apply on first appearance of mites. When applied early, one application may be sufficient to give effective control however if mite numbers exceed 3-5 mitres per leaflet, apply 2 applications at 7-10 day interval. DO NOT apply more than 2 applications per season.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Abamectin PER91106	6	Ingestion	NR	A	NSW, QLD, TAS & WA	Permitted in blueberries (staff and contracted growers of Costa Exchange only) for control of Six-Spotted Mite (*Eotetranychus sexmaculatus*) and **Two-Spotted Mite** (*Tetranychus urticae*). Apply as a foliar spray early in the infestation, using a minimum retreatment interval of 28 days. Maximum of 2 applications per season.	M Bee:H	-
Bifenazate	20D	Contact & Ingestion	1 G:7	A	ALL	Registered in strawberries for control of **Two-Spotted Mite** and Bryobia Mite. Do not apply more than 2 applications per growing season. Do not reapply within 21 days of the previous application. A different acaricide should be used between applications.	L Bee:H	-
Bifenazate PER14425	20D	Contact & Ingestion	1 G:28	A	ALL (excl. VIC)	Permitted in blackberries and raspberres for control of **Two Spotted Mite** (*Tetranychus urticae*) and European Red Spider Mite (*Panonychus ulmi*). Apply as a foliar spray when mites first appear, using a minimum retreatment interval of 21 days. Maximum of 2 applications per season.	L Bee:H	-
Botanical Oil (Eco-Oil)	-	Contact	NR	A	ALL	Registered in strawberries for control of **Two Spotted Mite**, Aphids and Sooty Mould. Spray when pest first appears. Apply 2 sprays 3-5 days apart. Repeat at signs of reinfestation. DO NOT apply more than 3 sprays to plants within a 4-8 week period.	L Bee:L	-
Botanical Oil (Eco-Oil) PER14234	-	Contact	NR	A	ALL (excl. VIC)	Permitted in blueberries, *Rubus* spp. and *Ribes* spp. for control of **Two Spotted Mite** (*Tetranychus urticae*). Apply as a foliar spray when mites first appear. Apply 2 sprays at a retreatment interval of 3-5 days. Subsequent treatments should use a minimum retreatment interval of 7 days. Do not apply more than 3 separate sprays within a 4-8 week period.	L Bee:L	-
Cyflumetofen (Danisaraba) BASF	25A	Contact	1	A	ALL	Registered in strawberry for control of **Two Spotted Mite** (*Tetranychus urticae*) and European Red Mite (*Panonychus ulmi*). Apply as a foliar spray using a retreatment interval of 14 days. Maximum of 2 applications per season.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dimethoate	1B	Contact / **Strawberry runner production only**	NR	A	ALL	Registered in strawberry runners for control of Aphids, Thrips, Jassids, **Spider Mites**, Strawberry Bug and Rutherglen Bug. Apply when pests first appear and repeat at 3 weekly intervals or as necessary. DO NOT apply to the whole field area. Apply to the bed, planted area or area covered by plants only, not areas such as walkways. Treatments per season not limited.	H Bee:H	R1
Ethyl Formate	-	Fumigant	NR	A	ALL	Registered in blueberries as a post-harvest fumigation treatment for the control of Light Brown Apple Moth, Red Back Spiders, **Two Spotted Mite**, Long Tailed Mealy Bug, Western Flower Thrips and Plague Thrips. Use only approved fumigation equipment. Treatment chamber must remain completely sealed for 1 hour exposure period.	-	-
Etoxazole PER89406	10B	Contact / IGR	1 NG	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of **Two Spotted Mite** (*Tetranychus urticae*) and Bean Spider Mite (*Tetranychus ludeni*). Apply as a foliar cover when mites first appear. Maximum of 1 application per season.	L Bee:VL	-
Fenbutatin Oxide (Torque) BASF	12B	Contact	1	A	QLD, NSW, VIC, SA, WA & NT	Registered in strawberries for control of **Two Spotted Mite.** Apply at first sign of mite activity. Repeat as required, subject to resistance management. Treatments per season not limited.	L Bee:L	R3
Fenbutatin Oxide PER89407	12B	Contact	1 NG	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of **Two Spotted Mite** (*Tetranychus urticae*), European Red Mite (*Pananychus ulmi*), Broad Mite (*Polyphagotarsonemus latus*), Bean Spider Mite (*Tetranychus ludeni*) and Red Berry Mite (*Acalitus essigi*). Apply as a foliar cover when mites first appear. Maximum of 2 applications per season with a 14 day retreatment interval.	L Bee:L	R3
Fenbutatin Oxide + Hexythiazox	12B + 10A	Contact / IGR	1	A	ALL	Registered in strawberries for control of **Two Spotted Mite** (*Tetranychus urticae*). Apply as a foliar spray in the early stages of infestation. Maximum of 1 application per season.	L Bee:L	R3
Hexythiazox (Calibre) Nufarm	10A	Contact / IGR	1	A	ALL	Registered in strawberries for control of **Two Spotted Mite.** Apply when mites are evident but before the infestation reaches a level where economic damage is imminent. Do not use more than 1 application per season.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Milbemectin (Milbeknock) Sipcam	6	Ingestion	1	A	ALL	Registered in strawberries for control of **Two Spotted Mite.** Apply on first appearance of mites. When applied early, one application may be sufficient to give effective control however if mite numbers exceed local thresholds a second application may be required. DO NOT apply more than 2 consecutive applications within or between season without an unrelated chemical being used in between.	M Bee:VH	-
Paraffinic Oil	-	Contact	1	A	ALL	Registered in blueberries for control of **Mites** and Scale. Spray no more than 4 times during growing season with 2 weeks minimum application interval. Do not spray stressed plants and avoid spraying open blooms.	L Bee:L	-
					NSW, ACT, SA, WA & TAS	Registered in strawberries for control of Aphids and **Mites**. Spray no more than 4 times during growing season with 2 weeks minimum application interval. Do not spray stressed plants and avoid spraying open blooms.		
Petroleum / Paraffinic Oil PER13957	-	Contact	1	A	ALL (excl. VIC)	Permitted in *Rubus* spp. and *Ribes* spp. for control of **Two Spotted Mite** (*Tetranychus urticae*) and Scale Insects. Apply as a foliar spray using a 5-7 day retreatment interval. Maximum number of applications per season not specified.	L Bee:L	-
Propargite (Omite)	12C	Contact	3	A	ALL (excl. SA)	Registered in strawberries for control of **Two Spotted Mite.** Spray when pests first appear. A maximum of 3 sprays applied over 3-4 weeks may be necessary. DO NOT mix with other pesticides or foliar nutrients and do not spray when temperature exceeds 27 deg C.	M Bee:L	R3
Sulfur PER87245	M2	Contact	NR	A	ALL	Permitted in blackberries for control of Broad Mite (*Polyphagotarsonemus latus*), **Two-Spotted Mite** (*Tetranychus urticae*), Bean Spider Mite (*Tetranychus ludeni*) and Red Berry Mite (*Acalitus essigi*). Apply as a foliar spray on new growing canes during the vegetative growth stage, using a retreatment interval of 7-14 days. Maximum of 10 applications per season.		-
Acequinocyl (Kanemite) UPL	20B	Contact & Ingestion		P		Registered for control of **Two-Spotted Mite** in pome fruit and stone fruit. US registration for control of Spider Mite in low growing berries.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Isocycloseram (Simodis) Syngenta	30	Ingestion		P		Registered for control of Diamond Back Moth, Cabbage White Butterfly and suppression of Heliothis in brassica vegetables and brassica leafy vegetables, suppression of Onion Thrips and Plague Thrips in bulb vegetables, control of **Two Spotted Mite** and Cucumber Moth and suppression of Broad Mite, Bean Red Spider Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in cucurbits, and control of **Two Spotted Mite** and Broad Mite and suppression of Tomato Russet Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in fruiting vegetables.	H Bee:VH	-
Spiromesifen (Oberon) Bayer	23	Ingestion		P		Registration pending for control of Mites in various crops. Hort Innovation is undertaking data generation projects across multiple commodities for a new label registration in Australia, including project ST19020 for control of various mites in *Rubus* spp. and strawberries. US registration for control of **Two Spotted Mite** in low growing berries.	M Bee:VL	-
Cyclamen Mite (*Phytonemus pallidus*) **Broad Mite** (*Polyphagotarsonemus latus*) **Red Berry Mite** (*Acalitus essigi*) **Six Spotted Mite** (*Eotetranychus sexmaculatus*) **Priority: Moderate**								
A range of secondary mites impact berries, including Cyclamen Mite which is rated as a moderate priority in strawberries, raspberries and blackberries, Broad Mite which is rated as a high priority in blackberries and as a moderate priority in raspberries and blueberries, and Red Berry Mite which is rated as a high priority in blackberries and as a moderate priority in raspberries. Six Spotted Mite is rated as a moderate priority in blueberries, but is specific to growing regions in WA and TAS. An Integrated Pest Management approach is particularly important for these pests, including the preservation of beneficial arthropods in the crop and cultural measures such as minimising dust.								
Abamectin PER91106	6	Ingestion	NR	A	NSW, QLD, TAS & WA	Permitted in blueberries (staff and contracted growers of Costa Exchange only) for control of **Six-Spotted Mite** (*Eotetranychus sexmaculatus*) and Two-Spotted Mite (*Tetranychus urticae*). Apply as a foliar spray early in the infestation, using a minimum retreatment interval of 28 days. Maximum of 2 applications per season.	M Bee:H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dimethoate	1B	Contact	1	A	ALL	Registered in blueberry for control of **Spider Mites**, Thrips, Jassids, Aphids and Redlegged Earth Mite. Apply as a foliar spray using a minimum retreatment interval of 21 days. Maximum of 7 applications per season.	H Bee:H	R1
			7			Registered in blackberries and raspberries for control of **Spider Mites**, Thrips, Jassids, Aphids and Redlegged Earth Mite. Apply as a foliar spray when pest first appears and use a retreatment interval of 21 days. Maximum number of applications per season not specified.		
Dimethoate	1B	Contact / **Strawberry runner production only**	NR	A	ALL	Registered in strawberry runners for control of Aphids, Thrips, Jassids, **Spider Mites**, Strawberry Bug and Rutherglen Bug. Apply when pests first appear and repeat at 3 weekly intervals or as necessary. DO NOT apply to the whole field area. Apply to the bed, planted area or area covered by plants only, not areas such as walkways. Treatments per season not limited.	H Bee:H	R1
Fenbutatin Oxide PER89407	12B	Contact	1 NG	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of Two Spotted Mite (*Tetranychus urticae*), European Red Mite (*Pananychus ulmi*), **Broad Mite** (*Polyphagotarsonemus latus*), Bean Spider Mite (*Tetranychus ludeni*) and **Red Berry Mite** (*Acalitus essigi*). Apply as a foliar cover when mites first appear. Maximum of 2 applications per season with a 14 day retreatment interval.	L Bee:L	R3
Paraffinic Oil	-	Contact	1	A	ALL	Registered in blueberries for control of **Mites** and Scale. Spray no more than 4 times during growing season with 2 weeks minimum application interval. Do not spray stressed plants and avoid spraying open blooms.	L Bee:L	-
					NSW, ACT, SA, WA & TAS	Registered in strawberries for control of Aphids and **Mites**. Spray no more than 4 times during growing season with 2 weeks minimum application interval. Do not spray stressed plants and avoid spraying open blooms.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Sulfur PER87245	M2	Contact	NR	A	ALL	Permitted in blackberries for control of **Broad Mite** (*Polyphagotarsonemus latus*), Two-Spotted Mite (*Tetranychus urticae*), Bean Spider Mite (*Tetranychus ludeni*) and **Red Berry Mite** (*Acalitus essigi*). Apply as a foliar spray on new growing canes during the vegetative growth stage, using a retreatment interval of 7-14 days. Maximum of 10 applications per season.		-
Acequinocyl (Kanemite) UPL	20B	Contact & Ingestion		P		Registered for control of Two-Spotted Mite in pome fruit and stone fruit. US registration for control of Spider Mite in low growing berries and control of **Broad Mite** in melons and okra.	L Bee:L	-
Isocycloseram (Simodis) Syngenta	30	Ingestion		P		Registered for control of Diamond Back Moth, Cabbage White Butterfly and suppression of Heliothis in brassica vegetables and brassica leafy vegetables, suppression of Onion Thrips and Plague Thrips in bulb vegetables, control of Two Spotted Mite and Cucumber Moth and suppression of **Broad Mite**, Bean Red Spider Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in cucurbits, and control of Two Spotted Mite and **Broad Mite** and suppression of Tomato Russet Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in fruiting vegetables.	H Bee:VH	-
Spiromesifen (Oberon) Bayer	23	Ingestion		P		Registration pending for control of Mites in various crops. Hort Innovation is undertaking data generation projects across multiple commodities for a new label registration in Australia, including project ST19020 for control of various mites in *Rubus* spp. and strawberries. US registration for control of **Broad Mite** in fruiting vegetables and Two Spotted Mite in low growing berries.	M Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Western Flower Thrips (*Frankliniella occidentalis*) **Plague Thrips** (*Thrips imaginis*) **Onion Thrips** (*Thrips tabaci*) **Chilli Thrips** (*Scirtothrips dorsalis*) **Priority: High**								
Western Flower Thrips is the most significant thrips species, rated as a high priority in strawberries, raspberries and blackberries and as a moderate priority in blueberries. Chilli Thrips are rated as a high priority in blueberries and blackberries, and as a moderate priority in strawberries and raspberries. Plague Thrips and Onion Thrips are rated as a moderate priority in all berry types, however their management is closely linked to Western Flower Thrips. Thrips are most active in crops during spring. They can cause substantial damage by rasping the surface of the fruit with their mouthparts. All thrips are difficult to control with insecticides, and Western Flower Thrips are particularly prone to developing insecticide resistance. Options are limited and products often give only partial control. Biological agents are commonly used to support chemical controls.								
Cyantraniliprole (Benevia) FMC	28	Ingestion	1	A	ALL	Registered in strawberries for control of Cluster Caterpillar, Cotton Bollworm, Light Brown Apple Moth, Native Budworm, Green Peach Aphid, Melon Aphid, Strawberry Aphid and suppression of **Onion Thrips**, **Plague Thrips** and **Western Flower Thrips**. More active on nymphs than adults, it should be applied to a newly developing infestation. To maximise efficacy apply sequential treatments. A maximum of 2 applications to be used per season. Apply on a 7-10 day spray interval.	L-M Bee:VH	-
Dimethoate	1B	Contact	1	A	ALL	Registered in blueberry for control of Spider Mites, **Thrips**, Jassids, Aphids and Redlegged Earth Mite. Apply as a foliar spray using a minimum retreatment interval of 21 days. Maximum of 7 applications per season.	H Bee:H	R1
			7			Registered in blackberries and raspberries for control of Spider Mites, **Thrips**, Jassids, Aphids and Redlegged Earth Mite. Apply as a foliar spray when pest first appears and repeat at 21-day intervals or as necessary. Maximum number of applications per season not specified.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dimethoate	1B	Contact **Strawberry runner production only**	NR	A	ALL	Registered in **strawberry runners** for control of Aphids, **Thrips**, Jassids, Spider Mites, Strawberry Bug and Rutherglen Bug. Apply when pest first appears and repeat at 3 weekly intervals or as necessary. DO NOT apply to the whole field area. Apply to the bed, planted area or area covered by plants only, not areas such as walkways. Treatments per season not limited.	H Bee:H	R1
Ethyl Formate	-	Contact / Post-Harvest Fumigation	NR	A	ALL	Registered in blueberry for post-harvest control of **Western Flower Thrips** and **Plague Thrips**, and in strawberries for post-harvest control of **Western Flower Thrips**. Use only approved fumigation equipment. Treatment chamber must remain completely sealed for 1 hour exposure period.	-	-
Methomyl (Lannate)	1A	Contact	5	A	NSW, WA	Registered in blueberry for control of Monolepta Beetle (*Monolepta australis*), *Helicoverpa* spp. and **Plague Thrips** (*Thrips imaginis*). Apply as a foliar spray when pest incidence on flowers is high. Retreatment interval and maximum number of applications per season not specified.	H Bee:H	R2
Methomyl (Lannate) PER87495	1A	Contact	5	A	ALL (excl. WA & NSW)	Permitted in blueberry for control of Monolepta Beetle (*Monolepta australis*), *Helicoverpa* spp. and **Plague Thrips** (*Thrips imaginis*). Apply as a foliar spray when pest incidence on flowers is high. Retreatment interval and maximum number of applications per season not specified.	H Bee:H	R2
Spinetoram (Success Neo) Corteva	5	Contact & Ingestion	1	A	ALL	Registered in berryfruit for control of Loopers, Light Brown Apple Moth, Helicoverpa and **Western Flower Thrips**. Make 3 consecutive applications at either 3-5 day intervals when temperatures are greater than 20 deg C or at 6-12 day intervals when temperatures are less than 20 deg C. Any further sprays required should be from a different chemical group.	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinosad (Entrust Organic) Corteva	5	Contact & Ingestion	1	A	ALL	Registered in berry fruit for control of Loopers, Light Brown Apple Moth, Helicoverpa and **Western Flower Thrips**. Make 3 consecutive applications at either 3-5 day intervals when temperatures are greater than 20 deg C or at 6-12 day intervals when temperatures are less than 20 deg C. Any further sprays required should be from a different chemical group.	L Bee:H	-
Spirotetramat (Movento) Bayer	23	Ingestion	1	P-A	ALL	Registered in blueberries for control of Soft Brown Scale and White Wax Scale. Registered for control of **Western Flower Thrips** in green beans, eggplant, peppers, tomato and lettuce, control of **Western Flower Thrips** and **Plague Thrips** in celery, rhubarb, herbs and bulb vegetables (excluding onions), and control of **Plague Thrips** in grapes.	M Bee:L	-
Beauveria bassiana (Velifer) BASF	UN			P		Registered for suppression of **Onion Thrips** and **Western Flower Thrips** in protected vegetables and ornamentals and has activity on Thrips, Aphids, Whitefly and Mites.	L Bee:L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids, Blueberry Thrips and Blueberry Maggot in bushberries.	L Bee:L	-
Isocycloseram (Simodis) Syngenta	30	Ingestion		P		Registered for control of Diamond Back Moth, Cabbage White Butterfly and suppression of Heliothis in brassica vegetables and brassica leafy vegetables, suppression of **Onion Thrips** and **Plague Thrips** in bulb vegetables, control of Two Spotted Mite and Cucumber Moth and suppression of Broad Mite, Bean Red Spider Mite, **Western Flower Thrips**, Tomato Thrips, Melon Thrips, **Plague Thrips** and Heliothis in cucurbits, and control of Two Spotted Mite and Broad Mite and suppression of Tomato Russet Mite, **Western Flower Thrips**, Tomato Thrips, Melon Thrips, **Plague Thrips** and Heliothis in fruiting vegetables.	H Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Green Vegetable Bug *(Nezara viridula)* **Rutherglen Bug** *(Nysius vinitor)* **Green Stink Bug** *(Chinavia hilaris)* **Cottonseed Bug** *(Oxycarenus luctuosus)* **Apple Dimpling Bug** *(Campylomma liebknechti)* **Priority: High**								
Green Vegetable Bug and Rutherglen Bug are rated as a high priority in raspberries and blackberries, and as a moderate priority in strawberries and blueberries. Green Stink Bug is rated as a high priority in raspberries and blackberries, as a moderate priority in blueberries, and as a low priority in strawberries. Cottonseed Bug and Apple Dimpling Bug are rated as a moderate priority in raspberries and blackberries, and as a low priority in strawberries and blueberries. Green Stink Bug and Green Vegetable Bug cause similar feeding damage, by piercing and sucking sap from buds and blossoms. Green Stink Bug will also feed directly on fruit causing discolouration and reduced firmness. Rutherglen Bug are a seasonal pest that is most prevalent in spring and summer during warm, dry periods and when surrounding weeds are drying off. They cause damage by sucking sap from fruit and leaves. Cottonseed Bug and Apple Dimpling Bug can swarm in large numbers and will cause significant damage to ripening fruit.								
Acetamiprid + Pyriproxyfen (Trivor) Adama PER91601	4A+7C	Contact & Ingestion / IGR	7	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of **Cottonseed Bug** (*Oxycarenus luctuosus*), Green Potato Bug (*Cuspicona simplex*), **Green Vegetable Bug** (*Nezara viridula*), Leafhoppers (*Empoasca* spp.), Light Brown Apple Moth (*Epiphyas postvittana*), Mealybugs (Pseudococcidae), Planthoppers (Fulgoroidea) and Scale Insects (Coccidae) and suppression of Mediterranean Fruit Fly (*Ceratitis capitata*) and Queensland Fruit Fly (*Bactrocera tryoni*). Apply as a foliar spray using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:H	-
Carbaryl	1A	Contact	7	A	ALL	Registered in raspberries for control of Grasshoppers, Heliothis, Mealy Bug, **Rutherglen Bug**, Weevils, Armyworm, Light Brown Apple Moth, Raspberry Fruit Caterpillar and Wingless Grasshopper. Apply at first signs of pest and repeat as required. Retreatment interval and maximum number of applications per season not specified.	H Bee:H	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dimethoate	1B	Contact	1	A	QLD, VIC, TAS, SA & WA	Registered in blueberry for control of Strawberry Bug and **Rutherglen Bug**. Apply as a foliar spray using a minimum retreatment interval of 21 days. Maximum of 7 applications per season.	H Bee:H	R1
			7			Registered in blackberries and raspberries for control of Strawberry Bug and **Rutherglen Bug**. Apply as a foliar spray when pest first appears and repeat at 21-day intervals or as necessary. Maximum number of applications per season not specified.		
Dimethoate	1B	Contact **Strawberry runner production only**	NR	A	ALL	Registered in **strawberry runners** for control of Aphids, Thrips, Jassids, Spider Mites, Strawberry Bug and **Rutherglen Bug**. Apply when pest first appears and repeat at 3 weekly intervals or as necessary. DO NOT apply to the whole field area. Apply to the bed, planted area or area covered by plants only, not areas such as walkways. Treatments per season not limited.	H Bee:H	R1
Flonicamid (Mainman) UPL PER89214	29	Ingestion	3	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Mirids (Miridae), Jassids / Leafhoppers (Cicadellidae), Aphids (Aphidae), Greenhouse Whitefly (*Trialeurodes vaporariorum*) and suppression of **Green Vegetable Bug** (*Nezara viridula*) and **Rutherglen Bug** (*Nysius vinitor*). Apply as a foliar spray using a minimum retreatment interval of 7 days. Maximum of 3 applications per season. Hort Innovation is generating data to support a label extension for control of Green Stink Bug in raspberries and blackberries.	M Bee:VL	-
Maldison PER13542	1B	Contact	3	A	ALL (excl. VIC)	Permitted in strawberries for control of **Rutherglen Bug** (*Nysius vinitor*) and Lygaeid Bugs (Lygaeidae). Apply as a foliar spray when pests first appear. Use a minimum retreatment interval of 7 days. Maximum of 3 applications per season.	H Bee:H	-
Pyrethrins (Pyganic)	3A	Contact	NR	A	ALL	Registered in berries as a cleanup spray just prior to harvest for control of Fruit Fly, **Rutherglen Bug** and Spiders.	VH Bee:H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Pyrethrins (Pyganic) PER80070	3A	Contact	NR NG	A	ALL	Permitted in rubus, ribes & blueberry for control of Monolepta Beetle (*Monolepta australis*), **Green Vegetable Bug** (*Nezara viridula*) and **Green Stink Bug** (*Plautia affinis*). Apply as a foliar spray, with the first spray at about 50% egg hatching (pest is at first instar) and a follow up spray at 100% egg hatch. Use a minimum retreatment interval of 1-2 days. Maximum number of applications per season not specified.	VH Bee:H	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	1	A	ALL	Registered in cane berries (incl. blackberries and raspberries) for control of Green Peach Aphid, Greenhouse Whitefly, Mirids, **Apple Dimpling Bug**, **Rutherglen Bug** and Scale Insects (*Coccidae* spp., *Diaspididae* spp.) Apply as a foliar spray, using a retreatment interval of 7 days if required. Maximum of 2 applications per season.	M Bee:VH	-
						Registered in strawberries for control of Green Peach Aphid, Green Mirid and **Rutherglen Bug**. Apply as a foliar spray, using a retreatment interval of 7 days if required. Maximum of 4 applications per season with no more than 2 consecutive.		
Sulfoxaflor (Transform) Corteva PER90208	4C	Contact & Ingestion	1	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Green Peach Aphid (*Myzus persicae*), **Cottonseed Bug** (*Oxycarenus luctuosus*), Green Mirids and Brown Mirids (*Creontiades dilutus* and *C. pacificus*), Greenhouse Whitefly (*Trialeurodes vaporariorum*), **Apple Dimpling Bug** (*Campylomma liebknechti*) and suppression of Scale (*Coccidae* spp., *Diaspididae* spp.) and **Rutherglen Bug** (*Nysius vinitor*). Apply as a foliar cover spray at first signs of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Sulfoxaflor (Transform) Corteva PER91327	4C	Contact & Ingestion	1	A	ALL (excl. VIC)	Permitted in blueberries for control of Green Peach Aphid (*Myzus persicae*), **Cottonseed Bug** (*Oxycarenus luctuosus*), Scale insects (*Coccidae* spp., *Diaspididae* spp., *Eriococcidae* spp.), **Green Stink Bug** (*Plautia affinis*) and Flatid Leaf Hopper (*Flatormenis* spp.) Apply as a foliar cover spray at first signs of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:VH	-
Clothianidin (Shield) Sumitomo	4A	Contact & Ingestion		P		Registered for control of **Green Vegetable Bug** in cotton.	M Bee:H	R2
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. Hort Innovation is generating data to support a label extension for control of Green Stink Bug, Green Vegetable Bug and Cottonseed Bug in blueberries, strawberries, raspberries and blackberries. US registration for control of Aphids, Blueberry Thrips and Blueberry Maggot in bushberries.	L Bee:L	-
Green Mirid (*Creontiades dilutus*) **Brown Mirid** (*Creontiades pacificus*) **Crop Mirid** (*Sidnia kinbergi*) **Priority: High**								
Green Mirid are rated as a high priority in strawberries, raspberries and blackberries, and as a moderate priority in blueberries. Brown Mirid and Crop Mirid are rated as a high priority in raspberries and blackberries, and as a moderate priority in strawberries and blueberries. Mirids are a problem in all regions but their importance is less in the more northern growing areas. Adults and nymphs pierce plant tissue and release a chemical that destroys cells in the feeding zone. They damage buds, flower and growing points through feeding. This results in reduced berry weight and increased fruit distortion.								
Flonicamid (Mainman) UPL	29	Ingestion	1	A	ALL	Registered in strawberries for control of Aphids including Green Peach Aphid (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and **Green Mirid** (*Creontiades dilutes*). Apply as foliar spray at the first sign of insect pest infestation. DO NOT apply more than 3 applications per crop, with a minimum 7-day retreatment interval between applications.	M Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flonicamid (Mainman) UPL PER82958	29	Ingestion	1	A	ALL (excl. VIC)	Permitted in strawberries for control of Aphids including Green Peach Aphid (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and **Green Mirid** (*Creontiades dilutes*). Apply as foliar spray at the first sign of insect pest infestation. DO NOT apply more than 3 applications per crop, with a minimum 7-day retreatment interval between applications.	M Bee:VL	-
Flonicamid (Mainman) UPL PER89214	29	Ingestion	3	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of **Mirids** (Miridae), Jassids / Leafhoppers (Cicadellidae), Aphids (Aphidae), Greenhouse Whitefly (*Trialeurodes vaporariorum*) and suppression of Green Vegetable Bug (*Nezara viridula*) and Rutherglen Bug (*Nysius vinitor*). Apply as a foliar spray using a minimum retreatment interval of 7 days. Maximum of 3 applications per season.	M Bee:VL	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	1	A	ALL	Registered in cane berries (incl. blackberries and raspberries) for control of Green Peach Aphid, Greenhouse Whitefly, **Mirids**, Apple Dimpling Bug, Rutherglen Bug and Scale Insects (*Coccidae* spp., *Diaspididae* spp.) Apply as a foliar spray, using a retreatment interval of 7 days if required. Maximum of 2 applications per season. Registered in strawberries for control of Green Peach Aphid, **Green Mirid** and Rutherglen Bug. Apply as a foliar spray, using a retreatment interval of 7 days if required. Maximum of 4 applications per season with no more than 2 consecutive.	M Bee:VH	-
Sulfoxaflor (Transform) Corteva PER90208	4C	Contact & Ingestion	1	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Green Peach Aphid (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), **Green Mirids** and **Brown Mirids** (*Creontiades dilutus* and *C. pacificus*), Greenhouse Whitefly (*Trialeurodes vaporariorum*), Apple Dimpling Bug (*Campylomma liebknechti*) and suppression of Scale (*Coccidae* spp., *Diaspididae* spp.) and Rutherglen Bug (*Nysius vinitor*). Apply as a foliar cover spray at first signs of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Paraffinic Oil	-	Contact	1	P-A	ALL	Registered in blueberries for control of Mites and Scale. Registered in cotton for control of **Green Mirids**.	L Bee:L	-
					NSW, ACT, SA, WA & TAS	Registered in strawberries for control of Aphids and Mites. Registered in cotton for control of **Green Mirids**.		
Petroleum / Paraffinic Oil PER13957	-	Contact	1	P-A	ALL (excl. VIC)	Permitted in *Rubus* spp. and *Ribes* spp. for control of Two Spotted Mite (*Tetranychus urticae*) and Scale Insects. Registered in cotton for control of **Green Mirids**.	L Bee:L	-
Clitoria ternatea Extract (Sero-X) Growth Agriculture	-	Biological	NR	P		Registered in cotton for control of *Helicoverpa* spp., **Green Mirids** and Silverleaf Whitefly and in brassica leafy vegetables for control of Diamondback Moth.	L Bee:VL	-
Fipronil (Regent) BASF	2B	Contact		P		Registered in cotton for control of **Green Mirids**.	M Bee:VH	
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids, Blueberry Thrips and Blueberry Maggot in bushberries.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Light Brown Apple Moth (*Epiphyas postvittana*) **Native Budworm** (*Helicoverpa punctigera*) **Cotton Bollworm** (*Helicoverpa armigera*) **Loopers** (*Chrysodeixis* spp.) **Priority: High**								
Light Brown Apple Moth is rated as a high priority in blueberries and blackberries, and as a moderate priority in strawberries and raspberries. Native Budworm and Cotton Bollworm are rated as a moderate priority in all berry types. Loopers are rated as a high priority in blueberries, raspberries and blackberries, and as a moderate priority in strawberries. Light Brown Apple Moth can cause significant feeding damage to fruit, reducing yields and marketability of berries. Loopers cause damage by feeding predominantly on leaves, although they can also attack growing tips, flowers and fruit. *Helicoverpa* spp. damage is caused by the larval stage. After hatching, they crawl around the plant feeding, particularly on tender tissues such as plant tips, flowers and fruit. Preservation and introduction of beneficial predators and parasitoids is a good strategy to support the judicious use of selective insecticides, particularly to protect flowers and the developing fruit.								
Acetamiprid + Pyriproxyfen (Trivor) Adama PER91601	4A+7C	Contact & Ingestion / IGR	7	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of Cottonseed Bug (*Oxycarenus luctuosus*), Green Potato Bug (*Cuspicona simplex*), Green Vegetable Bug (*Nezara viridula*), Leafhoppers (*Empoasca* spp.), **Light Brown Apple Moth** (*Epiphyas postvittana*), Mealybugs (Pseudococcidae), Planthoppers (Fulgoroidea), Scale Insects (Coccidae) and for suppression of Mediterranean Fruit Fly (*Ceratitis capitata*) and Queensland Fruit Fly (*Bactrocera tryoni*). Apply as a foliar spray at first signs of pest infestation. Use a minimum retreatment interval of 14 days and apply a maximum of 2 treatments per season.	M Bee:H	-
Bacillus thuringiensis Berliner subsp. *aizawai* strain GC-91 (Bacchus WG) Campbell	11C	Ingestion	NR	A	ALL	Registered in fruit crops for control of Armyworm, **Cotton Bollworm**, **Native Budworm**, Cabbage Moth, Cabbage White Butterfly, **Loopers**, **Light Brown Apple Moth** and Vine Moth. Time spraying to coincide with egg hatch. Treatments per season not limited.	VL Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Carbaryl	1A	Contact	7	A	ALL	Registered in raspberry for control of **Light Brown Apple Moth**, **Heliothis**, Mealy Bug, Rutherglen Bug, Weevils and Armyworm. Apply at first sign of pest and repeat as required. Maximum number of treatments per season not specified.	H Bee:H	R2
Chlorantraniliprole (Coragen) FMC	28	Ingestion	1	A	ALL	Registered in strawberries for control of Cluster Caterpillar (*Spodoptera litura*), **Cotton Bollworm** (*Helicoverpa armigera*) and **Native Budworm** (*Helicoverpa punctigera*). Apply as a foliar spray, targeting against eggs and newly hatched larvae before they become entrenched. Use a minimum retreatment interval of 7 days. Maximum of 3 applications per season, with no more than 2 consecutive.	L Bee:VL	-
Chlorantraniliprole (Coragen) FMC PER84178	28	Ingestion	3	A	ALL (excl. VIC)	Permitted in blueberries for control of **Lepidopteran Pests**. Commence applications when populations reach determined economic threshold levels. Do not apply more than 3 applications per crop, with a minimum retreatment interval of 7 days between sprays.	L Bee:VL	-
Cyantraniliprole (Benevia) FMC	28	Ingestion	1 NG	A	ALL	Registered in strawberries for control of Cluster Caterpillar (*Spodoptera litura*), **Cotton Bollworm** (*Helicoverpa armigera*), **Light Brown Apple Moth** (*Epiphyas postvittana*), **Native Budworm** (*Helicoverpa punctigera*), Green Peach Aphid (*Myzus persicae*), Melon Aphid (*Aphis gossypii*), Strawberry Aphid (*Chaetosiphon fragaefolii*), and for suppression of Onion Thrips (*Thrips tabaci*), Plague Thrips (*Thrips imaginis*) and Western Flower Thrips (*Frankliniella accidentalis*). Use a treatment interval of 7-10 days. Maximum of 2 applications per season.	L Bee:L	-
Deltamethrin	3A	Contact	1	A	QLD, WA	Registered in berry vegetables for control of **Native Budworm** (*Helicoverpa punctigera*). Apply as a foliar spray using a retreatment interval of 7-14 days. Maximum number of treatments per season not specified.	VH Bee:H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Emamectin (Proclaim) Syngenta	6	Ingestion	3 NG	A	ALL	Registered in strawberries for control of Cluster Caterpillar (*Spodoptera litura*), **Heliothis** (*Helicoverpa* spp.), **Light Brown Apple Moth** (*Epiphyas postvittana*) and **Loopers** (*Chrysodeixis* spp.). Minimum retreatment interval of 7 days. Maximum of 3 applications per season.	M Bee:H	-
Emamectin (Proclaim) Syngenta PER85422	6	Ingestion	5	A	ALL (excl. VIC)	Permitted in blueberries for control of Lepidopteran Pests. Apply at first signs of infestation. Do not apply more than 4 foliar applications per crop with a minimum retreatment interval of 14 days between consecutive sprays. Apply no more than 2 applications sequentially before using an insecticide from a different MoA group for 2 applications.	M Bee:H	-
Ethyl Formate	-	Fumigant	NR	A	ALL	Registered in blueberries as a post-harvest fumigation treatment for the control of **Light Brown Apple Moth**, Red Back Spiders, Two Spotted Mite, Long Tailed Mealy Bug, Western Flower Thrips and Plague Thrips. Use only approved fumigation equipment. Treatment chamber must remain completely sealed for 1 hour exposure period.	-	-
Flubendiamide (Belt) Bayer	28	Ingestion	1	A	ALL	Registered in strawberries for control of **Heliothis** (*Helicoverpa* spp.) and Cluster Caterpillar (*Spodoptera litura*). Apply as a foliar spray at egg hatch or very soon after egg hatch to target young larvae. Use a retreatment interval of 7-14 days. Maximum of 3 treatments per season.	L Bee:L	-
Indoxacarb (Avatar Evo) FMC	22A	Ingestion	7	A	ALL	Registered in blueberries for control of **Light Brown Apple Moth**. Apply as eggs and larvae reach economic thresholds and damage is observed. Do not use more than 2 applications per crop and do not use a retreatment interval of less than 7 days.	M Bee:H	R3
			3			Registered in *Rubus* spp. for control of **Light Brown Apple Moth**. Apply as eggs and larvae reach economic thresholds and damage is observed. Do not use more than 2 applications per crop and do not use a retreatment interval of less than 7 days.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Indoxacarb (Avatar) FMC PER13289	22A	Ingestion	3	A	ALL	Permitted in blueberries & *Rubus* spp. for control of **Light Brown Apple Moth** and Elephant Weevil Borer. Apply as eggs and larvae reach economic thresholds and damage is observed. Apply a maximum of 2 applications per crop with a minimum retreatment interval of 7 days between consecutive applications.	M Bee:H	R3
Methomyl (Lannate)	1A	Contact	5	A	NSW, WA	Registered in blueberries for control of Red Shouldered Leaf Beetle, ***Helicoverpa* spp.** and Plague Thrips. Apply when infestation reaches economically damaging level. Treatments per season not limited.	H Bee:H	R2
			Fr:3 Frz:10		ALL (excl. SA)	Registered in strawberries for control of Cluster Caterpillar, **Heliothis** and Loopers. Apply as a foliar spray when pests first appear. Retreatment interval and maximum number of treatments per season not specified.		
Methomyl (Lannate) PER87495	1A	Contact	5	A	ALL (excl. NSW & WA)	Permitted in blueberries for control of Red Shouldered Leaf Beetle, ***Helicoverpa* spp.** and Plague Thrips. Apply when infestation reaches economically damaging level. Treatments per season not limited.	H Bee:H	R2
Methoxyfenozide (Prodigy) Corteva	18	Ingestion	7	A	ALL	Registered in blueberries for control of **Light Brown Apple Moth**. Target eggs and newly hatched larvae. Apply when locally determined thresholds are exceeded. Treatments per season not limited.	VL Bee:VL	-
Nuclear Polyhedrosis Virus (Vivus) AgBiTech	31	Ingestion	NR	A	ALL	Registered in berryfruit for control of ***Helicoverpa* spp.** Apply as a foliar spray when larvae are newly hatched. Retreatment may be required at 2-3 day intervals. Treatments per season not limited.	VL Bee:VL	-
Spinetoram (Success Neo) Corteva	5	Ingestion	1	A	ALL	Registered in berryfruit for control of **Loopers**, **Light Brown Apple Moth**, ***Helicoverpa*** and Western Flower Thrips. Target sprays against mature eggs and newly hatched larvae when numbers exceed spray threshold. Apply repeat applications at 7-14 day intervals as new infestations occur. Do not make more than 4 applications per season.	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinosad (Entrust Organic) Corteva	5	Ingestion	1	A	ALL	Registered in berry fruit for control of **Looper**, **Light Brown Apple Moth**, **Heliothis** and Western Flower Thrips. Target sprays against mature eggs and newly hatched larvae when numbers exceed spray threshold. Apply repeat applications at 7-14 day intervals as new infestations occur. Do not make more than 4 applications per season.	L Bee:H	-
Tebufenozide (Mimic) Corteva PER91907	16A	Ingestion	3	A	ALL (excl. VIC)	Permitted in blueberries for control of Lepidopteran Pests. Apply as a foliar spray when pest numbers reach threshold levels. Use a minimum retreatment interval of 14 days. Maximum of 5 treatments per season.	L Bee:L	-
Clitoria ternatea Extract (Sero-X) Growth Agriculture		Biological / Ingestion	NR	P		Registered in cotton for control of ***Helicoverpa* spp.**, Green Mirids and Silverleaf Whitefly and in brassica leafy vegetables for control of Diamondback Moth.		-
Isocycloseram (Simodis) Syngenta	30	Ingestion		P		Registered for control of Diamond Back Moth, Cabbage White Butterfly and suppression of **Heliothis** in brassica vegetables and brassica leafy vegetables, suppression of Onion Thrips and Plague Thrips in bulb vegetables, control of Two Spotted Mite and Cucumber Moth and suppression of Broad Mite, Bean Red Spider Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and **Heliothis** in cucurbits, and control of Two Spotted Mite and Broad Mite and suppression of Tomato Russet Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and **Heliothis** in fruiting vegetables.	H Bee:VH	-
Tetraniliprole (Vayego) Bayer	28	Ingestion		P	ALL	Registered for control of various weevils, beetles and Lepidoptera in almonds, macadamias, pome and stone fruit. Hort Innovation project ST17000 data generation under development to register in raspberries and blackberries for various pests including Light Brown Apple Moth, Loopers, **Helicoverpa**, Cluster Caterpillar and Monolepta beetle.	L-M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Queensland Fruit Fly *(Bactrocera tryoni)* **Priority: High**								
Queensland Fruit Fly is rated as a high priority in strawberries, raspberries and blackberries, and as a moderate priority in blueberries. The pest lays its eggs in maturing and ripe fruit on bushes and sometimes in fallen fruit. The larvae hatch and their feeding and associated decay destroys the fruit. A combination of management strategies is required for dealing with QFF, including fruit fly traps, male annihilation technology, protein bait sprays and strict orchard hygiene practices.								
4-(P-Acetoxyphenyl) -2-Butanone + Fipronil	2B	Contact	NR	A	ALL	Registered in fruit crops for population reduction and population monitoring of **Queensland Fruit Fly** and Lesser Queensland Fruit Fly. Single stations can be used for population monitoring. Control of fruit fly required placement of 16 stations per hectare and should be used in conjunction with regular insecticide cover sprays.	M Bee:VH	R3
4-(P-Acetoxyphenyl) -2-Butanone + Malathion	1B	Contact	NR	A	ALL	Registered in fruit crops for use as a trap for **Queensland Fruit Fly**. Used to detect the presence of Fruit Fly in the orchard to assist with making decisions about control.	H Bee:H	R3
Abamectin	6	Contact & Ingestion	7	A	ALL	Registered in blueberries for control of **Queensland Fruit Fly** and in blackberries and raspberries for control of **Queensland Fruit Fly** and Two Spotted Mite. Apply as a directed spray to the base of bushes where fruit bearing is sparse. Apply on a weekly basis starting from a month prior to harvest (i.e. green berry stage) through to the end of the berry harvest. Add yeast autolysate as an attractant. Allow approximately 7 days between consecutive spray applications. Do not make more than 12 applications per season. Apply no more than 4 sequential applications before switching to an insecticide from another chemical group for at least 2 applications.	M Bee:H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Acetamiprid + Pyriproxyfen (Trivor) Adama PER91601	4A+7C	Contact & Ingestion / IGR	7	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of Cottonseed Bug (*Oxycarenus luctuosus*), Green Potato Bug (*Cuspicona simplex*), Green Vegetable Bug (*Nezara viridula*), Leafhoppers (*Empoasca* spp.), Light Brown Apple Moth (*Epiphyas postvittana*), Mealybugs (Pseudococcidae), Planthoppers (Fulgoroidea), Scale Insects (Coccidae) and for suppression of Mediterranean Fruit Fly (*Ceratitis capitata*) and **Queensland Fruit Fly** (*Bactrocera tryoni*). Apply as a foliar spray at first signs of pest infestation. Use a minimum retreatment interval of 14 days and apply a maximum of 2 treatments per season.	M Bee:H	-
Alpha-Cypermethrin PER90027	3A	Contact	NR NG	A	ALL	Permitted in Blueberries for control of Fruit Flies. Apply as a foliar application, using a minimum 7-day retreatment interval. Maximum of 6 applications per season, with no more than 2 consecutive.	VH Bee:H	-
Dimethoate	1B	Contact	1	A	NSW, WA	Registered in blueberries for control of **Queensland Fruit Fly**, Spider Mites, Thrips, Jassids, Aphids, Redlegged Earth Mite, Strawberry Bug and Rutherglen Bug. Do not exceed 7 applications per season with a minimum retreatment interval of 21 days between consecutive applications.	H Bee:H	R3
Dimethoate (Danadim) PER88174	1B	Contact	1	A	QLD	Permitted in blueberries for control of **Queensland Fruit Fly**. Do not exceed 7 applications per season, with a minimum retreatment interval of 21 days between consecutive applications.	H Bee:H	R3
Dimethoate PER13859	1B	Contact	NR	A	ALL	Permitted in fruit fly host crops for orchard clean-up of **Fruit Fly** following harvest. Do not apply more than 2 applications per host crop. Apply as a foliar and/or ground spray to both fallen and retained fruit. Produce treated must not be harvested, collected or supplied for human or animal consumption.	H Bee:H	R3
Maldison (Fyfanon) FMC	1B	Contact	3	A	ALL	Registered in strawberries, blueberries, rubus and ribes for control of **Fruit Fly**. Apply as a foliar spray when fruit fly activity is initially observed. Use a minimum retreatment interval of 7 days. Maximum of 6 applications per season.	H Bee:H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Pyrethrins (Pyganic)	3A	Contact	NR	A	ALL	Registered in berries as a cleanup spray just prior to harvest for control of **Fruit Fly**, Rutherglen Bug and Spiders.	VH Bee:H	-
Spinetoram (Success Neo) Corteva PER87408	5	Ingestion	1	A	ALL (excl. VIC)	Permitted in strawberries, Rubus, Rubus hybrids & blueberries for suppression of **Queensland Fruit Fly**, Lesser Queensland Fruit Fly and Mediterranean Fruit Fly. For suppression of adult flies only, this treatment must be used in conjunction with other control strategies to be effective in reducing fruit fly damage. Apply as a foliar spray after flower set. Do not apply more than 4 applications per season, with a minimum 7-14 days between consecutive applications.	M Bee:VH	-
Spinosad (Naturalure) Corteva	5	Bait / Ingestion	NR	A	ALL	Registered in fruit for control of Fruit Flies including **Queensland Fruit Fly** and Mediterranean Fruit Fly. Apply as either a band or a spot spray to the lower canopy of fruiting plants. Begin applications as soon as monitoring traps indicate flies are present and fruit is at a susceptible stage. Repeat applications every 7 days, re-applying sooner if rain washes off the deposit. Avoid spraying the fruit as phytotoxicity may occur.	L Bee:H	-
Trichlorfon (Lepidex)	1B	Contact	2	A	NSW	Registered in blueberries for control of **Queensland Fruit Fly**. Apply 21, 14 and 7 days before harvesting, when fruit fly are numerous. Treatments per season not limited.	H Bee:H	R2
Trichlorfon (Lepidex) PER12486	1B	Contact	2	A	ACT, NSW, NT, QLD, SA & WA	Permitted in blueberries for control of **Queensland Fruit Fly** and Mediterranean Fruit Fly. Apply as a cover spray. Do not apply more than 3 applications per season with a minimum retreatment interval of 7 days between applications.	H Bee:H	R2
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Hort Innovation 2021/22 AgVet Grant (ST21001) to undertake studies to support a label registration for the control of **Fruit Fly** in stone fruit. Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids, Blueberry Thrips and Blueberry Maggot in bushberries.	L Bee:L	-
Tetraniliprole (Vayego) Bayer	28	Ingestion		P	ALL	Registered for control of Mediterranean Fruit Fly in stone fruit.	L-M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Strawberry Aphid (*Chaetosiphon fragaefolii*) **Priority: High**								
Strawberry Aphid is rated as a high priority in strawberries, and as a low priority in all other berry types. Strawberry Aphid can cause damage to fruit quality if large infestations are not controlled. Honeydew can lead to the development of sooty mould on the fruit. Practising good IPM techniques will assist in stopping aphid flare and aphicides should be rotated regularly as resistance can develop rapidly.								
Botanical Oil (Eco-Oil)	-	Contact	NR	A	ALL	Registered in strawberries for control of Two Spotted Mite and **Aphids**. Spray when pest first appears. Apply 2 sprays 3-5 days apart. Repeat at signs of reinfestation. DO NOT apply more than 3 sprays to plants within a 4-8 week period.	L Bee:L	-
Cyantraniliprole (Benevia) FMC	28	Ingestion	1	A	ALL	Registered in strawberries for control of Cluster Caterpillar, Cotton Bollworm, Light Brown Apple Moth, Native Budworm, Green Peach Aphid, Melon Aphid, **Strawberry Aphid** and suppression of Onion Thrips, Plague Thrips and Western Flower Thrips. Should be applied to a newly developing infestation. To maximise efficacy, apply sequential treatments. A maximum of 2 applications to be used per season. Apply on a 7-10 day spray interval.	L-M Bee:VH	-
Dimethoate	1B	Contact **Strawberry runner production only**	NR	A	ALL	Registered in **strawberry runners** for control of **Aphids**, Thrips, Jassids, Spider Mites, Strawberry Bug and Rutherglen Bug. Apply when pest first appears and repeat at 3 weekly intervals or as necessary. DO NOT apply to the whole field area. Apply to the bed, planted area or area covered by plants only, not areas such as walkways. Treatments per season not limited.	H Bee H	R1
Flonicamid (Mainman) UPL	29	Ingestion	1	A	ALL	Registered in strawberries for control of **Aphids** including Green Peach Aphid (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and Green Mirid (*Creontiades dilutes*). Apply as foliar spray at the first sign of insect pest infestation. DO NOT apply more than 3 applications per crop, with a minimum 7-day retreatment interval between applications.	M Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flonicamid (Mainman) UPL PER82958	29	Ingestion	1	A	ALL (excl. VIC)	Permitted in strawberries for control of **Aphids** including Green Peach Aphid (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and Green Mirid (*Creontiades dilutes*). Apply as foliar spray at the first sign of insect pest infestation. DO NOT apply more than 3 applications per crop, with a minimum 7-day retreatment interval between applications.	M Bee:VL	-
Petroleum / Paraffinic Oil	-	Contact	1	A	NSW, ACT, SA, WA & TAS	Registered in strawberries for control of **Aphids** and Mites. Spray no more than 4 times during growing season with 2 weeks minimum application interval. Do not spray stressed plants and avoid spraying open blooms.	L Bee:L	-
Pirimicarb (Pirimor)	1A	Contact	2	A	ALL	Registered in blueberries & strawberries for control of **Aphids**. Do not use on carbamate resistant aphid populations. If aphids are not resistant to carbamates, use a maximum of 2 non-consecutive applications per season. DO NOT use as the first spray of the season if a carbamate was used as the last spray of the previous season.	VL Bee:VL	R3
Afidopyropen (Versys) BASF	9D	Ingestion	1	P-A	ALL	Registered in strawberries for control of Green Peach Aphid (*Myzus persicae*), Cabbage Aphid (*Brevicoryne brassicae*), Currant Lettuce Aphid (*Nasanovia ribis-nigri*), Cotton Aphid / Melon Aphid (*Aphid gossypii*), Corn Aphid (*Rhopalosiphum maydis*), and suppression of Silverleaf Whitefly (*Bemisia tabaci*).	L Bee:L	-
Spirotetramat (Movento) Bayer	23	Ingestion	1	P-A	ALL	Registered in blueberries for control of Soft Brown Scale and White Wax Scale. Registered for control of Aphids in various crops. US registration in bushberry for control of various pests including Aphids.	M Bee:L	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	1	P-A	ALL	Registered in cane berries (incl. blackberries and raspberries) for control of Green Peach Aphid, Greenhouse Whitefly, Mirids, Apple Dimpling Bug, Rutherglen Bug and Scale Insects (*Coccidae* spp., *Diaspididae* spp.) and in strawberries for control of Green Peach Aphid, Green Mirid and Rutherglen Bug.	M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Sulfoxaflor (Transform) Corteva PER90208	4C	Contact & Ingestion	1	P-A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Green Peach Aphid (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), Green Mirids and Brown Mirids (*Creontiades dilutus* and *C. pacificus*), Greenhouse Whitefly (*Trialeurodes vaporariorum*), Apple Dimpling Bug (*Campylomma liebknechti*) and suppression of Scale (*Coccidae* spp., *Diaspididae* spp.) and Rutherglen Bug (*Nysius vinitor*). season.	M Bee:VH	-
Beauveria bassiana (Velifer) BASF	UN	Biological		P		Registered for suppression of various aphids in protected vegetables and ornamentals.	L Bee:L	-
Dimpropyridaz (Efficon) BASF	UN	Contact & Ingestion		P		Registered for control of various aphids in cucurbits, brassica vegetables, leafy vegetables, brassica leafy vegetables and cotton.	M Bee:L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids and Whitefly in caneberries, for control of Aphids, Thrips and Blueberry Maggot and suppression of Scirtothrips in bushberries, and in various crops for control of Bugs and Leafhoppers.	L Bee:L	-
Isocycloseram (Simodis) Syngenta	30	Ingestion		P		Registered for control of Diamond Back Moth, Cabbage White Butterfly and suppression of Heliothis in brassica vegetables and brassica leafy vegetables, suppression of Onion Thrips and Plague Thrips in bulb vegetables, control of Two Spotted Mite and Cucumber Moth and suppression of Broad Mite, Bean Red Spider Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in cucurbits, and control of Two Spotted Mite and Broad Mite and suppression of Tomato Russet Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in fruiting vegetables.	H Bee:VH	-
Pymetrozine (Chess) Syngenta	9B	Contact & Ingestion		P		Registered for control of Aphids in brassica vegetables, tomatoes, eggplant, capsicum, sweet corn, lettuce, endive, chicory, radicchio, leafy vegetables, cucurbits, potatoes, stone fruit, almonds, pistachios, beetroot, celery, cut flowers and nursery stock.	L Bee:VL	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Leaf and Bud Nematode (*Aphelenchoides ritzemabosi*) **Priority: High**								
Leaf and Bud Nematode is rated as a high priority in strawberries, as a moderate priority in raspberries and blackberries, and as a low priority in blueberries. Leaf and Bud Nematodes attack the above-ground parts of the plant. They cause disease-like symptoms with plant stunting and leaf distortion easy to confuse with other disorders.								
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	-
Cyclobutrifluram (Tymirium)	N-3	Contact		P		Nematicide in development from Syngenta.	-	-
Fluazaindolizine (Salibro Reklemel) Corteva	N-UN	Contact		P	ALL	Registered in for control of Nematodes in cucurbits, fruiting vegetables, root & tuber vegetables and sweet potato.	-	-
Fluensulfone (Nimitz) Adama	N-UN	Contact		P	ALL	Registered for control of Root Knot Nematode in cucurbits, fruiting vegetables, carrots, potato, sweet potato and sugarcane.	-	-
Fluopyram (Velum Prime) Bayer	N-3	Contact		P		US registration for control of Nematodes in brassica leafy vegetables, bulb vegetables, cucurbits, fruiting vegetables, hops, legume vegetables, pome fruit, potato, sweet potato, small berries, sorghum, stone fruit, strawberries and other low-growing berries, sunflower, tobacco and tree nuts.	-	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Leafhoppers / Jassids (Cicadellidae) **Priority: Moderate**								
Leafhoppers are rated as a high priority in raspberries, and as a moderate priority in all other berry types. Adults and nymphs cause piercing and sucking damage to plant parts, mainly the leaves.								
Acetamiprid + Pyriproxyfen (Trivor) Adama PER91601	4A+7C	Contact & Ingestion / IGR	7	A	ALL (excl. VIC)	Permitted in blackberries and raspberries for control of Cottonseed Bug (*Oxycarenus luctuosus*), Green Potato Bug (*Cuspicona simplex*), Green Vegetable Bug (*Nezara viridula*), **Leafhoppers** (*Empoasca* spp.), Light Brown Apple Moth (*Epiphyas postvittana*), Mealybugs (Pseudococcidae), Planthoppers (Fulgoroidea) and Scale Insects (Coccidae) and suppression of Mediterranean Fruit Fly (*Ceratitis capitata*) and Queensland Fruit Fly (*Bactrocera tryoni*). Apply as a foliar spray using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:H	-
Dimethoate	1B	Contact	1	A	ALL	Registered in blueberry for control of Spider Mites, Thrips, **Jassids**, Aphids and Redlegged Earth Mite. Apply as a foliar spray using a minimum retreatment interval of 21 days. Maximum of 7 applications per season.	H Bee:H	R1
			7			Registered in blackberries and raspberries for control of Spider Mites, Thrips, **Jassids**, Aphids and Redlegged Earth Mite. Apply as a foliar spray when pest first appears and repeat at 21-day intervals or as necessary. Maximum number of applications per season not specified.		
Dimethoate	1B	Contact **Strawberry runner production only**	NR	A	ALL	Registered in **strawberry runners** for control of Aphids, Thrips, **Jassids**, Spider Mites, Strawberry Bug and Rutherglen Bug. Apply when pest first appears and repeat at 3 weekly intervals or as necessary. DO NOT apply to the whole field area. Apply to the bed, planted area or area covered by plants only, not areas such as walkways. Treatments per season not limited.	H Bee:H	R1

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flonicamid (Mainman) UPL PER89214	29	Ingestion	3	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Mirids (Miridae), **Jassids** / **Leafhoppers** (Cicadellidae), Aphids (Aphidae), Greenhouse Whitefly (*Trialeurodes vaporariorum*) and suppression of Green Vegetable Bug (*Nezara viridula*) and Rutherglen Bug (*Nysius vinitor*). Apply as a foliar spray using a minimum retreatment interval of 7 days. Maximum of 3 applications per season.	M Bee:VL	-
Sulfoxaflor (Transform) Corteva PER91327	4C	Contact & Ingestion	1	P-A	ALL (excl. VIC)	Permitted in blueberries for control of Green Peach Aphid (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), Scale insects (*Coccidae* spp., *Diaspididae* spp., *Eriococcidae* spp.), Green Stink Bug (*Plautia affinis*) and Flatid Leaf Hopper (*Flatormenis* spp.)	M Bee:VH	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids, Blueberry Thrips and Blueberry Maggot in bushberries.	L Bee:L	-
Isocycloseram (Simodis) Syngenta	30	Ingestion		P		Registered for control of Diamond Back Moth, Cabbage White Butterfly and suppression of Heliothis in brassica vegetables and brassica leafy vegetables, suppression of Onion Thrips and Plague Thrips in bulb vegetables, control of Two Spotted Mite and Cucumber Moth and suppression of Broad Mite, Bean Red Spider Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in cucurbits, and control of Two Spotted Mite and Broad Mite and suppression of Tomato Russet Mite, Western Flower Thrips, Tomato Thrips, Melon Thrips, Plague Thrips and Heliothis in fruiting vegetables.	H Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Green Peach Aphid (*Myzus persicae*) **Melon Aphid** (*Aphis gossypii*) **Priority: Moderate**								
Green Peach Aphid is rated as a high priority in blackberries, and as a moderate priority in all other berry types. Melon Aphid is rated as a moderate priority in blackberries, and as a low priority in all other berry types. Aphids cause direct feeding damage and secretion of honeydew tends to promote infestations of other sucking insects. They are a potential disease vector although the diseases of concern are not currently in Australia. Green Peach Aphid is difficult to control with insecticides and the use of an IPM approach is vital to ensure that populations are kept below damaging levels and the longevity of available chemistry is maintained.								
Afidopyropen (Versys) BASF	9D	Ingestion	1	P-A	ALL	Registered in strawberries for control of **Green Peach Aphid** (*Myzus persicae*), Cabbage Aphid (*Brevicoryne brassicae*), Currant Lettuce Aphid (*Nasanovia ribis-nigri*), **Cotton Aphid** / **Melon Aphid** (*Aphid gossypii*), Corn Aphid (*Rhopalosiphum maydis*), and suppression of Silverleaf Whitefly (*Bemisia tabaci*). Apply as foliar spray at the first sign of insect pest infestation. Apply a maximum 4 applications per crop, with a minimum 14-day re-treatment interval between applications. Apply a maximum of 2 sprays before rotating to an alternative MoA insecticide for aphid control.	L Bee:L	-
Afidopyropen (Versys) BASF PER90178	9D	Ingestion	1	A	ALL	Permitted in raspberries and blackberries for control of Aphids incl. **Green Peach Aphid** (*Myzus persicae*) and suppression of Greenhouse Whitefly (*Trialeurodes vaporariorum*). Apply at first sign of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 4 applications per season, with no more than 2 consecutive. Hort Innovation is generating data to support a label extension for control of Green Peach Aphid in raspberries and blackberries.	L Bee:L	-
Botanical Oil (Eco-Oil)	-	Contact	NR	A	ALL	Registered in strawberries for control of Two Spotted Mite, **Aphids** and Sooty Mould. Spray when pest first appears. Apply 2 sprays 3-5 days apart. Repeat at signs of reinfestation. DO NOT apply more than 3 sprays to plants within a 4-8 week period.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cyantraniliprole (Benevia) FMC	28	Ingestion	1	A	ALL	Registered in strawberries for control of Cluster Caterpillar, Cotton Bollworm, Light Brown Apple Moth, Native Budworm, **Green Peach Aphid**, Melon Aphid, Strawberry Aphid and suppression of Onion Thrips, Plague Thrips and Western Flower Thrips. Should be applied to a newly developing infestation. To maximise efficacy, apply sequential treatments. A maximum of 2 applications to be used per season. Apply on a 7-10 day spray interval.	L-M Bee:VH	-
Dimethoate	1B	Contact	1	A	ALL	Registered in blueberry for control of Spider Mites, Thrips, Jassids, **Aphids** and Redlegged Earth Mite. Apply as a foliar spray using a minimum retreatment interval of 21 days. Maximum of 7 applications per season.	H Bee:H	R1
			7			Registered in blackberries and raspberries for control of Spider Mites, Thrips, Jassids, **Aphids** and Redlegged Earth Mite. Apply as a foliar spray when pest first appears and repeat at 21-day intervals or as necessary. Maximum number of applications per season not specified.		
Dimethoate	1B	Contact **Strawberry runner production only**	NR	A	ALL	Registered in **strawberry runners** for control of **Aphids**, Thrips, Jassids, Spider Mites, Strawberry Bug and Rutherglen Bug. Apply when pest first appears and repeat at 3 weekly intervals or as necessary. DO NOT apply to the whole field area. Apply to the bed, planted area or area covered by plants only, not areas such as walkways. Treatments per season not limited.	H Bee H	R1
Flonicamid (Mainman) UPL	29	Ingestion	1	A	ALL	Registered in strawberries for control of Aphids including **Green Peach Aphid** (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and Green Mirid (*Creontiades dilutes*). Apply as foliar spray at the first sign of insect pest infestation. DO NOT apply more than 3 applications per crop, with a minimum 7-day retreatment interval between applications.	M Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flonicamid (Mainman) UPL PER82958	29	Ingestion	1	A	ALL (excl. VIC)	Permitted in strawberries for control of Aphids including **Green Peach Aphid** (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and Green Mirid (*Creontiades dilutes*). Apply as foliar spray at the first sign of insect pest infestation. DO NOT apply more than 3 applications per crop, with a minimum 7-day retreatment interval between applications.	M Bee:VL	-
Flonicamid (Mainman) UPL PER89214	29	Ingestion	3	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Mirids (Miridae), Jassids / Leafhoppers (Cicadellidae), **Aphids** (Aphidae), Greenhouse Whitefly (*Trialeurodes vaporariorum*) and suppression of Green Vegetable Bug (*Nezara viridula*) and Rutherglen Bug (*Nysius vinitor*). Apply as a foliar spray using a minimum retreatment interval of 7 days. Maximum of 3 applications per season.	M Bee:VL	-
Petroleum / Paraffinic Oil	-	Contact	1	A	NSW, ACT, SA, WA & TAS	Registered in strawberries for control of **Aphids** and Mites. Spray no more than 4 times during growing season with 2 weeks minimum application interval. Do not spray stressed plants and avoid spraying open blooms.	L Bee:L	-
Pirimicarb (Pirimor)	1A	Contact	2	A	ALL	Registered in blueberries & strawberries for control of **Aphids**. Do not use on carbamate resistant aphid populations. If aphids are not resistant to carbamates, use a maximum of 2 non-consecutive applications per season. DO NOT use as the first spray of the season if a carbamate was used as the last spray of the previous season.	VL Bee:VL	R3
			7			Registered in blackberries for control of Aphids, including **Green Peach Aphid**. Do not use on carbamate resistant aphid populations. Do not use consecutive applications and do not reapply withing 10-14 days of a previous application. Maximum of 2 applications per season.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	1	A	ALL	Registered in cane berries (incl. blackberries and raspberries) for control of **Green Peach Aphid**, Greenhouse Whitefly, Mirids, Apple Dimpling Bug, Rutherglen Bug and Scale Insects (*Coccidae* spp., *Diaspididae* spp.) Apply as a foliar spray, using a retreatment interval of 7 days if required. Maximum of 2 applications per season.	M Bee:VH	-
						Registered in strawberries for control of **Green Peach Aphid**, Green Mirid and Rutherglen Bug. Apply as a foliar spray, using a retreatment interval of 7 days if required. Maximum of 4 applications per season with no more than 2 consecutive.		
Sulfoxaflor (Transform) Corteva PER90208	4C	Contact & Ingestion	1	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of **Green Peach Aphid** (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), Green Mirids and Brown Mirids (*Creontiades dilutus* and *C. pacificus*), Greenhouse Whitefly (*Trialeurodes vaporariorum*), Apple Dimpling Bug (*Campylomma liebknechti*) and suppression of Scale (*Coccidae* spp., *Diaspididae* spp.) and Rutherglen Bug (*Nysius vinitor*). Apply as a foliar cover spray at first signs of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:VH	-
Sulfoxaflor (Transform) Corteva PER91327	4C	Contact & Ingestion	1	A	ALL (excl. VIC)	Permitted in blueberries for control of **Green Peach Aphid** (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), Scale insects (*Coccidae* spp., *Diaspididae* spp., *Eriococcidae* spp.), Green Stink Bug (*Plautia affinis*) and Flatid Leaf Hopper (*Flatormenis* spp.) Apply as a foliar cover spray at first signs of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:VH	-
Spirotetramat (Movento) Bayer	23	Ingestion	1	P-A	ALL	Registered in blueberries for control of Soft Brown Scale and White Wax Scale. Registered for control of aphids in various crops. US registration in bushberry for control of various pests including Aphids.	M Bee:L	-
Beauveria bassiana (Velifer) BASF	UN	Biological		P		Registered for suppression of various aphids in protected vegetables and ornamentals.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dimpropyridaz (Efficon) BASF	UN	Contact & Ingestion		P		Registered for control of various aphids in cucurbits, brassica vegetables, leafy vegetables, brassica leafy vegetables and cotton.	M Bee:L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids and Whitefly in caneberries, for control of Aphids, Thrips and Blueberry Maggot and suppression of Scirtothrips in bushberries, and in various crops for control of Bugs and Leafhoppers.	L Bee:L	-
Pymetrozine (Chess) Syngenta	9B	Contact & Ingestion		P		Registered for control of Aphids in brassica vegetables, tomatoes, eggplant, capsicum, sweet corn, lettuce, endive, chicory, radicchio, leafy vegetables, cucurbits, potatoes, stone fruit, almonds, pistachios, beetroot, celery, cut flowers and nursery stock.	L Bee:VL	R3
Snails & Slugs (*Helix aspersa, Cernuella virgate*) **Priority: Moderate**								
Snails & Slugs are rated as a moderate priority in all berry types. They cause direct feeding damage to fruit leading to reduced yields or marketability. Molluscicides can be used as a broadcast across the field or applied to localised areas of infestation.								
Copper (Cu) present as Buffered Copper Complex	M1	Contact	1	A	ALL	Registered in berry fruit for control of **slugs** and **snails**. Thoroughly wet trunk and infested canes prior to expansion of the first new leaves. Do not spray foliage. Maximum number of applications per season not specified.	-	-
Iron EDTA Complex	-	Contact	NR G:7	A	ALL	Registered in strawberries for control of **Common Garden Snail**, **White Snail** and **Vine Snail**. Apply evenly to the field. Ensure pellets do not become lodged in plant foliage. Treatments per season not limited.	-	-
Iron Powder	-	Contact	NR	A	ALL	Registered in strawberries for control of Grey Field Slugs, **Common Brown Snail**, **Small Brown Snail**, **White Snails** and Slaters. Apply evenly to the field. Ensure pellets do not become lodged in plant foliage. Treatments per season not limited.	-	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Metaldehyde	-	Contact	7	A	ALL	Registered in horticultural crops for control of **snails** and **slugs**. Broadcast evenly over the ground where snails and slugs are active or incorporate with seed when direct drilling. Treatments per season not limited.	-	-
Methiocarb (Mesurol) Bayer	1A	Contact	H:7 G:28	A	ALL	Registered in strawberries for control of **Common Garden Snail**, **Slugs**, **White Italian Snail** and **White Snail**. Keep away from domestic pets. Scatter baits evenly onto ground where snails and slugs occur. Treatments per season not limited.	-	-
Lygaeid Bugs (*Lygaeidae*) **Priority: Moderate**								
Lygus are rated as a moderate priority in strawberries, raspberries and blackberries, and as a low priority in blueberries. Hort Innovation project BS12026 found that Lygaeid Bugs do not damage strawberries. Correct identification is important to distinguish them from mirids. Lygaeid Bugs generally do not warrant control.								
Maldison PER13542	1B	Contact	3	A	ALL (excl. VIC)	Permitted in strawberries for control of Rutherglen Bug (*Nysius vinitor*) and **Lygaeid Bugs** (Lygaeidae). Apply as a foliar spray when pests first appear. Use a minimum retreatment interval of 7 days. Maximum of 3 applications per season.	H Bee:H	-
Dimethoate	1B	Contact	1	P-A	ALL	Registered in blueberry for control of Spider Mites, Thrips, Jassids, Aphids and Redlegged Earth Mite. Registered for control of plant bugs in various other crops.	H Bee:H	R1
			7			Registered in blackberries and raspberries for control of Spider Mites, Thrips, Jassids, Aphids and Redlegged Earth Mite. Registered for control of plant bugs in various other crops.		
Dimethoate	1B	Contact / **Strawberry runner production only**	NR	P-A	ALL	Registered in strawberry runners for control of Aphids, Thrips, Jassids, Spider Mites, Strawberry Bug and Rutherglen Bug. Registered for control of plant bugs in various other crops.	H Bee:H	R1

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flonicamid (Mainman) UPL	29	Ingestion	1	P-A	ALL	Registered in strawberries for control of Aphids including Green Peach Aphid (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and Green Mirid (*Creontiades dilutes*). US registration for control of ***Lygus* spp.** in low growing berries, rapeseed/canola and legume vegetables.	M Bee:VL	-
Flonicamid (Mainman) UPL PER82958	29	Ingestion	1	P-A	ALL (excl. VIC)	Permitted in strawberries for control of Aphids including Green Peach Aphid (*Myzus persicae*), Whiteflies (*Bemisia tabaci*) and Green Mirid (*Creontiades dilutes*). US registration for control of ***Lygus* spp.** in low growing berries, rapeseed/canola and legume vegetables.	M Bee:VL	-
Flonicamid (Mainman) UPL PER89214	29	Ingestion	3	P-A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Mirids (Miridae), Jassids / Leafhoppers (Cicadellidae), Aphids (Aphidae), Greenhouse Whitefly (*Trialeurodes vaporariorum*) and suppression of Green Vegetable Bug (*Nezara viridula*) and Rutherglen Bug (*Nysius vinitor*). US registration for control of ***Lygus* spp.** in low growing berries, rapeseed/canola and legume vegetables.	M Bee:VL	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	1	P-A	ALL	Registered in cane berries (incl. blackberries and raspberries) for control of Green Peach Aphid, Greenhouse Whitefly, Mirids, Apple Dimpling Bug, Rutherglen Bug and Scale Insects (*Coccidae* spp., *Diaspididae* spp.) and in strawberries for control of Green Peach Aphid, Green Mirid and Rutherglen Bug.	M Bee:VH	-
Sulfoxaflor (Transform) Corteva PER90208	4C	Contact & Ingestion	1	P-A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Green Peach Aphid (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), Green Mirids and Brown Mirids (*Creontiades dilutus* and *C. pacificus*), Greenhouse Whitefly (*Trialeurodes vaporariorum*), Apple Dimpling Bug (*Campylomma liebknechti*) and suppression of Scale (*Coccidae* spp., *Diaspididae* spp.) and Rutherglen Bug (*Nysius vinitor*). season.	M Bee:VH	-
Clitoria ternatea Extract (Sero-X) Growth Agriculture		Biological	NR	P		Registered in cotton for control of *Helicoverpa* spp., Green Mirids and Silverleaf Whitefly and in brassica leafy vegetables for control of Diamondback Moth.	L Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids, Blueberry Thrips and Blueberry Maggot in bushberries.	L Bee:L	-
Root-Knot Nematode (*Meloidogyne* spp.) **Root-Lesion Nematode** (*Pratylenchus* spp.) **Priority: Moderate**								
Root-Knot Nematode and Root-Lesion Nematode are rated as a moderate priority in strawberries and blackberries, and as a low priority in blueberries and raspberries. Various nematode species affect strawberries with Root-Knot Nematode the most significant across all growing regions. Fumigation before planting is commonly used to reduce nematode numbers. The impact of nematodes may be underestimated because the effects on production can be difficult to detect.								
Abamectin (Tervigo) Syngenta PER91777	6	Contact	NR	A	ALL	Permitted in strawberries (staff and contracted growers of Driscolls only) for control of **Root-Knot Nematode**. Apply when the water content of the soil is close to full. Apply at early stages of pest development as a preventative treatment. DO NOT apply more than 4 applications per crop production cycle at minimum 10 day retreatment interval. Apply using injection unit through direct injection into drip/trickle irrigation system into soil or growing media in hydroponic systems, during the second quarter of the irrigation cycle.	M Bee:H	-
Chloropicrin + 1,3-Dichloropropene (Agrocelhone NE Soil Fumigant)	8B	Fumigant	NR	A	ALL	Registered in strawberries for pre-plant control of **Nematodes** and Insects. Inject at least 15-18cm deep, roll soil to level and pack and water immediately to seal in gas. Exposure time of 2-3 days and do not plant for at least 10 days after the end of treatment or if gas odour is still present. **For use by professional and registered fumigators only.**	-	-
Ethanedinitrile (EDN Fumigas)	-	Fumigant	NR	A	ALL	Registered in strawberries and **strawberry runners** for pre-planting control of Soil Borne Pathogens, Nematodes (***Meloidogyne* spp.**, *Steinernema* spp.) and weeds. ***For use by licensed fumigators or approved persons only.***	-	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Fenamiphos (Nemacur) PER91381	N-1B	Contact	NR	A	TAS & QLD	Permitted in strawberry runners as a post-lifting dip treatment for control of **Root-Knot Nematode** (*Meloidogyne* spp.) Remove all dead plant tissue prior to treatment and immerse plants in dip solution for 10 minutes. Apply once only per season.	M Bee:H	-
Cyclobutrifluram (Tymirium)	N-3	Contact		P		Nematicide in development from Syngenta.	-	-
Fluazaindolizine (Salibro Reklemel) Corteva	N-UN	Contact		P	ALL	Registered in for control of Nematodes in cucurbits, fruiting vegetables, root & tuber vegetables and sweet potato.	-	-
Fluensulfone (Nimitz) Adama	N-UN	Contact		P	ALL	Registered for control of **Root Knot Nematode** in cucurbits, fruiting vegetables, carrots, potato, sweet potato and sugarcane.	-	-
Fluopyram (Velum Prime) Bayer	N-3	Contact		P		Hort Innovation is generating data to support registration for control of nematodes in strawberries. US registration for control of Nematodes in brassica leafy vegetables, bulb vegetables, cucurbits, fruiting vegetables, hops, legume vegetables, pome fruit, potato, sweet potato, small berries, sorghum, stone fruit, strawberries and other low-growing berries, sunflower, tobacco and tree nuts.	-	-
Greenhouse Whitefly *(Trialeurodes vaporariorum)* **Priority: Moderate**								
Greenhouse Whitefly is rated as a moderate priority in all berry types. Greenhouse Whitefly are a sporadic pest with outbreaks leading to honeydew build up which can potentially impact fruit quality. Preserving natural enemies is an important part of an integrated whitefly management strategy.								
Afidopyropen (Versys) BASF PER90178	9D	Ingestion	1	A	ALL	Permitted in raspberries and blackberries for control of Aphids incl. Green Peach Aphid (*Myzus persicae*) and suppression of **Greenhouse Whitefly** (*Trialeurodes vaporariorum*). Apply at first sign of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flonicamid (Mainman) UPL PER89214	29	Ingestion	3	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Mirids (Miridae), Jassids / Leafhoppers (Cicadellidae), Aphids (Aphidae), **Greenhouse Whitefly** (*Trialeurodes vaporariorum*) and suppression of Green Vegetable Bug (*Nezara viridula*) and Rutherglen Bug (*Nysius vinitor*). Apply as a foliar spray using a minimum retreatment interval of 7 days. Maximum of 3 applications per season.	M Bee:VL	-
Pyriproxyfen (Admiral) Sumitomo PER13331	7C	Contact / IGR	2	A	ALL (excl. VIC)	Permitted in strawberries for control of **Greenhouse Whitefly** and Silverleaf Whitefly. Apply at the first appearance of whitefly or when whiteflies reach threshold levels of 3-5 adults per leaf and/or equivalent levels of immatures. DO NOT apply more than twice per season with a minimum retreatment interval of 30 days between applications.	VL Bee L	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	1	A	ALL	Registered in cane berries (incl. blackberries and raspberries) for control of Green Peach Aphid, **Greenhouse Whitefly**, Mirids, Apple Dimpling Bug, Rutherglen Bug and Scale Insects (*Coccidae* spp., *Diaspididae* spp.) Apply as a foliar spray, using a retreatment interval of 7 days if required. Maximum of 2 applications per season.	M Bee:VH	-
Sulfoxaflor (Transform) Corteva PER90208	4C	Contact & Ingestion	1	A	ALL (excl. VIC)	Permitted in raspberries and blackberries for control of Green Peach Aphid (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), Green Mirids and Brown Mirids (*Creontiades dilutus* and *C. pacificus*), **Greenhouse Whitefly** (*Trialeurodes vaporariorum*), Apple Dimpling Bug (*Campylomma liebknechti*) and suppression of Scale (*Coccidae* spp., *Diaspididae* spp.) and Rutherglen Bug (*Nysius vinitor*). Apply as a foliar cover spray at first signs of pest infestation, using a minimum retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:VH	-
Cyantraniliprole (Benevia) FMC	28	Ingestion	1	P-A	ALL	Registered in strawberries for control of Cluster Caterpillar, Cotton Bollworm, Light Brown Apple Moth, Native Budworm, Green Peach Aphid, Melon Aphid, Strawberry Aphid and suppression of Onion Thrips, Plague Thrips and Western Flower Thrips. Registered for control of whitefly in various crops.	L-M Bee:VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spirotetramat (Movento) Bayer	23	Ingestion	1	P-A	ALL	Registered in blueberries for control of Soft Brown Scale and White Wax Scale. Registered in various crops for control of **Silverleaf Whitefly**. US registration in bushberry for control of various pests and various crops for control of Whitefly.	M Bee:L	-
Beauveria bassiana (Velifer) BASF	UN	Biological		P		Registered for suppression of whitefly in protected vegetables and ornamentals.	L Bee:L	-
Clitoria ternatea Extract (Sero-X) Growth Agriculture	-	Biological	NR	P		Registered in cotton for control of *Helicoverpa* spp., Green Mirids and Silverleaf Whitefly and in brassica leafy vegetables for control of Diamondback Moth.	L Bee:VL	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids, Blueberry Thrips and Blueberry Maggot in bushberries.	L Bee:L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. Registered in the US in caneberries for control of Aphids and Whitefly, in bushberries for control of Aphids, Thrips and Blueberry Maggot and suppression of Scirtothrips, and control of Whiteflies in various crops.	L Bee L	-
Cutworm (*Agrostis* spp.) **Priority: Moderate**								
Cutworm is rated as a moderate priority in all berry types. Cutworms are soil borne insects that can damage the roots and stems of berries, with small plants during the establishment phase at most risk. If insecticide control is required, application should be made late afternoon to evening to coincide with when the larvae are feeding.								
Trichlorfon (Lepidex)	1B	Contact	2	A	QLD	Registered in strawberries for control of **Cutworm**. Thoroughly spray the bases of plants and surrounding soil. Spray in the late afternoon or night. Retreatment interval and maximum number of applications per season no specified.	H Bee:H	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Carbaryl	1A	Contact	7	P-A	ALL	Registered in raspberries for control of Grasshoppers, Heliothis, Mealy Bug, Rutherglen Bug, Weevils, Armyworm, Light Brown Apple Moth, Raspberry Fruit Caterpillar and Wingless Grasshopper. Registered for control of **Cutworm** in grapes, beetroot, cucurbits, rosella, potatoes, turnips, cereals, pastures and ornamentals.	H Bee:H	R2
Clothianidin + Imidacloprid (Poncho Plus) BASF	4A	Protectant / Seed Treatment		P		Registered for control of **Cutworms** as a seed treatment in canola, forage brassicas, maize, sweet corn, sorghum, sunflower and pastures.	M Bee:VH	R2
Red Shouldered Leaf Beetle (*Monolepta australis*) **Scarab Beetle /African Black Beetle** (*Heteronychus arator*) **Priority: Low**								
Red Shouldered Leaf Beetle is rated as a moderate priority in blueberries, raspberries and blackberries, and as a low priority in strawberries. Scarab Beetle is rated as a moderate priority in strawberries and blueberries, and as a low priority in raspberries and blackberries. Adult Red Shouldered Leaf Beetles attack leaves, fruit and flowers and in high numbers they can strip plants of leaves and flowers. Hatching occurs from grassed rows in spring through autumn after rain. Early detection will enable spot spraying to control outbreaks before they spread through the farm. Most Scarab Beetle damage is caused by larvae feeding on the roots of young plants. Populations build up in dry spring / summer periods. Insecticide treatments should be applied at planting and prior to root flushes each year.								
Chlorpyrifos (Suscon Green) Nufarm PER81745	1B	Contact	NR	A	QLD	Permitted in strawberries (field grown only) for control of **Scarab Beetles** (Scarabaeidae). Apply during bed-forming prior to planting, using a Precision Granular Boom applicator and immediately cover with mulch. Maximum of 1 application per season.	H Bee:H	R1
Chlorpyrifos (Suscon Green, Suscon Blue) Nufarm PER90666	1B	Contact	NR	A	ALL	Permitted in blueberries for control of **Scarab Beetles** (Scarabaeidae). Apply following pruning and planting (October to April), using a Precision Granular Boom applicator and immediately cover with mulch. Maximum of 2 applications per year, with approximately 6 months between soil treatments.	H Bee:H	R1

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Imidacloprid (Confidor) Bayer PER12534	4A	Contact & Ingestion	NR NG	A	ALL (excl. VIC)	Permitted in blueberries for control of **Scarab Beetle Larvae**. Apply after harvest, and before flowering begins the next season. Apply via subsurface trickle irrigation or injection through fertigation system. Do not use more than 1 application per year. Do not apply using surface trickle irrigation or any other type of above ground irrigation system.	M Bee:M	R2
Methomyl (Lannate)	1A	Contact	5	A	NSW, WA	Registered in blueberry for control of **Monolepta Beetle** (*Monolepta australis*), *Helicoverpa* spp. and Plague Thrips (*Thrips imaginis*). Apply as a foliar spray when pest incidence on flowers is high. Retreatment interval and maximum number of applications per season not specified.	H Bee:H	R2
Methomyl (Lannate) PER87495	1A	Contact	5	A	ALL (excl. WA & NSW)	Permitted in blueberry for control of **Monolepta Beetle** (*Monolepta australis*), *Helicoverpa* spp. and Plague Thrips (*Thrips imaginis*). Apply as a foliar spray when pest incidence on flowers is high. Retreatment interval and maximum number of applications per season not specified.	H Bee:H	R2
Pyrethrins (Pyganic) PER80070	3A	Contact	NR NG	A	ALL	Permitted in rubus, ribes & blueberry for control of **Monolepta Beetle** (*Monolepta australis*), Green Vegetable Bug (*Nezara viridula*) and Green Stink Bug (*Plautia affinis*). Apply as a foliar spray, using a minimum retreatment interval of 1-2 days. Maximum number of applications per season not specified.	VH Bee:H	-
Indoxacarb (Avatar Evo) FMC	22A	Ingestion	7	P-A	ALL	Registered in blueberries for control of Light Brown Apple Moth. Registered for control of various beetle species, including Garden Weevil in asparagus, strawberries and grapes, Vegetable Weevil in celery, Apple Weevil, Fuller's Rose Weevil and Garden Weevil in pome fruit and stone fruit, and Macadamia Seed Weevil in macadamia.	M Bee:H	R3
			3			Registered in *Rubus* spp. for control of Light Brown Apple Moth. Registered for control of various beetle species, including Garden Weevil in asparagus, strawberries and grapes, Vegetable Weevil in celery, Apple Weevil, Fuller's Rose Weevil and Garden Weevil in pome fruit and stone fruit, and Macadamia Seed Weevil in macadamia.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Tetraniliprole (Vayego) Bayer	28	Ingestion		P		Registered for control of various weevils, beetles and Lepidoptera in almonds, macadamias, pome and stone fruit. Hort Innovation project ST17000 data generation under development to register in raspberries and blackberries for various pests including Light Brown Apple Moth, Loopers, Helicoverpa, Cluster Caterpillar and **Monolepta Beetle**.	L-M Bee:VH	-
Ants (Formicidae) **Priority: Low**								
Ants are rated as a moderate priority in blueberries, and as a low priority in all other berry types. Ants can be a nuisance in orchards. The ants do not cause damage to bushes, but they can interfere with operations and severe infestations can impact on beneficial predators. They are a competitor for space in substrate which can impact on the health of bushes.								
Pyriproxyfen (Distance Ant Bait) Sumitomo	7C	IGR / Bait	NR	A	ALL	Registered in fruit crops for control of invasive and nuisance **ants**. Apply baits in early spring or summer at first sign of ant activity. Do not exceed 3 applications per year and a minimum of 3 months between each treatment.	VL Bee L	-
Broflanilide (Vedira) BASF	30	Contact & Ingestion		P		Registered for control of ants in non-crop situations.	-	-
Metaflumizone (Siesta Ant Bait) BASF	22B	Ingestion		P		Registered for control of ants in non-crop situations.	-	-

4.3 Weeds of Berries

4.3.1 Weed priorities

Weeds	Priority
Fumitory (*Fumaria officinalis*)	H
Flickweed (*Cardamine hirsuta*)	H
Crows Foot (*Eleusine indica*)	M
Flaxleaf Fleabane (*Conyza bonariensis*)	M
Wireweed (*Polygonum aviculare*)	M
Blackberry Nightshade (*Solanum nigrum*)	M
Silverleaf Nightshade (*Solanum elaeagnifolium*)	M
Clover (*Trifolium* spp.)	M
Marshmallow (*Malva parviflora*)	M
Nutgrass (*Cyperus rotundus*)	M
Fat-Hen (*Chenopodium album*)	M
Sowthistle (*Sonchus oleraceus*)	M
Couch Grass (*Cynodon dactylon*)	M
Pigweed (*Portulaca* spp.)	M
Chickweed (*Stellaria media*)	M
Dandelion (*Taraxacum officinale*)	M
Annual Ryegrass (*Lolium rigidum*)	M
Capeweed (*Arctotheca calendula*)	M
Paspalum (*Paspalum dilatatum*)	M
Broadleaf Dock (*Rumex obtusifolius*)	M
Wild Radish (*Raphanus raphanistrum*)	M
Willow Herb (*Epilobium* spp.)	M
Green Amaranth (*Amaranthus viridis*)	L
Johnson Grass (*Sorghum halepense*)	L

Weed priorities can vary substantially between regions, and weed management generally is guided more by factors such as the production system (e.g. substrate vs. in-ground production) than by specific problem weed species. Our industry consultation identified Fumitory and Flickweed as high priority weeds as well as several moderate priority species.

Berry farms should have a planned, integrated weed management program which combines cultural controls with strategic use of herbicides. In conventional production systems, ground cover should be maintained in the inter-row with grass, mulch, weed mat, or a combination of these. The key to achieving effective results with herbicides is to target young, actively growing weeds.

All of these weeds are prolific and highly competitive. In the case of Sowthistle, there has been confirmed cases of herbicide resistance to Groups 2, 4 and 9, and Blackberry Nightshade has confirmed resistance to Group 22[3].

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

https://www.croplife.org.au/resources/programs/resistance-management/herbicide-resistance-management-strategies/

[3] www.croplife.org.au/resources/programs/resistance-management/herbicide-resistance-management-strategies-3-draft/

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)**	
		R1	Short-term: Critical concern over retaining access
**	Moderate resistance risk	R2	Medium-term: Maintaining access of significant concern
***	High resistance risk	R3	Long-term: Potential issues associated with use - Monitoring required
Withholding Period (WHP) – Number of days from last treatment to harvest (H) or Grazing (G)			
Harvest	H	Not Required when used as directed	NR
Grazing	G	No Grazing Permitted	NG

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fumitory (*Fumaria officinalis*) **Priority: High**							
Fumitory is rated as a high priority weed. It is an aggressive and competitive weed which develops a highly persistent seed bank. Requires ongoing management using an Integrated Weed Management approach.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Fumitory**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Fumitory**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Fumitory**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Registered in non-bearing berry fruits for the control of grass and broadleaf weeds, including **Fumitory**. Apply as a directed spray to weed-free soil. At least 12.5mm of irrigation or rainfall is required within 21 days of application to activate the herbicide. Treatments per season not limited.	NR	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Fumitory**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Fumitory**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present.	NR	A	ALL	R3
			Registered in strawberries for control of various grass and broadleaf weeds, including **Fumitory**. Apply to bare, moist soil between polyethylene covered beds.				
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Fumitory**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-
Dimethenamid-P (Outlook) BASF	15**		Registered for control of grass and broadleaf weeds, including **Fumitory** in sweet corn, beans, peas, pumpkins and kabocha.		P		-
Fluroxypyr (Starane)	4**		Registered for control of broadleaf weeds, including **Fumitory** in poppies.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including **Fumitory** in onions. Compatible with glyphosate and diquat/paraquat.		P		-
Flickweed (*Cardamine hirsuta*) **Priority: High**							
Flickweed is rated as a high priority weed. Annual broadleaf weed that has a wide geographic distribution. It seeds prolifically and disperses explosively from the fruiting pods.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Flickweed**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Flickweed**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Oxyfluorfen + Oryzalin (Vault)	14** + 3**		Registered for control of **Flickweed** in container and in-ground ornamental plants.		P		-
Pendimethalin + Dimethenamid-P (Freehand)	3** + 15**		Registered for control of **Flickweed** in container and in-ground ornamental plants and recreational turf.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Crows Foot (*Eleusine indica*) **Priority: Moderate**							
Crows Foot is rated as a moderate priority weed. Coarse perennial grass weed that has a wide geographic distribution. It has a vigorous growth habit and it can germinate and spread in a wide variety of environmental conditions.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Crows Foot**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Crows Foot**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Fluazifop-P (Fusilade)	1***	Blueberries / Directed Spray or Shielded Spray	Registered in blueberries and strawberries for control of Grass Weeds, including **Crows Foot**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	QLD	-
		Strawberries / Directed Spray or Shielded Spray				ALL	
Fluazifop-P (Fusilade) PER86586	1***	Blueberries / Directed Spray or Shielded Spray	Permitted in blueberries for control of Grass Weeds, including **Crows Foot**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	NSW, ACT, NT, SA, TAS & WA	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Crows Foot**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Crows Foot**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Haloxyfop (Verdiict)	1***	Blueberry / Directed Spray or Spot Spray	Registered in blueberries for control of grass weeds, including **Crows Foot**. Apply as a directed spray or spot spray. Treatments per season not limited.	NR	A	ALL	-
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Crows Foot**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Flaxleaf Fleabane (*Conyza bonariensis*) **Priority: Moderate**							
Flaxleaf Fleabane is rated as a moderate priority weed. It is a widespread weed that is difficult to control with herbicides. Weed control should be targeted at small, actively growing weeds and usually multiple applications will be required. A good strategy is to use a combination of residual and knockdown herbicides.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Fleabane**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Flaxleaf Fleabane**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Flaxleaf Fleabane**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Paraquat + Amitrole (Guerrilla)	22** + 34**	Orchards / Directed Spray	Registered in orchards for control of annual grass and broadleaf weeds, including **Fleabane**. Avoid contact with crop foliage.	H:NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Fleabane**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Amitrole	34**		Registered for control of **Fleabane** in fallow and pine plantations.		P		-
Saflufenacil (Sharpen) BASF	14**		Registered for control of grass and broadleaf weeds, including **Flaxleaf Fleabane,** in citrus, pome and almond orchards.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Wireweed (*Polygonum aviculare*) **Priority: Moderate**							
Wireweed is rated as a moderate priority weed. Grows rapidly in the warmer months and is difficult to control with herbicides. Application timing is critical to ensure small weeds are targeted.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Wireweed**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Wireweed**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Wireweed**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Wireweed**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Wireweed**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Registered in non-bearing berry fruits for the control of grass and broadleaf weeds, including **Wireweed**. Apply as a directed spray to weed-free soil. At least 12.5mm of irrigation or rainfall is required within 21 days of application to activate the herbicide. Treatments per season not limited.	NR	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Wireweed**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Wireweed**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present. Registered in strawberries for control of various grass and broadleaf weeds, including **Wireweed**. Apply to bare, moist soil between polyethylene covered beds.	NR	A	ALL	R3
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Wireweed**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fluroxypyr (Starane) Corteva	4**		Registered for control of **Wireweed** in non-crop areas and pastures.		P		-
Pendimethalin (Stomp)	3**		Registered for control of **Wireweed** in various broadacre crops, broad beans, onions, avocado, banana, citrus, deciduous fruits, grapevines, lychees, macadamia nut, mangos, nuts, eucalypt plantations and teatree.		P		
Blackberry Nightshade (*Solanum nigrum*) **Silverleaf Nightshade** (*Solanum elaeagnifolium*) **Priority: Moderate**							
Blackberry Nightshade and Silverleaf Nightshade are rated as a moderate priority weed. It is a competitive weed that is widespread in all regions. Herbicide control is effective but requires timely application and avoidance of seed set over several years to bring the soil seed bank down.							
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Blackberry Nightshade**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Blackberry Nightshade**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Silverleaf Nightshade**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Registered in non-bearing berry fruits for the control of grass and broadleaf weeds, including **Blackberry Nightshade**. Apply as a directed spray to weed-free soil. At least 12.5mm of irrigation or rainfall is required within 21 days of application to activate the herbicide. Treatments per season not limited.	NR	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Blackberry Nightshade**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Aclonifen (Emerger) Bayer	32**	Pre-Emergence	Bayer is expected to seek registration for pre-emergent control of grass and broadleaf weeds in various vegetable crops. Registered in Europe for use in potatoes, legume vegetables and cereals. **Blackberry Nightshade** is listed as moderately susceptible at a high rate.		P		-
Clomazone	13**		Registered for control of broadleaf weeds including **Blackberry Nightshade** in beans, poppies, potato and tobacco transplants.		P		-
Dimethenamid-P (Outlook) BASF	15**		Registered for control of grass and broadleaf weeds, including **Blackberry Nightshade** in sweet corn, beans, peas, pumpkins and kabocha.		P		-
Fluroxypyr (Starane) Corteva	4**		Registered for control of **Blackberry Nightshade** in non-crop areas and pastures.		P		-
Norflurazon (Zoliar) Agnova	12**		Registered for control of grass and broadleaf weeds including **Blackberry Nightshade** in citrus, grapes, almonds, stone & pome fruits.		P		-
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including **Blackberry Nightshade** in fallow, Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Pendimethalin (Stomp)	3**		Registered for suppression of **Blackberry Nightshade** in carrots, processing peas, French beans, cabbage, cauliflower, broccoli and lettuce.		P		
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds, including **Blackberry Nightshade** in Brassica vegetables and beans.		P		-
Clover (*Trifolium* spp.) **Priority: Moderate**							
Clover is rated as a moderate priority weed. Aggressive winter-growing weed that is difficult to control with herbicides in-crop.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Clover**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Clover**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Clover**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Clover**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Clover**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present.	NR	A	ALL	R3
			Registered in strawberries for control of various grass and broadleaf weeds, including **Clover**. Apply to bare, moist soil between polyethylene covered beds.				
Marshmallow (*Malva parviflora*) **Priority: Moderate**							
Marshmallow is rated as a moderate priority weed. Adapted to a wide variety of environments and highly competitive weed. Control with knockdown herbicides can be unreliable.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Marshmallow**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Marshmallow**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Marshmallow**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Fluroxypyr (Starane) Corteva	4**		Registered for control of **Small Flowered Mallow** in fallows.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Isoxaben (Gallery) Corteva	29**		Registered for control of **Small Flowered Mallow** in non-crop, forests, fencelines, tree fruit & nut orchards, vineyards, nursery & amenity tree plantings and pyrethrum.		P		-
Oxyfluorfen (Goal)	14**		Registered for control of **Small Flowered Mallow** in fallow and fruit & nut trees and vines. Compatible with glyphosate and diquat/paraquat.		P		-
Nutgrass (*Cyperus rotundus*) **Priority: Moderate**							
Nutgrass is rated as a moderate priority weed. Prefers damp, water-logged soils but the nuts can survive for years underground during dry times. Herbicide options are limited and unreliable. Improve soil drainage if possible.							
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Nutgrass**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Nutgrass**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Dimethenamid-P (Outlook) BASF	15**		Registered for control of grass and broadleaf weeds in sweet corn, beans, peas, pumpkins and kabocha. Permitted in bulb onions for suppression of **Nutgrass** and other *Cyperus* species.		P		-
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Nutgrass** in asparagus.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fat-Hen (*Chenopodium album*) **Priority: Moderate**							
Fat-Hen is rated as a moderate priority weed. Herbicide control can be difficult and targeting weeds at early growth stages is critical.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Fat-Hen**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Fat Hen**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Fat-Hen**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Fat-Hen**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Registered in non-bearing berry fruits for the control of grass and broadleaf weeds, including **Fat-Hen**. Apply as a directed spray to weed-free soil. At least 12.5mm of irrigation or rainfall is required within 21 days of application to activate the herbicide. Treatments per season not limited.	NR	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Fat-Hen**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Fat-Hen**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present.	NR	A	ALL	R3
			Registered in strawberries for control of various grass and broadleaf weeds, including **Fat-Hen**. Apply to bare, moist soil between polyethylene covered beds.				
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Fat-Hen**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-
Aclonifen (Emerger) Bayer	32**	Pre-Emergence	Bayer is expected to seek registration for pre-emergent control of grass and broadleaf weeds in various vegetable crops. Registered in Europe for use in potatoes, legume vegetables and cereals. **Fat-Hen** is listed as susceptible.		P		-
Isoxaben (Gallery) Corteva	29**		Registered for control of **Fat-Hen** in non-crop, forests, fencelines, tree fruit & nut orchards, vineyards, nursery & amenity tree plantings and pyrethrum.		P		-
Nonanoic Acid (Beloukha)	-		Registered for control of **Fat Hen** in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	14**		Registered for control of **Fat Hen** in brassicas, coffee, duboisia, forestry, pyrethrum, tobacco, fruit & nut trees, vines and tropical and subtropical fruit (inedible peel).		P		-
Saflufenacil (Sharpen) BASF	14**		Registered for control of grass and broadleaf weeds, including **Fat Hen,** in citrus, pome and almond orchards.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds, including **Fat Hen** in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Pendimethalin (Stomp)	3**		Registered for control of **Fat Hen** in carrots, processing peas, French beans, cabbage, cauliflower, broccoli and lettuce.		P		-
Sowthistle (*Sonchus oleraceus*) **Priority: Moderate**							
Sowthistle is rated as a moderate priority weed. Sowthistle is prolific and widespread in all regions and it is also prone to development of herbicide resistance.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Sowthistle**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Sowthistle**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Sowthistle**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Sowthistle**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Sowthistle**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Registered in non-bearing berry fruits for the control of grass and broadleaf weeds, including **Sowthistle**. Apply as a directed spray to weed-free soil. At least 12.5mm of irrigation or rainfall is required within 21 days of application to activate the herbicide. Treatments per season not limited.	NR	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Sowthistle**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Sowthistle**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present. Registered in strawberries for control of various grass and broadleaf weeds, including **Sowthistle**. Apply to bare, moist soil between polyethylene covered beds.	NR	A	ALL	R3
Amitrole	34**		Registered for control of **Sowthistle** in fallow.		P		-
Isoxaben (Gallery) Corteva	29**		Registered for control of **Sowthistle** in non-crop, forests, fencelines, tree fruit & nut orchards, vineyards, nursery & amenity tree plantings.		P		-
Napropamide (Devrinol)	0**		Registered for control of **Sowthistle** in almonds, grapevines, stone fruit, tomatoes and canola.		P		-
Nonanoic Acid (Beloukha)	-		Registered for control of **Sowthistle** in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		-
Norflurazon (Zoliar) Agnova	12**		Registered for control of grass and broadleaf weeds including **Sowthistle** in citrus, grapes, almonds, stone & pome fruits.		P		-
Pendimethalin (Stomp)	3**		Registered for control of **Sowthistle** in carrots, avocado, banana, citrus, deciduous fruits, grapevines, lychees, macadamia nut, mangos, nuts, eucalypt plantations and teatree.		P		
Saflufenacil (Sharpen) BASF	14**		Registered for control of grass and broadleaf weeds, including **Sowthistle** in cereal crops.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds, including **Sowthistle**, in Brassica vegetables, green beans, navy beans and sugar cane.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Couch Grass (*Cynodon dactylon*) **Priority: Moderate**							
Couch Grass is rated as a moderate priority weed. It is a widespread, perennial weed that grows year-round in most areas. Herbicide control is effective provided it is targeted to young, actively growing weeds. Multiple applications are usually required.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Couch Grass**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Fluazifop-P (Fusilade)	1***	Blueberries / Directed Spray or Shielded Spray	Registered in blueberries and strawberries for control of Grass Weeds, including **Couch Grass**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	QLD	-
		Strawberries / Directed Spray or Shielded Spray				ALL	
Fluazifop-P (Fusilade) PER86586	1***	Blueberries / Directed Spray or Shielded Spray	Permitted in blueberries for control of Grass Weeds, including **Couch Grass**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	NSW, ACT, NT, SA, TAS & WA	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Couch Grass**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Couch Grass**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Haloxyfop (Verdiict)	1***	Blueberry / Directed Spray or Spot Spray	Registered in blueberries for control of grass weeds, including **Couch Grass**. Apply as a directed spray or spot spray. Treatments per season not limited.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Amitrole	34**		Registered for control of **Couch Grass** in non-crop areas.		P		-
Nonanoic Acid (Beloukha)	-		Registered for control of **Couch Grass** in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		-
Norflurazon (Zoliar) Agnova	12**		Registered for control of grass and broadleaf weeds including **Couch Grass** in citrus, grapes, almonds, stone & pome fruits.		P		-
Pigweed (*Portulaca* spp.) **Priority: Moderate**							
Pigweed is rated as a moderate priority weed. Summer growing weed that competes aggressively in-crop and can be difficult to control with herbicides.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Pigweed**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Pigweed**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Pigweed**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Pigweed**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Pigweed**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Registered in non-bearing berry fruits for the control of grass and broadleaf weeds, including **Pigweed**. Apply as a directed spray to weed-free soil. At least 12.5mm of irrigation or rainfall is required within 21 days of application to activate the herbicide. Treatments per season not limited.	NR	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Pigweed**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Pigweed**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-
Fluroxypyr (Starane)	4**		Registered for control of broadleaf weeds, including **Pigweed** in sorghum, maize, millets, sweet corn, fallow and lucerne.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Chickweed (*Stellaria media*) **Priority: Moderate**							
Chickweed is rated as a moderate priority weed. Low growing, winter annual weed that can continue growing all through summer. Targeting weed control prior to their flowering is critical.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Chickweed**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Chickweed**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Chickweed**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Chickweed**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present. Registered in strawberries for control of various grass and broadleaf weeds, including **Chickweed**. Apply to bare, moist soil between polyethylene covered beds.	NR	A	ALL	R3
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including **Chickweed** in pyrtherum. Compatible with glyphosate and diquat/paraquat.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Pendimethalin (Stomp)	3**		Registered for control of **Chickweed** in avocado, banana, citrus, deciduous fruits, grapevines, lychees, macadamia nut, mangos, nuts, eucalypt plantations and teatree.		P		
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds, including **Chickweed** in Brassica vegetables.		P		-
Dandelion (*Taraxacum officinale*) **Priority: Moderate**							
Dandelion is rated as a moderate priority weed. Dandelions are an annual broadleaf weed that can grow year-round in most regions. They are prolific and very hardy weeds that will require sustained control measures to eradicate.							
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Dandelion**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Norflurazon (Zoliar)	12**		Registered for control of **Dandelion** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
Annual Ryegrass (*Lolium rigidum*) **Priority: Moderate**							
Annual Ryegrass is rated as a moderate priority weed. 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. In-crop options are limited to Group A's so it is important to use alternate, broad-spectrum products in non-crop periods.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Annual Ryegrass**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Annual Ryegrass**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Fluazifop-P (Fusilade)	1***	Blueberries / Directed Spray or Shielded Spray	Registered in blueberries and strawberries for control of Grass Weeds, including **Annual Ryegrass**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	QLD	-
		Strawberries / Directed Spray or Shielded Spray				ALL	
Fluazifop-P (Fusilade) PER86586	1***	Blueberries / Directed Spray or Shielded Spray	Permitted in blueberries for control of Grass Weeds, including **Annual Ryegrass**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	NSW, ACT, NT, SA, TAS & WA	-
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Annual Ryegrass**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Annual Ryegrass**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Annual Ryegrass**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Haloxyfop (Verdiict)	1***	Blueberry / Directed Spray or Spot Spray	Registered in blueberries for control of grass weeds, including **Annual Ryegrass**. Apply as a directed spray or spot spray. Treatments per season not limited.	NR	A	ALL	-
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Annual Ryegrass**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present.	NR	A	ALL	R3
			Registered in strawberries for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Apply to bare, moist soil between polyethylene covered beds.				
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-
Amitrole	34**		Registered for control of **Annual Ryegrass** in fallow and potatoes.		P		-
Napropamide (Devrinol)	0**		Registered for control of **Annual Ryegrass** in almonds, grapevines, stone fruit, tomatoes and canola.		P		-
Nonanoic Acid (Beloukha)	-		Registered for control of **Annual Ryegrass** in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		-
Norflurazon (Zoliar)	12**		Registered for control of **Annual Ryegrass** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including **Annual Ryegrass** in fallow, Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		-
Saflufenacil (Sharpen) BASF	14**		Registered for control of grass and broadleaf weeds, including **Annual Ryegrass** in fallow, lucerne and citrus, pome fruit and almonds.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds, including **Annual Ryegrass**, in Brassica vegetables.		P		-
Capeweed (*Arctotheca calendula*) **Priority: Moderate**							
Capeweed is rated as a moderate priority weed. Annual broadleaf weed that germinates in the cooler months and is widespread in temperate regions. Capeweed seeds and grows prolifically and is difficult to control with knockdown herbicides.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Capeweed**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Capeweed**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Capeweed**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Capeweed**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Capeweed**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Capeweed**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Capeweed**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present. Registered in strawberries for control of various grass and broadleaf weeds, including **Capeweed**. Apply to bare, moist soil between polyethylene covered beds.	NR	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Capeweed**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-
Amitrole	34**		Registered for control of **Capeweed** in potatoes.		P		-
Isoxaben (Gallery) Corteva	29**		Registered for control of **Capeweed** in non-crop, forests, fencelines, tree fruit & nut orchards, vineyards, nursery & amenity tree plantings.		P		-
Nonanoic Acid (Beloukha)	-		Registered for control of **Capeweed** in non-crop areas, turf, orchards & vineyards, fallow and forestry.		P		-
Norflurazon (Zoliar)	12**		Registered for control of **Capeweed** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including **Capeweed** in fallow, Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		-
Pendimethalin (Stomp)	3**		Registered for control of **Capeweed** in pyrethrum.		P		
Saflufenacil (Sharpen) BASF	14**		Registered for control of grass and broadleaf weeds, including **Capeweed** in fallow, lucerne and citrus, pome fruit and almonds.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paspalum (*Paspalum dilatatum*) **Priority: Moderate**							
Paspalum is rated as a moderate priority weed. Paspalum is a perennial grass weeds that forms clumps that are tough to control. They are aggressive and fast-growing and ongoing control measures are required to keep them in check. Spot spraying can be effective, but it is important to target newly germinated weeds to achieve effective control.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Paspalum**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Fluazifop-P (Fusilade)	1***	Blueberries / Directed Spray or Shielded Spray	Registered in blueberries and strawberries for control of Grass Weeds, including **Paspalum**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	QLD	-
		Strawberries / Directed Spray or Shielded Spray				ALL	
Fluazifop-P (Fusilade) PER86586	1***	Blueberries / Directed Spray or Shielded Spray	Permitted in blueberries for control of Grass Weeds, including **Paspalum**. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	NSW, ACT, NT, SA, TAS & WA	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Paspalum**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Paspalum**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Haloxyfop (Verdiict)	1***	Blueberry / Directed Spray or Spot Spray	Registered in blueberries for control of grass weeds, including **Paspalum**. Apply as a directed spray or spot spray. Treatments per season not limited.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Norflurazon (Zoliar)	12**		Registered for control of **Paspalum** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
Broadleaf Dock (*Rumex obtusifolius*) **Priority: Moderate**							
Broadleaf Dock is rated as a moderate priority weed. It is an aggressive perennial that is difficult to eradicate with herbicides.							
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various Grass and Broadleaf Weeds, including **Broadleaf Dock**. Can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Broadleaf Dock**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Broadleaf Dock**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present.	NR	A	ALL	R3
			Registered in strawberries for control of various grass and broadleaf weeds, including **Broadleaf Dock**. Apply to bare, moist soil between polyethylene covered beds.				
Amitrole	34**		Registered for control of **Dock** in non-crop areas.		P		-
Fluroxypyr (Starane)	4**		Registered for control of broadleaf weeds, including **Dock** in non-crop areas.		P		-
Pendimethalin (Stomp)	3**		Registered for control of **Dock** in pyrethrum.		P		

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Wild Radish (*Raphanus raphanistrum*) **Priority: Moderate**							
Wild Radish is rated as a moderate priority weed. 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.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Wild Radish**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of Grass and Broadleaf Weeds, including **Wild Radish**. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Wild Radish**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds, including **Wild Radish**. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds, including **Wild Radish**. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds, including **Wild Radish**. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present. Registered in strawberries for control of various grass and broadleaf weeds, including **Wild Radish**. Apply to bare, moist soil between polyethylene covered beds.	NR	A	ALL	R3
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds, including **Wild Radish**. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-
Fluroxypyr (Starane)	4**		Registered for control of broadleaf weeds, including **Wild Radish** in cereal crops.		P		-
Isoxaben (Gallery) Corteva	29**		Registered for control of **Wild Radish** in pyrethrumand cereals.		P		-
Norflurazon (Zoliar)	12**		Registered for control of **Wild Radish** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
Oxyfluorfen (Goal)	14**		Registered for control of grass and broadleaf weeds, including **Wild Radish** in fallow, Brassica vegetables and fruit and nut trees. Compatible with glyphosate and diquat/paraquat.		P		-
Pendimethalin (Stomp)	3**		Registered for suppression of **Wild Radish** in carrots, processing peas, French beans, brassica vegetables, lettuce and pyrethrum.		P		
Saflufenacil (Sharpen) BASF	14**		Registered for control of grass and broadleaf weeds, including **Wild Radish** in fallow, lucerne and citrus, pome fruit and almonds.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Willow Herb (*Epilobium* spp.) **Priority: Moderate**							
Willow Herb is rated as a moderate priority weed. Aggressive broadleaf perennial which can reproduce from seed dispersal as well as underground rhizomes.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds, including **Willow Herb**. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds, including **Willow Herb**. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3
Flazasulfuron (Katana) ISK	2***		Registration pending for control of various grass and broadleaf weeds, including **Willow Herb**, in vineyards, olive groves, citrus orchards and non-crop situations.		P		-
Grass and Broadleaf Weeds **Priority: Low**							
The key to weed management in orchards is maintaining ground cover in the inter-row with grass and mulch.							
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+ 10**	Cane berries incl. raspberry & blackberry / Inter-row	Registered in cane berries as an inter-row knockdown treatment for control of grass and broadleaf weeds. Do not allow spray or spray drift to contact the crop. Maximum of 2 applications per season.	NR G:56	A	ALL	-
Chlorthal-Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Registered in strawberries for control of various grass and broadleaf weeds. can be applied at transplanting or on established plantings in autumn and early spring. Do not apply after first bloom. Can be sprayed over plants without injury.	NR NG	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Dichlobenil (Casoron) UPL	29**	Blackcurrants, Raspberries, Gooseberries	Registered in blackcurrants, raspberries and gooseberries for control of annual grass and broadleaf weeds. Apply late winter to early spring before growth has started, using a calibrated granular chemical applicator. Maximum number of applications per season not specified.	NR	A	TAS	-
Dichlobenil (Casoron) UPL PER12219	29**	Blueberries / Granule Application / Residual Weed Control	Permitted in blueberries for control of annual grass and broadleaf weeds. Apply using a calibrated granular chemical applicator. Apply first application prior to budburst and the second application following final harvest. Do not use more than 2 applications per year.	NR NG	A	ALL (excl. VIC)	-
Fluazifop-P (Fusilade)	1***	Blueberries / Directed Spray or Shielded Spray	Registered in blueberries and strawberries for control of grass weeds. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	QLD	-
		Strawberries / Directed Spray or Shielded Spray				ALL	
Fluazifop-P (Fusilade) PER86586	1***	Blueberries / Directed Spray or Shielded Spray	Permitted in blueberries for control of grass weeds. Apply as a directed spray to young, actively growing weeds. Treatments per season not limited.	28	A	NSW, ACT, NT, SA, TAS & WA	-
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Registered in blueberries for control of grass and broadleaf weeds. Apply to bare soil using a directed spray at the base of the bushes. At least 15mm of irrigation or rainfall is required to activate the herbicide. Best application is during the period following final harvest up to bud break. Avoid direct or indirect spray contact to foliage, fruit and green bark. Do not apply to bushes established in the orchard for less than 1 year.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Registered in blueberries, strawberries and cane berry fruits for control of grass and broadleaf weeds. Do not allow spray to contact any part of the bush. Do not apply to young, green or un-calloused and damaged blueberry plants. Treatments per season not limited.	NR G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in blueberries for control of grass and broadleaf weeds. Do not allow spray to contact any part of the bush. Treatments per season not limited.	NR	A	ALL	R3
Haloxyfop (Verdiict)	1***	Blueberry / Directed Spray or Spot Spray	Registered in blueberries for control of grass weeds. Apply as a directed spray or spot spray. Treatments per season not limited.	NR	A	ALL	-
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Registered in non-bearing berry fruits for the control of grass and broadleaf weeds. Apply as a directed spray to weed-free soil. At least 12.5mm of irrigation or rainfall is required within 21 days of application to activate the herbicide. Treatments per season not limited.	NR	A	ALL	-
Paraquat (Gramoxone) Syngenta	22**	Orchards / directed spray or spot spray	Registered in orchards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Treatments per season not limited.	H:1 G:7	A	ALL	R3
Paraquat + Amitrole (Guerrilla)	22** + 34**	Orchards / Directed Spray	Registered in orchards for control of annual grass and broadleaf weeds. Avoid contact with crop foliage.	H:NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Registered in orchards for control of grass and broadleaf weeds. Apply as a directed spray or spot spray. Treatments per season not limited.	G:7	A	ALL	R3
Simazine	5**	Berry fruit / Strawberries / pre-emergent	Registered in berry fruit for control of various grass and broadleaf weeds. Apply to bare, moist soil on established plants only. Do not apply to foliage or when fruit is present.	NR	A	ALL	R3
			Registered in strawberries for control of various grass and broadleaf weeds. Apply to bare, moist soil between polyethylene covered beds.				

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Trifluralin	3**	Orchards & Vineyards / Pre-emergence residual	Registered in orchards and vineyards for control of various grass and broadleaf weeds. Apply to new plantings during pre-plant cultivation or to established crops in spring after weeds and green manure crops have been ploughed in.	NR	A	ALL (excl. NSW)	-
Oryzalin + Oxyfluorfen (Rout)	3** + 14**	Substrate Application / Residual Weed Control	Registered as a pre-emergent herbicide applied to substrate for control of grass and broadleaf weeds in ornamentals. US registration for control of grass and broadleaf weeds in Homebell Blueberry.		P		-

4.4 Plant Growth Regulators in Berries

4.4.1 Plant Growth Regulator Priorities

PGR Priorities	Strawberry	Blueberry	Raspberry	Blackberry
Increase fruit yield	M	M	M	M
Improve fruit quality	M	M	H	H
Promote flowering	M	M	M	M
Promote fruit set	M	H	M	M
Promote fruit ripening	M	M	M	M
Promote vegetative growth	M	M	M	M

Plant Growth Regulators (PGRs) are not commonly used in berry farms.

4.4.2 Available and Potential Plant Growth Regulators

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

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

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Improve Fruit Quality **Priority: High**							
Improving Fruit Quality is rated as a high priority in raspberries and blackberries, and as a moderate priority in strawberries and blueberries.							
Ethephon	PGR		Registered for colour improvement in apples, promotion of even maturity in cherries, and promotion of early uniform colouring in table grapes. Previously permitted in blueberries to **promote uniform maturity** of berries at harvest.		P		-
Promote Fruit Set **Priority: High**							
Promoting Fruit Set is rated as a high priority in blueberries, and as a moderate priority in strawberries, raspberries and blackberries.							
Ethephon	PGR		Registered for advancement of maturity and stimulation of flowering in apples, advancement and concentration of maturity in peaches and acceleration of ripening of tomatoes. Previously permitted in blueberries to **promote uniform maturity** of berries at harvest.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Control of Suckers Priority: Unknown							
Carfentrazone	14**	*Rubus* spp.	Registered in *Rubus* spp. for cane burning (control of unwanted suckers). Apply to suckers less than 300mm long, before lignification occurs. Avoid spray drift onto desirable green stems, foliage, fruit or flowers.	NR G:14	A	ALL	-
Glufosinate (Basta)	10**	Blackberry, Raspberry	Registered in blackberries and raspberries for primocane and sucker control. Apply as a directed spray to suckers and primocanes. Avoid contact with flowers, developing fruit or desirable foliage.	H:NR G:56	A	NSW, ACT, VIC & TAS	R3

5. References

5.1 Information:

AgChem Access Priority Access Forum	https://www.agrifutures.com.au/national-rural-issues/agvet-chemicals/
Australian Pesticide and Veterinary Medicines Authority	www.apvma.gov.au
APVMA Chemical review	https://apvma.gov.au/chemicals-and-products/chemical-review/listing
APVMA MRLs	www.legislation.gov.au/Details/F2023L01350
APVMA Permit search	https://productsearch.apvma.gov.au/permits
APVMA Product search	https://productsearch.apvma.gov.au/products
Codex MRL database	http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/
Cotton Pest Management Guide 2023-24	https://www.cottoninfo.com.au/publications/cotton-pest-management-guide
CropLife Australia	https://www.croplife.org.au/
Growcom – Infopest Database	www.infopest.com.au
Hort Innovation	www.horticulture.com.au

5.2 Abbreviations and Definitions:

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

5.3 Acknowledgements:

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6. Appendices

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

Appendix 1. Products available for disease control in Berries

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
1,3-Dichloropropene + Chloropicrin (Telone C-35)	8B	Strawberries / Soil Fumigation Pre-Plant	Soil Borne Diseases including Fusarium & Verticillium Wilts Rhizoctonia Pythium	ALL	NR	-
Agrobacterium radiobacter (NoGall) PER13150	-	*Rubus* spp.	Crown Gall (*Agrobacterium tumefaciens*)	ALL (excl. VIC)	NR	-
Agrobacterium radiobacter (NoGall) PER89523	-	Blueberries	Crown Gall (*Agrobacterium tumefaciens*)	ALL (excl. VIC)	NR	-
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Berries	Botrytis Blight & Fruit Rot / Grey Mould (*Botrytis cinerea*) Suppression of: Anthracnose Fruit Rot (*Colletotrichum* spp.) Fruit Rot (*Phomopsis* spp.) Rhizopus Fruit Rot (*Rhizopus* spp.)	ALL	NR	-
Azoxystrobin (Amistar)	11	Rubus	Anthracnose (*Elsinoe veneta*) Botrytis (*Botrytis cinerea*) Cladosporium (*Cladosporium cladosporiodes*)	ALL	1	-
Azoxystrobin (Amistar) PER89953	11	Blueberries	Suppression of: Blueberry Rust (*Thekopsora minima*) Stem Blight and Dieback (*Neofusicocum* spp. / *Botryosphaeria* spp.) Twig Blight (*Phomopsis* spp. / *Pestalotiopsis* spp.)	ALL (excl. VIC)	1	-
Bacillus amyloliquefaciens Strain MBI600 (Serifel) BASF	BM01	Strawberries Berries, including Blackberries, Blueberries & Raspberries	Grey Mould (*Botrytis cinerea*)	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer	BM01	Strawberries	Botrytis (*Botrytis cinerea*)	ALL	NR	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Opti) Bayer PER88058	BM01	Blackberries & Raspberries	Botrytis Grey Mould (*Botrytis* spp.)	ALL (excl. VIC)	NR	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide)	BM01	Berries / Biological Soil Ameliorant	For application to soil to improve bioavailability of soil resources.	ALL	NR	-
Boscalid + Pyraclostrobin (Pristine) BASF PER82986	7+11	*Rubus* & *Rubus* hybrids	Grey Mould (*Botrytis* spp.), Anthracnose (*Colletotrichum* spp. or *Elsinoe* spp.), Alternaria Leaf Spot & Fruit Rot (*Alternaria* spp.), Leaf Spot & Blotch (*Mycosphaerella* spp. or *Septoria* spp.), Monilinia Blight (*Monilinia* spp.), Phomopsis (*Phomopsis* spp.) & Powdery Mildew (*Sphaerotheca* spp., *Microsphaera* spp. or *Oidium* spp.) Suppression of: Rust (*Didymella* spp. or *Phoma* spp.)	ALL (excl. VIC)	1	-
		Blueberries / Field & Protected Grown	Grey Mould (*Botrytis* spp.) Anthracnose (*Gloesporoides* spp.) Suppression Only: Rust (*Thekospora minima*)		3	
Bromo Chloro Dimethyl Hydantoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	External Rot Causing Organisms	ALL	NR	-
Bupirimate (Nimrod) Adama	8	Strawberry runner production only	Powdery Mildew	QLD, SA	NG	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Captan	M4	Strawberries	Grey Mould (*Botrytis cinerea*) Gloeosporium Fruit Rot Phytophthora Root Rot (*Phytophthora nicotianae* var. *parasitica*) Black Spot / Anthracnose (*Colletotrichum acutatum*) Scorch (*Diplocarpon earlianum*) Leaf Blight (*Dendrophoma obscurans*)	ALL	1	
Captan PER13958	M4	*Rubus* spp., *Ribes* spp. & Blueberries	Cane Spot Spur Blights Botrytis Flower & Fruit Rot Anthracnose (*Colletotrichum* spp.)	ALL (excl. VIC)	1	-
Chlorine	-	Sanitiser / Post-Harvest Treatment	Bacteria and Fungi	ALL	NR	-
Chloropicrin	-	Pre-Planting Soil Fumigation	Soil-Borne Fungus Diseases Bacteria	ALL	NR	-
Chlorothalonil (Bravo) PER14449	M5	*Rubus* spp.	Grey Mould Rusts Downy Mildew Septoria Leaf Spot	ALL (excl. VIC)	28	R3
Chlorothalonil (Bravo) PER91300	M5	Blueberries	Grey Mould (*Botrytis cinerea*) Rust (*Thekopsora minima*)	ALL (excl. VIC)	28	R3
Copper (Cu) present as Copper Ammonium Acetate	M1	Strawberries	Leaf Spot (*Mycosphaerella musicola*) Grey Mould (*Botrytis cinerea*)	VIC, SA, TAS & WA	1	-
Copper (Cu) present as Copper Oxychloride	M1	Strawberries	Leaf Spot Leaf Scorch	ALL	1	-
		Rubus	Rust Leaf Spot		NR	
Copper (Cu) present as Cuprous Oxide	M1	Strawberries	Leaf Spot Grey Mould	VIC, SA, TAS & WA	1	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Copper (Cu) present as Copper Hydroxide PER14443	M1	*Rubus* spp.	Rust Leaf Spot	ALL (excl. VIC)	NR	-
Copper (Cu) present as Copper Hydroxide PER84176	M1	Blueberries	Anthracnose (*Collectotrichum* spp.) Blueberry Rust (*Thekospora minima*)	ALL (excl. VIC)	1	-
Cyflufenamid (Flute) AgNova	U6	Strawberries	Powdery Mildew (*Podosphaera aphanis*)	ALL	NR	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Strawberries	Crown & Petiole Rot (*Colletotrichum gloeosporioides)* Grey Mould (*Botrytis cinerea*)	ALL	3	
Cyprodinil + Fludioxonil (Switch) Syngenta PER84891	9+12	Blueberries / Field & Protected Cropping Systems	Grey Mould (*Botrytis cinerea*) Anthracnose (*Gloesporoides* spp.)	ALL (excl. VIC)	7	-
Cyprodinil + Fludioxonil (Switch) Syngenta PER14422	9+12	Blackberries & Raspberries / Field & Protected Cropping Systems	Grey Mould (*Botrytis cinerea*)	ALL (excl. VIC)	7	-
Dithianon (Dragon) Nufarm PER82601	M9	Blueberries / Field Grown Only	Blueberry Rust (*Thekospora minima*)	ALL (excl. VIC)	H:21 NG	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Ethanedinitrile (EDN Fumigas)	-	Strawberry Runners / Strawberries / Fumigation	Soil Borne Pathogens: *Bipolaris sorokiniana* *Fusarium acuminatum* *Fusarium oxysporum* *Phytophthora cactorum* *Phytophthora cryptogea* *Pythium sulcatum* *Pythium ultimum* *Rhizoctonia fragariae* *Rhizoctonia solani* *Sclerotium rolfsii* *Macrophomina phaseolina*	ALL	NR	-
Fenhexamid (Teldor) Bayer	17	Strawberries	Grey Mould (*Botrytis cinerea*)	ALL	NR	-
		Rubus			1	
Fenhexamid (Teldor) Bayer PER86489	17	Blueberry / Field & Protected	Grey Mould (*Botrytis cinerea*)	ALL (excl. VIC)	1	-
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Strawberry	Grey Mould (*Botrytis cinerea*) Powdery Mildew (*Sphaerotheca macularis*)	ALL	1	-
Fluazinam (Gem) Adama PER83871	29	Strawberry runner production only	Leaf Blotch	QLD	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Fluopicolide & Propamocarb Hydrochloride (Infinito) Bayer PER93024	43+28	Blackberries & Raspberries	Downy Mildew (*Peronospora* spp.)	ALL (excl. VIC)	1	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Strawberries	Grey Mould (*Botrytis cinerea*)	ALL	1	-
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Strawberries & cane berries (incl. raspberries, blackberries, dewberries)	Grey Mould (*Botrytis cinerea*)	ALL	1	-
		Strawberries	Powdery Mildew (*Sphaerotheca macularis*)			
Iodine	-	Berries / Post-Harvest Sanitiser	Bacteria & Fungi	ALL	NR	-
Ipflufenoquin (Migiwa Kinoprol) AgNova	52	Strawberries	Grey Mould (*Botrytis cinerea*)	ALL	1	-
Iprodione	2	Blueberries	Grey Mould (*Botrytis* spp.)	NSW, QLD, TAS & WA	1	R2
		Raspberries Strawberries		ALL		
Isofetamid (Kenja) AgNova	7	Low growing berries incl. strawberries Cane berries incl. raspberries & blackberries Bush berries incl. blueberries & currants	Grey Mould (*Botrytis cinerea*)	ALL	NR	-
Mancozeb PER13958	M3	*Rubus* spp., *Ribes* spp. & Blueberries	Grey Mould Rust Downy Mildew	ALL (excl. VIC)	7	R2

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Mancozeb + Metalaxyl-M (Ridomil Gold MZ) Syngenta	M3+4	Strawberry runner production only	Eye Spot Leaf Blight Root Rot Scorch	ALL	7	R2
Mancozeb & Metalaxyl-M (Ridomil Gold MZ) Syngenta PER84973	M3+4	Rubus	Downy Mildew (*Peronospora* spp.)	ALL (excl. VIC)	14	R2
Metalaxyl-M (Ridomil Gold 25G) Syngenta PER13958	4	*Rubus* spp., *Ribes* spp. & Blueberries	*Phytophthora* spp.	ALL (excl. VIC)	48	-
Metalaxyl-M (Ridomil Gold) Syngenta & Phosphorous Acid PER13697	4+33	Strawberry runner production only	Root & Crown Rot	QLD	NR	-
Myclobutanil (Systhane)	3	Strawberries	Powdery Mildew	ALL	NR	R3
Myclobutanil (Systhane) PER92308	3	Blackberries & Raspberries	Yellow Rust (*Phragmidium rubi-idaei*)	ALL (excl. VIC)	1	R3
Oxathiapiprolin (Zorvec Enicade) Corteva PER91060	49	Blackberry & Raspberry / Staff & contracted growers of Driscolls only	Phytophthora Root Rot (*Phytophthora* spp.)	ALL	1	-
Penthiopyrad (Fontelis) Corteva	7	Strawberry	Grey Mould (*Botrytis cinerea*) Powdery Mildew (*Sphaerotheca* spp.)	ALL	NR	-
Peroxyacetic Acid	-	Sanitiser / Post-Harvest Treatment	Bacteria	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Phosphorous Acid PER13958	33	*Rubus* spp., *Ribes* spp. & Blueberries	*Phytophthora* spp.	ALL (excl. VIC)	NR	-
Phosphorous Acid PER80064	33	Strawberries / Post-planting only	Crown Rot (*Phytophthora* spp.)	ALL (excl. VIC)	NR	-
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Berries incl. blackberries, blueberries, raspberries & strawberries / Field & protected cropping	Grey Mould (*Botrytis cinerea*) Powdery Mildew (*Sphaerotheca aphanis*)	ALL	NR	-
Polyoxin D Zinc Salt (Intervene) Nufarm PER92997	19	Blueberry	Suppression of: Blueberry Rust (*Thekospora minima*)	ALL (excl. VIC)	NR	-
Potassium Bicarbonate (EcoCarb)	M2	Strawberries	Powdery Mildew	ALL	NR	-
Prochloraz (Octave)	3	Strawberry runner production only	Colletotrichum Crown Rot / Stolon Rot. Apply	QLD, WA	NR	R3
Propiconazole (Tilt) PER14740	3	Blueberries	Blueberry Rust (*Pucciniastrum vaccinii, Thekospora minima*)	ACT, NSW, QLD, SA, TAS & WA	3	R3
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Berries incl. raspberries, blackberries, blueberries, dewberries & currants	Grey Mould (*Botrytis cinerea*)	ALL	1 NG	R3
		Strawberries	Grey Mould (*Botrytis cinerea*) Powdery Mildew (*Podosphaeria aphanis*)			
Pyraclostrobin (Cabrio) PER14483	11	Strawberry runner production only	Crown or Petiole Rot	QLD, TAS & VIC	NR	-
Pyrimethanil (Scala) Bayer	9	Strawberries	Grey Mould (*Botrytis cinerea*)	ALL	1	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Pyrimethanil (Scala) Bayer PER13958	9	*Rubus* spp., *Ribes* spp. & Blueberries	Grey Mould (*Botrytis cinerea*)	ALL (excl. VIC)	1	-
Quinoxyfen (Legend) Corteva PER14577	13	Strawberry runner production only	Powdery Mildew	ALL	NR	-
Sodium Metabisulphite (Sulphur Dioxide Pads)	M	Blueberries / Post-Harvest Treatment	Grey Mould (*Botrytis cinerea*)	ALL	NR	-
Streptomyces lydicus (Actinovate)	BM 02	Strawberries	Suppression of: Powdery Mildew Phytophthora	ALL	NR	-
Sulfur	M2	Strawberries	Powdery Mildew	NSW, WA	NR	-
Thiram	M3	Strawberries	Black Spot (*Colletotrichum acutatum*) Grey Mould (*Botrytis cinerea*)	ALL (excl. NSW)	2	R2
Triadimenol (Bayfidan) Bayer PER13958	3	*Rubus* spp., *Ribes* spp. & Blueberries	Powdery Mildew	ALL (excl. VIC)	7	R3
Trifloxystrobin (Flint) BASF	11	Strawberries	Powdery Mildew (*Sphaerotheca macularis*)	ALL	1	-
Zineb	M4	Strawberries	Leaf Blight	QLD, WA	7	R3
			Scorch	TAS		

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

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
3-Methyl-1-Butanol | 2-Methyl-1-Butanol | Ethyl Acetate | Acetaldehyde | Sec Butanol | Ethanol | Carpophilus Aggregation Pheromones (Carpophilus Catcha Trapping System)	-	Berry Fruit	Carpophilus Beetles	ALL	NR	-
Abamectin	6	Blueberries	Queensland Fruit Fly *(Bactrocera tryoni)*	ALL	7	-
		Blackberries & Raspberries	Queensland Fruit Fly *(Bactrocera tryoni)* Two Spotted Mite (*Tetranychus urticae*)			
		Strawberries	Two Spotted Mite (*Tetranychus urticae*)		3 G:3	
Abamectin PER91106	6	Blueberries / Staff & contracted growers of Costa Exchange only	Six-Spotted Mite (*Eotetranychus sexmaculatus*) Two-Spotted Mite (*Tetranychus urticae*)	NSW, QLD, TAS & WA	7	-
Abamectin (Tervigo) Syngenta PER91777	6	Strawberry / Staff & contracted growers of Driscolls only	Root-Knot Nematode (*Meloidogyne* spp.)	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Acetamiprid + Pyriproxyfen (Trivor) Adama PER91601	4A+7C	Blackberries & Raspberries	Cottonseed Bug (*Oxycarenus luctuosus*) Green Potato Bug (*Cuspicona simplex*) Green Vegetable Bug (*Nezara viridula*) Leafhoppers (*Empoasca* spp.) Light Brown Apple Moth (*Epiphyas postvittana*) Mealybugs (Pseudococcidae) Planthoppers (Fulgoroidea) Scale Insects (Coccidae) Suppression of: Mediterranean Fruit Fly (*Ceratitis capitata*) Queensland Fruit Fly (*Bactrocera tryoni*)	ALL (excl. VIC)	7	-
Afidopyropen (Versys) BASF	9D	Strawberry	Green Peach Aphid (*Myzus persicae*) Cabbage Aphid (*Brevicoryne brassicae*) Currant Lettuce Aphid (*Nasanovia ribis-nigri*) Cotton Aphid / Melon Aphid (*Aphid gossypii*) Corn Aphid (*Rhopalosiphum maydis*) Suppression of: Silverleaf Whitefly (*Bemisia tabaci*)	ALL	1	-
Afidopyropen (Versys) BASF PER90178	9D	Raspberries & Blackberries	Aphids incl. Green Peach Aphid (*Myzus persicae*) Suppression of: Greenhouse Whitefly (*Trialeurodes vaporariorum*)	ALL	1	-
Alpha-Cypermethrin PER90027	3A	Blueberries	Fruit Flies	ALL (excl. VIC)	7	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Bacillus thuringiensis Berliner subsp. *aizawai* strain GC-91 (Bacchus WG) Campbell	11C	Fruit	Armyworm (*Spodoptera* spp.) Cotton Bollworm (*Helicoverpa armigera*) Native Budworm (*Helicoverpa punctigera*) Cabbage Moth (*Plutella xylostella*) Cabbage White Butterfly (*Pieris rapae*) Loopers (C*hrysodeixis* spp., *Ectropis excursaria*, *Thysanoplusia orichalcea*) Light Brown Apple Moth (*Epiphyas postvittana*) Vine Moth (*Phalaenoides glycinae, Agarista Agricola*)	ALL	NR	-
Bifenazate	20D	Strawberries	Two Spotted Mite (*Tetranychus urticae*) Bryobia Mite (*Bryobia rubrioculus*)	ALL	1 G:7	-
Bifenazate PER14425	20D	Blackberries & Raspberries	Two Spotted Mite (*Tetranychus urticae*) European Red Spider Mite (*Panonychus ulmi*)	ALL (excl. VIC)	1 G:28	-
Bifenthrin (Talstar) PER84972	3A	*Rubus* spp. *Ribes* spp. Blueberries	Elephant Weevil (*Orthorhinus cylindrirostris*)	ALL (excl. VIC)	1	R3
Botanical Oil (Eco-Oil)	-	Strawberries	Two Spotted Mite (*Tetranychus urticae*) Aphids	ALL	NR	-
Botanical Oil (Eco-Oil) PER14234	-	Blueberries *Rubus* spp. *Ribes* spp.	Two Spotted Mite (*Tetranychus urticae*)	ALL (excl. VIC)	NR	-
Carbaryl	1A	Raspberries	Grasshoppers, Heliothis, Mealy Bug, Rutherglen Bug, Weevils, Armyworm, Light Brown Apple Moth, Raspberry Fruit Caterpillar and Wingless Grasshopper.	ALL	7	R2
		Strawberry runners	Grasshoppers		NR	
Chlorantraniliprole (Coragen) FMC	28	Strawberries	Cluster Caterpillar (*Spodoptera litura*) Cotton Bollworm (*Helicoverpa armigera*) Native Budworm (*Helicoverpa punctigera*)	ALL	1	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Chlorantraniliprole (Coragen) FMC PER84178	28	Blueberries / Field & Protected	Lepidopteran Pests	ALL	3	-
Chloropicrin + (Agrocelhone NE Soil Fumigant)	8B	Strawberries / Fumigant	Nematodes	ALL	NR	-
Chlorpyrifos	1B	Strawberries	Field Crickets Mole Crickets	QLD, WA	NR	R1
Chlorpyrifos (Suscon Green) Nufarm PER81745	1B	Strawberries / Field Cropping only	Scarab Beetles (*Scarabaeidae*)	QLD	NR	R1
Chlorpyrifos (Suscon Green, Suscon Blue) Nufarm PER90666	1B	Blueberries	Scarab Beetles (*Scarabaeidae*)	ALL	NR	R1
Copper (Cu) present as Buffered Copper Complex	M1	Berry Fruit	Slug Snail	ALL	1	-
Cyantraniliprole (Benevia) FMC	28	Strawberries	Cluster Caterpillar (*Spodoptera litura*) Cotton Bollworm (*Helicoverpa armigera*) Light Brown Apple Moth (*Epiphyas postvittana*) Native Budworm (*Helicoverpa punctigera*) Green Peach Aphid (*Myzus persicae*) Melon Aphid (*Aphis gossypii*) Strawberry Aphid (*Chaetosiphon fragaefolii*) Suppression of: Onion Thrips (*Thrips tabaci*) Plague Thrips (*Thrips imaginis*) Western Flower Thrips (*Frankliniella accidentalis*)	ALL	1 NG	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Cyflumetofen (Danisaraba) BASF	25A	Strawberry	Two Spotted Mite (*Tetranychus urticae*) European Red Mite (*Panonychus ulmi*)	ALL	1	-
Deltamethrin	3A	Berry Vegetables	Native Budworm (*Helicoverpa punctigera*)	QLD, WA	1	-
Diazinon	1B	Blueberry	Scale Insects	NSW, ACT & WA	14	R3
Dimethoate	1B	Blueberry	Queensland Fruit Fly	NSW, WA	1	R3
			Spider Mites Thrips Jassids Aphids Redlegged Earth Mite	ALL		
			Strawberry Bug Rutherglen Bug	QLD, VIC, TAS, SA & WA		
		Blackberries & Raspberries	Spider Mites Thrips Jassids Aphids Redlegged Earth Mite	ALL	7	
			Strawberry Bug Rutherglen Bug	QLD, VIC, TAS, SA & WA		
Dimethoate	1B	Strawberry runner production only	Aphids Thrips Jassids Spider Mites Strawberry Bug Rutherglen Bug.	ALL	NR	R1

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Dimethoate PER13859	1B	Orchard Cleanup – Fruit Fly host crops following harvest	Fruit Fly	ALL	NR	R3
Dimethoate (Danadim) PER88174	1B	Blueberries	Queensland Fruit Fly *(Bactrocera tryoni)*	QLD	1	R3
Ethanedinitrile (EDN Fumigas)	-	Strawberries / Strawberry Runners / Fumigant	Nematodes	ALL	NR	-
Emamectin (Proclaim) Syngenta	6	Strawberries	Cluster Caterpillar (*Spodoptera litura*) Heliothis (*Helicoverpa* spp.) Light Brown Apple Moth (*Epiphyas postvittana*) Loopers (*Chrysodeixis* spp.)	ALL	3 NG	-
Emamectin (Proclaim) Syngenta PER85422	6	Blueberries / Field & Protected	Lepidopteran Pests	ALL (excl. VIC)	5	-
Ethyl Formate	8A	Blueberry	Light Brown Apple Moth (*Epiphyas postvittana*) Red Back Spiders (*Latrodectus hasselti*) Two Spotted Mite (*Tetranychus urticae*) Long Tailed Mealy Bug (*Pseudococcus longispinus*) Western Flower Thrips (*Frankliniella occidentalis*) Plague Thrips (T*hrips imaginis*)	ALL	NR	-
		Strawberry	Western Flower Thrips (*Frankliniella occidentalis*)			
Etoxazole PER89406	10B	Blackberries & Raspberries	Two Spotted Mite (*Tetranychus urticae*) Bean Spider Mite (*Tetranychus ludeni*)	ALL (excl. VIC)	1 NG	-
Fenamiphos (Nemacur) PER91381	N-1B	Strawberry Runners	Root-Knot Nematode (*Meloidogyne* spp.)	TAS & QLD	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Fenbutatin Oxide	12B	Strawberries	Two Spotted Mite (*Tetranychus urticae*)	ALL	1	-
Fenbutatin Oxide PER89407	12B	Blackberries & Raspberries	Two Spotted Mite (*Tetranychus urticae*) European Red Mite (*Pananychus ulmi*) Broad Mite (*Polyphagotarsonemus latus*) Bean Spider Mite (*Tetranychus ludeni*) Red Berry Mite (*Acalitus essigi*)	ALL (excl. VIC)	1 NG	-
Fenbutatin Oxide + Hexythiazox	12B+10A	Strawberries	Two Spotted Mite (*Tetranychus urticae*)	ALL	1	-
Fipronil PER86492	2B	Berry Crops / Bait	European Wasp (*Vespula germanica*) Common Wasp (*Vespula vulgaris*)	ALL	NR	-
Flonicamid (Mainman) UPL	29	Strawberries	Aphids incl. Green Peach Aphid (*Myzus persicae*) Whiteflies (*Bemisia tabaci*) Green Mirid (*Creontiades dilutes*)	ALL	1	
Flonicamid (Mainman) UPL PER82958	29	Strawberries	Aphids incl. Green Peach Aphid (*Myzus persicae*) Whiteflies (*Bemisia tabaci*) Green Mirid (*Creontiades dilutes*)	ALL (excl. VIC)	1	-
Flonicamid (Mainman) UPL PER89214	29	Raspberries & Blackberries	Mirids (Miridae) Jassids / Leafhoppers (Cicadellidae) Aphids (Aphidae) Greenhouse Whitefly (*Trialeurodes vaporariorum*) and suppression of Green Vegetable Bug (*Nezara viridula*) Rutherglen Bug (*Nysius vinitor*)	ALL (excl. VIC)	3	-
Flubendiamide (Belt) Bayer	28	Strawberries	Heliothis (*Helicoverpa* spp.) Cluster Caterpillar (*Spodoptera litura*)	ALL	1	-
Hexythiazox (Calibre)	10A	Strawberries	Two Spotted Mite (*Tetranychus urticae*)	ALL	1	

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Imidacloprid (Confidor) Bayer PER12534	4A	Blueberry / Field & Protected / Soil Application Only	Scarab Beetle Larvae (*Rhapaea magnicorni*)	ALL (excl. VIC)	NR NG	R2
Indoxacarb (Avatar Evo) FMC	22A	Blueberries / Field Grown Only	Light Brown Apple Moth (*Epiphyas postvittana*)	ALL	7	R3
		Rubus spp. / Field Grown Only			3	
		Strawberries	Garden Weevil (*Phlyctinus callosus*)			
Indoxacarb (Avatar) FMC PER13289	22A	Blueberries / *Rubus* spp. / Field & Protected Grown	Light Brown Apple Moth (*Epiphyas postvittana*) Elephant Weevil Borer (*Orthorhinus cylindrirostris*)	ALL	3	R3
Indoxacarb (Avatar) FMC PER14192	22A	Strawberries / Field Grown only	Whitefringed Weevil (*Graphognathus leucoloma*) Garden Weevil (*Phlyctinus callosus*)	ALL (excl. VIC)	2	R3
Iron EDTA	-	Strawberries	Common Brown Snail White Snail Vine Snail	ALL	NR G:7	-
Iron Powder	-	Strawberries	Grey Field Slugs Common Brown Snail Small Brown Snail White Snails Slaters	ALL	NR	-
Maldison PER13542	1B	Strawberries	Rutherglen Bug (*Nysius vinitor*) Lygaeid Bugs (Lygaeidae)	ALL (excl. VIC)	3	-
Maldison (Fyfanon) FMC	1B	Strawberries, Blueberries, Rubus & Ribes	Fruit Fly	ALL	3	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Metaldehyde	-	Horticultural crops	Snails Slugs	ALL	7	-
Methiocarb	1A	Strawberries	Common Garden Snail Slugs White Italian Snail White Snail	ALL	7 G:28	-
Methomyl (Lannate)	1A	Blueberry	Monolepta Beetle (*Monolepta australis*) *Helicoverpa* spp. Plague Thrips (*Thrips imaginis*)	NSW, WA	5	R2
		Strawberries	Cluster Caterpillar Heliothis Loopers	ALL (excl. SA)	Fresh:3 Froz:10	
			Light Brown Apple Moth	SA, WA		
Methomyl (Lannate) PER87495	1A	Blueberries	Red-Shouldered Leaf Beetle (*Monolepta australis*) *Helicoverpa* spp. Plague Thrips (*Thrips imaginis*)	ALL (excl. NSW & WA)	5	R2
Methoxyfenozide (Prodigy) Corteva	18	Blueberry	Light Brown Apple Moth	ALL	7	-
Milbemectin (Milbeknock)	6	Strawberries	Two Spotted Mite (*Tetranychus urticae*)	ALL	1 NG	-
Nuclear Polyhedrosis Virus (Vivus) AgBiTech	31	Berryfruit	Cotton Bollworm (*Helicoverpa armigera*) Native Budworm (*Helicoverpa punctigera*)	ALL	NR	-
Paraffinic Oil	-	Blueberry	Mites Scale	ALL	1	-
		Strawberries	Aphids Mites	NSW, ACT, SA, WA & TAS		
Permethrin PER85743	3A	Berry Crops / Bait Feeders	European Wasps (*Vespula germanica*)	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Petroleum / Paraffinic Oil PER13957	-	*Rubus* spp. *Ribes* spp.	Two Spotted Mite (*Tetranychus urticae*) Scale Insects	ALL (excl. VIC)	1	-
Pirimicarb (Pirimor)	1A	Blueberry Strawberries	Aphids	ALL	2	R3
		Blackberries	Aphids including Green Peach Aphid		7	
Propargite	12C	Strawberries	Two Spotted Mite (*Tetranychus urticae*)	ALL (excl. SA)	3	-
Pyrethrins (Pyganic)	3A	Berries	Clean up spray just prior to harvest: Fruit Fly Rutherglen Bug Spiders	ALL	NR	-
Pyrethrins (Pyganic) PER80070	3A	Rubus, Ribes & Blueberry	Monolepta Beetle (*Monolepta australis*) Green Vegetable Bug (*Nezara viridula*) Green Stink Bug (*Plautia affinis*)	ALL	NR NG	-
Pyriproxyfen (Admiral) Sumitomo PER13331	7C	Strawberries	Greenhouse Whitefly (*Trialeurodes vaporariorum*) Silverleaf Whitefly (*Bemisia tabaci*)	ALL (excl. VIC)	2	-
Pyriproxyfen (Distance Ant Bait) Sumitomo	7C	Fruit Crops / Ant Bait	Invasive and Nuisance Ants	ALL	NR	-
Spinetoram (Success Neo) Corteva	5	Berryfruit	Loopers Light Brown Apple Moth *Helicoverpa* Western Flower Thrips	ALL	1	-
Spinetoram (Success Neo) Corteva PER87408	5	Strawberries Rubus & Rubus Hybrids Blueberries	Suppression Only Of: Queensland Fruit Fly *(Bactrocera tryoni)* Lesser Queensland Fruit Fly *(Bactrocera neohumeralis)* Mediterranean Fruit Fly *(Ceratitis capitata)*	ALL (excl. VIC)	1	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Spinosad (Entrust Organic) Corteva	5	Berry Fruit	Loopers Light Brown Apple Moth Heliothis Western Flower Thrips	ALL	1	-
Spinosad (Naturalure) Corteva	5	Tree, Fruit, Nut, Vine & Vegetable Crops / Fruit Fly Bait	Queensland Fruit Fly *(Bactrocera tryoni)* Mediterranean Fruit Fly *(Ceratitis capitata)*	ALL	NR	-
Spirotetramat (Movento) Bayer	23	Blueberries	Soft Brown Scale (*Coccus hesperidum*) White Wax Scale (*Ceroplastes destructor*)	ALL	1	-
Spirotetramat (Movento) Bayer PER91301	23	Blueberries / Field & Protected	White Wax Scale (*Ceroplastes destructor*)	ALL (excl. VIC)	H:7 NG	-
Sulfoxaflor (Transform) Corteva	4C	Cane berries incl. blackberries & raspberries	Green Peach Aphid Greenhouse Whitefly Mirids Apple Dimpling Bug Rutherglen Bug Scale Insects (*Coccidae* spp., *Diaspididae* spp.)	ALL	1	-
		Strawberries	Green Peach Aphid Green Mirid Rutherglen Bug			

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Sulfoxaflor (Transform) Corteva PER90208	4C	Raspberries & Blackberries	Green Peach Aphid (*Myzus persicae*) Cottonseed Bug (*Oxycarenus luctuosus*) Green Mirids and Brown Mirids (*Creontiades dilutus* and *C. pacificus*) Greenhouse Whitefly (*Trialeurodes vaporariorum*) Apple Dimpling Bug (*Campylomma liebknechti*) Suppression of: Scale (*Coccidae* spp., *Diaspididae* spp.) Rutherglen Bug (*Nysius vinitor*)	ALL (excl. VIC)	1	-
Sulfoxaflor (Transform) Corteva PER91327	4C	Blueberries	Green Peach Aphid (*Myzus persicae*), Cottonseed Bug (*Oxycarenus luctuosus*), Scale insects (*Coccidae* spp., *Diaspididae* spp., *Eriococcidae* spp.), Green Stink Bug (*Plautia affinis*) & Flatid Leaf Hopper (*Flatormenis* spp.)	ALL (excl. VIC)	1	-
Sulfur PER87245	M2	Blackberries	Broad Mite (*Polyphagotarsonemus latus*) Two-Spotted Mite (*Tetranychus urticae*) Bean Spider Mite (*Tetranychus ludeni*) Red Berry Mite (*Acalitus essigi*)	ALL	NR	-
Tebufenozide (Mimic) Corteva PER91907	16A	Blueberries	Lepidopteran Pests	ALL (excl. VIC)	3	-
Trichlorfon (Lepidex)	1B	Blueberries	Queensland Fruit Fly	NSW	2	R2
		Strawberries	Cluster Caterpillar	QLD, NT		
			Cutworm	QLD		
Trichlorfon (Lepidex) PER12486	1B	Blueberries	Queensland Fruit Fly *(Bactrocera tryoni)* Mediterranean Fruit Fly *(Ceratitis capitata)*	ACT, NSW, NT, QLD, SA & WA	2	R2

Appendix 3. Products available for weed control in Berries

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Carfentrazone + Glufosinate (Hellcat) AgNova	14**+10**	Cane berries incl. raspberry & blackberry / Inter-row	Grass and Broadleaf Weeds	NR G:56	ALL	-
Chlorthal Dimethyl (Dacthal) Nufarm	3**	Strawberries / New plantings	Grass and Broadleaf Weeds	NR NG	ALL	-
Dichlobenil (Casoron) UPL	29**	Blackcurrants, Raspberries, Gooseberries	Annual Grass and Broadleaf Weeds	NR	TAS	-
Dichlobenil (Casoron) UPL PER12219	29**	Blueberries / Granule Application / Residual Weed Control	Annual Grass and Broadleaf Weeds	NR NG	ALL (excl. VIC)	-
Fluazifop-P (Fusilade)	1***	Blueberries / Directed Spray or Shielded Spray	Grass Weeds	28	QLD only	-
		Strawberries / Directed Spray or Shielded Spray			ALL	
Fluazifop-P (Fusilade) PER86586	1***	Blueberries / Directed Spray or Shielded Spray	Grass Weeds	28	NSW, ACT, NT, SA, TAS & WA	-

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Flumioxazin (Chateau) Sumitomo	14**	Blueberries / Directed Spray / Residual Weed Control	Grass and Broadleaf Weeds	H:98 G:28	ALL	-
Glufosinate (Basta)	10**	Blueberries, Strawberries, Cane berry fruits / Directed or Shielded Spray	Grass and broadleaf weeds	H:NR G:56	ALL	R3
Glyphosate (Roundup)	9**	Berries and Other Small Fruit / Directed Spray, Shielded Spray or Wick Wiper	Do not allow spray to contact any part of the tree, including the trunk. Grass and broadleaf weeds.	NR	ALL	R3
Haloxyfop (Verdict)	1***	Blueberry / Directed Spray or Spot Spray	Grass weeds	NR	ALL	-
Oryzalin	3**	Berry Fruits / Blackberry, Blueberry, Raspberry / Non-Bearing Fruit / Directed Spray	Grass and broadleaf weeds	NR	ALL	-
Paraquat (Gramoxone) Syngenta	22**	Orchards / directed spray or spot spray	Annual grass and broadleaf weeds	H:1 G:7	ALL	R3
Paraquat + Amitrole (Guerrilla)	22** + 34**	Orchards / Directed Spray	Annual grass and broadleaf weeds	H:NR G:1	ALL	R3
Paraquat + Diquat (SpraySeed) Syngenta	22**	Orchards / Directed Spray	Grass and Broadleaf Weeds	G:7	ALL	R3
Simazine	5**	Berry Fruit	Grass and Broadleaf Weeds	NR	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Trifluralin	3**	Orchards & Vineyards / directed spray or spot spray	Johnson Grass Liverseed Grass	NR	ALL (excl. NSW)	-

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

Appendix 4. Plant Growth Regulators available in Berries

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Carfentrazone	14**	*Rubus* spp.	Cane burning (control of unwanted suckers	NR G:14	ALL	-
Glufosinate (Basta)	10**	Blackberry, Raspberry	Primocane & Sucker Control	H:NR G:56	NSW, ACT, VIC & TAS	R3

Appendix 5. Current permits for use in Berries

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER12219 Version 5	Dichlobenil (Casoron 4G) / Blueberries / Specified Weeds	05-Apr-12	21-Mar-24	Hort Innovation
PER12486 Version 6	Trichlorfon / Specified Berry Fruit / Fruit Fly (ACT, NSW, NT, WA, QLD & SA)	6-Oct-11	31-Mar-26	Hort Innovation
PER12534 Version 4	Imidacloprid (Confidor Guard) / Blueberry / Scarab Beetle Larvae	01-Nov-12	31-Oct-25	Aust Blueberry Growers Assn
PER13150 Version 3	*Agrobacterium radiobacter* (NoGall) / Rubus Root Systems / Crown Gall	23-Mar-12	30-Sep-27	Hort Innovation
PER13289 Version 5	Indoxacarb (Avatar) / Blueberries & *Rubus* spp. / Light Brown Apple Moth	31-Oct-12	31-May-28	Hort Innovation
PER13331 Version 3	Pyriproxyfen (Admiral) / Strawberries / Greenhouse & Silverleaf Whitefly	08-May-12	31-Aug-25	Hort Innovation
PER13542 Version 3	Maldison (Malathion) / Strawberries / Rutherglen Bug	01-Jul-12	30-Apr-25	Hort Innovation
PER13697 Version 3	Metalaxyl-M (Ridomil Gold 480SL) & Phosphorous acid / **Strawberry runners** / Root & Crown rot	28-Aug-12	30-Sep-27	Hort Innovation
PER13859 Version 2	Dimethoate / Orchard cleanup fruit fly host crops / Fruit Fly	09-Feb-15	31-Jul-24	Hort Innovation
PER13957 Version 3	Petroleum Oil / Rubus and Ribes / Two Spotted Mite and Scale Insects	01-Apr-13	31-Dec-27	Hort Innovation
PER13958 Version 5	Pyrimethanil, Captan, Metalaxyl, Metalaxyl-M, Mancozeb, Triadimenol, Phosphorous Acid / Rubus, Ribes & Blueberries / Various Fungal Blights	1-Apr-13	31-Aug-25	Hort Innovation
PER14192 Version 3	Indoxacarb (Avatar) / Strawberries / White Fringed Weevil & Garden Weevil	24-Dec-13	31-Jul-28	Hort Innovation
PER14234 Version 3	Botanical Oil / Rubus / Two Spotted Mite	10-Sep-13	31-May-28	Hort Innovation
PER14422 Version 3	Cyprodinil + Fludioxonil (Switch) / Rubus and Rubus Hybrids / Grey Mould	28-Feb-14	30-Jun-24	Hort Innovation
PER14425 Version 3	Bifenazate / Rubus and Rubus Hybrids / Two Spotted Mite & European Red Spider Mite	28-Feb-14	31-Jul-28	Hort Innovation

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER14443 Version 3	Copper Hydroxide / Rubus spp (incl. raspberries & blackberries) / Rust & Leaf Spot	28-Feb-14	31-Oct-28	Hort Innovation
PER14449	Chlorothalonil / Rubus crops / Various Fungal Diseases	01-Oct-14	31-Mar-25	Hort Innovation
PER14483 Version 3	Pyraclostrobin (Cabrio Fungicide) / **Strawberry runners** (non-fruiting) / Crown or petiole rot	29-Oct-13	30-Sep-28	Hort Innovation
PER14740 Version 2	Propiconazole (Tilt) / Blueberries / Rust (*Pucciniastrum vaccinii*) (ACT, NSW, WA, QLD, SA & TAS)	1-Jul-14	30-Jun-24	Aust Blueberry Growers Assn
PER80064 Version 3	Phosphorous Acid / Strawberries / Crown Rot	01-Nov-14	31-Oct-25	Hort Innovation
PER80070 Version 2	Pyrethrins (Pyganic) / Rubus, Ribes and Blueberry / Monolepta Beetle, Green Vegetable Bug, Green Stink Bug	18-Aug-15	31-Oct-25	Aust Blueberry Growers Assn
PER81745 Version 3	Chlorpyrifos / Strawberries / Scarab Beetles	21-Oct-15	31-Jul-26	Hort Innovation
PER82598 Version 2	Flonicamid (Mainman) / Strawberries / Aphids	31-Mar-17	30-Nov-24	Hort Innovation
PER82601 Version 3	Dithianon (Dragon) / Blueberry / Blueberry Rust	26-Jul-17	31-Dec-26	Aust Blueberry Growers Assn
PER82986 Version 2	Boscalid + Pyraclostrobin (Pristine) / Rubus and Rubus Hybrids, Blueberries / Various diseases Field and Protected Cropping	25-Aug-17	31-Aug-24	Hort Innovation
PER83871 Version 2	Fluazinam (Gem) / **Strawberry Runner** Production / Leaf Blotch	19-May-17	30-Jun-27	Hort Innovation
PER84176 Version 2	Copper / Blueberries / Anthracnose	21-Dec-17	31-Dec-25	Aust Blueberry Growers Assn
PER84178 Version 2	Chlorantraniliprole (Coragen) / Blueberry / Lepidopteran Pests	31-Oct-17	31-Jan-26	Hort Innovation
PER84891 Version 2	Cyprodinil + Fludioxonil (Switch) / Blueberries / Grey Mould & Anthracnose	29-Jan-18	31-Jan-28	Hort Innovation
PER84972 Version 2	Bifenthrin / Rubus spp., Ribes spp. / Monolepta beetle & Plague thrips	12-Feb-18	30-Nov-27	Hort Innovation
PER84973 Version 3	Mancozeb & Metalaxyl-M (Ridomil Gold MZ) / Rubus spp. & Rubus hybrids / Downy Mildew	16-Feb-18	31-Dec-27	Hort Innovation
PER85422 Version 2	Emamectin (Proclaim) / Blueberry / Lepidopteran Pests	26-Mar-18	29-Feb-28	Hort Innovation

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER85743 Version 2	Permethrin dust / Berry crops / European Wasps	19-Feb-18	31-Mar-28	Hort Innovation
PER86489 Version 2	Fenhexamid (Teldor) / Blueberry / Grey Mould	25-Jan-19	31-Jan-28	Hort Innovation
PER86492 Version 4	Fipronil / Orchards, Vineyards and Berry Farms / European Wasp	14-Sep-18	31-Aug-26	NSW Dept of Primary Industries
PER86586 Version 2	Fluazifop-P (Fusilade) / Blueberry / Grass Weeds	14-Aug-18	31-May-28	Hort Innovation
PER87245	Sulfur / Blackberries / Broad Mites, Two-Spotted Mites, Bean Spider Mites & Red Berry Mites	25-Mar-19	31-Mar-24	Hort Innovation
PER87408	Spinetoram (Success Neo) / Blueberries, Strawberries, Rubus and Rubus hybrids / Fruit Fly	15-Apr-19	30-Apr-24	Hort Innovation
PER87495 Version 2	Methomyl (Lannate) / Blueberries / Red-Shouldered Leaf Beetle, Helicoverpa spp. & Plague Thrips	09-Feb-21	31-Dec-28	Hort Innovation
PER88058 Version 2	*Bacillus amyloliquefaciens* strain QST 713 (Serenade Opti) / Blackberries & Raspberries/ Grey Mould	15-Oct-19	31-Aug-27	Hort Innovation
PER88174	Dimethoate / Blueberries / Queensland Fruit Fly	25-Jul-19	31-Jul-24	Aust Blueberry Growers Assn
PER89214 Version 2	Flonicamid (Mainman) / Raspberries & Blackberries / Various Insect Pests	03-Jun-21	28-Feb-27	Hort Innovation
PER89406 Version 2	Etoxazole / Raspberries & Blackberries / Two-Spotted Mite & Bean Spider Mite	30-Apr-20	31-Jan-26	Hort Innovation
PER89407 Version 2	Fenbutatin Oxide / Blackberries & Raspberries / Two-Spotted Mite, European Red Mite, Broad Mite, Red Berry Mite & Bean Spider Mite	14-May-20	28-Feb-26	Hort Innovation
PER89523 Version 2	*Agrobacterium radiobacter* (NoGall) / Blueberry / Crown Gall	25-Sep-20	31-Jul-28	Hort Innovation
PER89953	Azoxystrobin / Blueberries / Blueberry Rust, Stem Blight & Dieback, Twig Blight	27-Oct-21	31-Oct-24	Aust Blueberry Growers Assn
PER90027 Version 2	Alpha-Cypermethrin / Blueberries / Fruit Flies	09-Oct-20	31-Jul-25	Hort Innovation

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER90178	Afidopyropen (Versys) / Raspberries & Blackberries (Cane berries) / Aphids & Greenhouse Whitefly	20-Apr-21	30-Apr-24	Hort Innovation
PER90208	Sulfoxaflor / Raspberries & Blackberries / Various Pests	05-May-21	31-May-24	Hort Innovation
PER90666	Chlorpyrifos / Blueberries / Scarab Beetles	06-May-21	31-May-24	Aust Blueberry Growers Assn
PER91060	Oxathiapiprolin (Zorvec Enicade) / Raspberry and Blackberry (hydroponic substrate or soil grown) / Phytophthora Root Rot NOTE: Can only be used by staff and contracted growers of Driscolls	15-Oct-21	31-Oct-24	Driscolls Aust
PER91106	Abamectin / Blueberries / Six-Spotted Mite & Two-Spotted Mite NOTE: Can only be used by staff and contracted growers of Costa Exchange	20-Oct-21	31-Oct-24	Costa Exchange
PER91300	Chlorothalonil / Blueberries / Various Fungal Diseases	30-Sep-21	30-Sep-26	Aust Blueberry Growers Assn
PER91301	Spirotetramat (Movento) / Blueberry / White Wax Scale	30-Sep-21	30-Sep-26	Aust Blueberry Growers Assn
PER91327	Sulfoxaflor (Transform) / Blueberries / Green Peach Aphid, Cotton Seed Bug, Scale Insects, Green Stink Bug & Flatid Leafhopper	23-Dec-21	31-Dec-24	Hort Innovation
PER91381	Fenamiphos (Nemacur) / Strawberry Runners / Root-Knot Nematode	10-May-22	31-May-25	Driscolls Aust
PER91601	Acetamiprid + Pyriproxyfen (Trivor) / Rubus spp. including blackberries and raspberries / Various pests	21-Feb-22	28-Feb-25	Hort Innovation
PER91777	Abamectin (Tervigo) / Strawberry / Root-Knot Nematode NOTE: Can only be used by staff and contracted growers of Driscolls	03-Nov-21	30-Nov-24	Driscolls Aust
PER91907	Tebufenozide (Mimic) / Blueberry / Lepidopteran Pests	06-Jun-22	30-Jun-24	Aust Blueberry Growers Assn
PER92308	Myclobutanil / Cane berries including Blackberries and Raspberries / Yellow Rust	07-Oct-22	31-Oct-25	Hort Innovation
PER92997	Polyoxin D Zinc Salt (Intervene) / Blueberries / Blueberry Rust	28-Mar-23	31-Mar-25	Aust Blueberry Growers Assn

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER93024	Fluopicolide & Propamocarb hydrochloride (Infinito) / Cane Berries including Blackberries and Raspberries / Downy Mildew	15-Aug-23	31-Aug-26	Hort Innovation

Appendix 6. Berry Maximum Residue Limits (MRLs)

CODEX commodity groupings of berries and subgroups:

	Fruits
FB 0018	Berries and other small fruits
FB 0275	Strawberry
FB 2009	Low growing berries
FB 0020	Blueberries
FB 2006	Bush berries
FB 4073	Blueberry, highbush
FB 4075	Blueberry, lowbush
FB 4077	Blueberry, Rabbiteye
FB 0264	Blackberries
FB 0272	Raspberries, red, black
FB 2005	Cane berries

Note: The percentage of berries exported is very low, with fresh exports accounting for 4% of strawberry production, 3% of blueberry production and less than 1% for raspberries and blackberries. Of those export volumes, they are focussed on South-East Asian destinations such as Singapore and Hong. Available information indicates that in the absence of specific limits in legislation, that some countries defer to Codex, followed by EU MRL standards, or apply a 0.01ppm default value. Food exported to New Zealand from Australia may be legally sold if it complies with Australian requirements. MRLs and legislation are subject to change; the values presented should not be relied on.

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
2,4-D	FB 0018	Berries and other small fruits	-	0.1
Abamectin	FB 0020	Blueberries	T0.1	-
	FB 2005	Cane berries	-	0.2
	FB 0264	Blackberries	0.1	-
	FB 0272	Raspberries, red, black	0.1	-
	FB 0275	Strawberry	0.1	0.15
Acetamiprid	FB 0018	Berries and other small fruits {except grapes, strawberry}	-	2
	FB 2005	Cane berries	1	-
	FB 0275	Strawberry	-	0.5
Acibenzolar-S-methyl	FB 2009	Low growing berries	-	0.15
Afidopyropen	FB 2005	Cane berries	T0.3	-
	FB 0275	Strawberry	0.2	-
Aldrin and Dieldrin		Fruits	E0.05	-
Azoxystrobin	FB 0018	Berries and other small fruits {except cranberry, grapes, strawberry}	-	5
	FB 0020	Blueberries	T5	-
	FB 0264	Blackberries	T5	-
	FB 0272	Raspberries, red, black	T5	-
	FB 0275	Strawberry	10	-
Bifenazate	FB 0264	Blackberries	T7	7
	FB 0272	Raspberries, red, black	T7	7
	FB 0275	Strawberry	2	-

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Bifenthrin	FB 0020	Blueberries	T3	3
	FB 0264	Blackberries	T3	1
	FB 0272	Raspberries, red, black	T3	1
Boscalid	FB 0018	Berries and other small fruits {except grapes, strawberry}	-	10
	FB 0020	Blueberries	T15	-
	FB 0264	Blackberries	T10	-
	FB 0272	Raspberries, red, black	T10	-
	FB 0275	Strawberry	3	-
Bupirimate	FB 0275	Strawberry	*0.01	-
Buprofezin	FB 0275	Strawberry	3	-
Captan	FB 0018	Berries and other small fruits {except blueberries, grapes, strawberries}	T30	-
	FB 0020	Blueberries	20	20
	FB 0272	Raspberries, red, black	-	20
	FB 0275	Strawberry	10	15
Carbaryl	FB 0272	Raspberries, red, black	15	-
	FB 0275	Strawberry	*0.01	-
Carbendazim	FB 0018	Berries and other small fruits {except grapes}	-	1
Carfentrazone-ethyl	FB 0018	Berries and other small fruits {except grapes}	*0.05	-
Chlorantraniliprole	FB 0018	Berries and other small fruits	-	1
	FB 0020	Blueberries	T3	-
	FB 0275	Strawberry	T2	-
	FB 2005	Cane berries	T1	-
Chlorothalonil	FB 0018	Berries and other small fruits {except black currants, grapes}	T10	-
	FB 0275	Strawberry	5	-
Chlorpyrifos	FB 0020	Blueberries	*0.01	-
	FB 0275	Strawberry	0.05	0.06
	FB 2005	Cane berries	T*0.01	-
Clofentezine	FB 0275	Strawberry	-	2
Clothianidin (see also thiamethoxam)	FB 0018	Berries and other small fruits {except grapes}	-	0.07
	FB 0020	Blueberries	T*0.01	-
Cyanamide	FB 0020	Blueberries	*0.05	-
Cyantraniliprole	FB 2006	Bush berries	-	4
	FB 0275	Strawberry	0.7	1.5
Cyclaniliprole	FB 2005	Cane berries	-	0.8
	FB 2006	Bush berries	-	1.5
	FB 2009	Low growing berries {except cranberry}	-	0.4
Cycloxydim	FB 0275	Strawberry	-	3
Cyflufenamid	FB 0275	Strawberry	0.3	-
Cyflumetofen	FB 0275	Strawberry	0.8	0.6
Cyhalothrin	FB 0018	Berries and other small fruits	-	0.2

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Cypermethrin	FB 0020	Blueberries	T0.5	-
	FB 0275	Strawberry	-	0.07
Cyprodinil	FB 0018	Berries and other small fruits {except grapes}	-	10
	FB 0020	Blueberries	T3	-
	FB 0264	Blackberries	T3	-
	FB 0272	Raspberries, red, black	T3	-
	FB 0275	Strawberry	5	-
Deltamethrin	FB 0275	Strawberry	-	0.2
Diazinon		Fruit	0.5	-
	FB 0264	Blackberries	-	0.1
	FB 0272	Raspberries, red, black	-	0.2
	FB 0275	Strawberry	-	0.1
DDT		Fruits	E1	-
Dichlobenil	FB 0020	Blueberries	T1	-
	FB 0272	Raspberries, red, black	T1	-
	FB 2005	Cane berries	-	0.2
Dichlofluanid	FB 0018	Berries and other small fruits {except grapes, strawberries}	T50	-
	FB 0275	Strawberry	10	-
Dicofol		Fruit {except strawberry}	5	-
	FB 0275	Strawberry	1	-
Difenoconazole	FB 0020	Blueberries	-	4
	FB 0275	Strawberry	-	2
Dimethoate	FB 0264	Blackberries	T5	-
	FB 0272	Raspberries, red, black	T5	-
	FB 0275	Strawberry	*0.02	-
Dimethomorph	FB 0275	Strawberry	-	0.5
Dinocap	FB 0275	Strawberry {except glasshouse grown strawberry}	-	0.5
Diquat		Fruit	*0.05	-
	FB 0275	Strawberry	-	*0.05
Dithianon	FB 0020	Blueberries	T7	-
Dithiocarbamates	FB 0018	Berries and other small fruits {except strawberries}	T15	-
	FB 0275	Strawberry	5	5
Emamectin	FB 0020	Blueberries	T0.07	-
	FB 0275	Strawberry	0.05	-
Ethephon	FB 0020	Blueberries	T10	-
Ethoprophos	FB 0275	Strawberry	-	*0.02
Etoxazole	FB 2005	Cane berries	T0.5	-
Fenamidone	FB 0275	Strawberry	-	0.04
Fenamophos	FB 0275	Strawberry	*0.05	-
Fenbuconazole	FB 0020	Blueberries	-	0.5

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Fenbutatin oxide	FB 0018	Berries and other small fruits {except grapes excl. wine-grapes}	1	-
	FB 0275	Strawberry	-	10
Fenhexamid	FB 0020	Blueberries	T5	5
	FB 0264	Blackberries	-	15
	FB 0272	Raspberries, red, black	T20	15
	FB 0275	Strawberry	10	10
	FB 2005	Cane berries	20	-
Fenpropathrin	FB 0275	Strawberry	-	2
Fenpyrazamine	FB 0275	Strawberry	-	3
	FB 2005	Cane berries	-	5
	FB 2006	Bush berries	-	4
Fenpyroximate	FB 0275	Strawberry	-	0.3
Flonicamid	FB 0264	Blackberries	T2	-
	FB 0272	Raspberries, red, black	T2	-
	FB 0275	Strawberry	T2	-
	FB 2009	Low growing berries	-	1.5
Florylpicoxamid	FB 0275	Strawberry	1	-
Fluazifop-p-butyl	FB 0018	Berries and other small fruits	0.2	-
	FB 0275	Strawberry	-	3
	FB 2005	Cane berries	-	0.08
	FB 2006	Bush berries	-	0.3
Fluazinam	FB 0275	Strawberry	T*0.05	-
Flubendiamide	FB 0275	Strawberry	0.3	-
Fludioxonil	FB 0018	Berries and other small fruits {except grapes}	5	-
	FB 0020	Blueberries	-	2
	FB 0264	Blackberries	-	5
	FB 0272	Raspberries, red, black	-	5
	FB 0275	Strawberry	-	3
Fluensulfone	FB 2009	Low growing berries	-	0.5
Flumioxazin	FB 0020	Blueberries	*0.02	-
	FB 2006	Bush berries	-	*0.02
Fluopicolide	FB 2005	Cane berries	T1.5	-
Fluopyram	FB 2005	Cane berries	3	5
	FB 2006	Bush berries	-	7
	FB 0275	Strawberry	2	0.4
Flupyradifurone	FB 0275	Strawberry	-	1.5
	FB 2005	Cane berries	-	6
	FB 2006	Bush berries	-	4
Flutriafol	FB 0275	Strawberry	-	1.5
Fluxapyroxad	FB 0018	Berries and other small fruits {except grapes}	-	7
Folpet	FB 0275	Strawberry	-	5

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Fosetyl Al	FB 0264	Blackberries	-	70
	FB 0275	Strawberry	-	70
Glufosinate and Glufosinate-ammonium	FB 0018	Berries and other small fruits	0.1	-
	FB 0020	Blueberries	-	0.1
	FB 0272	Raspberries, red, black	-	0.1
	FB 0275	Strawberry	-	0.3
Glyphosate	FB 0018	Berries and other small fruits	*0.05	-
Haloxyfop	FB 0018	Berries and other small fruits	*0.05	-
Hexythiazox	FB 0018	Berries and other small fruits {except grapes}	1	-
	FB 0275	Strawberry	-	6
Imidacloprid	FB 0018	Berries and other small fruits {except cranberry, grapes, strawberry}	-	5
	FB 0020	Blueberries	T0.1	-
	FB 0275	Strawberry	-	0.5
Indoxacarb	FB 0018	Berries and other small fruits {except grapes}	1	-
Inorganic bromide		Fruit {except avocado, citrus fruits, dried fruits, strawberry}	20	-
	FB 0275	Strawberry	30	-
Ipflufenoquin	FB 0275	Strawberry	0.3	-
Iprodione	FB 0018	Berries and other small fruits {except grapes}	12	-
	FB 0264	Blackberries	-	30
	FB 0272	Raspberries, red, black	-	30
	FB 0275	Strawberry	-	10
Isofetamid	FB 0018	Berries and other small fruits {except grapes}	5	-
	FB 2005	Cane berries	-	3
	FB 2006	Bush berries	-	4
	FB 2009	Low growing berries	-	4
Lindane		Fruit {except Apple, Cherries, Cranberry, Grapes, Peach, Pineapple, Plums, Strawberry}	E0.5	-
	FB 0275	Strawberry	E3	-
Malathion / Maldison	FB 0018	Berries and other small fruits {except grapes, strawberries}	10	-
	FB 0020	Blueberries	-	10
	FB 0275	Strawberry	1	1
Mandestrobin	FB 0275	Strawberry	-	3
Meptyldinocap	FB 0275	Strawberry	-	0.3
Mesotrione	FB 2005	Cane berries	-	*0.01
	FB 2006	Bush berries	-	*0.01
Metalaxyl	FB 0018	Berries and other small fruits {except grapes}	T0.5	-
Metaldehyde		Fruit	1	-
Metconazole	FB 0020	Blueberries	-	0.5

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Methiocarb		Fruit {except citrus fruits, grapes}	T0.1	-
	FB 0275	Strawberry	-	1
Methomyl	FB 0020	Blueberries	2	-
	FB 0275	Strawberry	3	-
Methoxyfenozide	FB 0020	Blueberries	2	4
	FB 0275	Strawberry	-	2
Methyl bromide		Fruit {except jackfruit, litchi, mango, papaya}	T*0.05	-
Metrafenone	FB 0275	Strawberry	-	0.6
Milbemectin	FB 0275	Strawberry	0.2	-
Myclobutanil	FB 0275	Strawberry	2	0.8
	FB 2005	Cane berries	T2	-
Novaluron	FB 0020	Blueberries	-	7
	FB 0275	Strawberry	-	0.5
Omethoate	FB 0264	Blackberries	T3	-
	FB 0272	Raspberries, red, black	T3	-
	FB 0275	Strawberry	*0.01	-
Oryzalin		Fruit	0.1	-
Oxathiapiprolin	FB 0264	Blackberries	T0.5	-
	FB 0272	Raspberries, red, black	T0.5	-
	FB 2005	Cane berries	-	0.5
Paraquat		Fruits {except olives}	*0.05	-
	FB 0018	Berries and other small fruits	-	*0.01
Penconazole	FB 0275	Strawberry	-	0.5
Pendimethalin	FB 0018	Berries and other small fruits	*0.05	-
	FB 0275	Strawberry	-	*0.05
	FB 2005	Cane berries	-	*0.05
	FB 2006	Bush berries	-	*0.05
Penthiopyrad	FB 0275	Strawberry	5	3
	FB 2005	Cane berries	-	10
	FB 2006	Bush berries	-	7
Permethrin	FB 0264	Blackberries	-	1
	FB 0272	Raspberries, red, black	-	1
	FB 0275	Strawberry	-	1
Phosmet	FB 0020	Blueberries	-	10
Phosphine	FB 0018	Berries and other small fruits	T*0.01	-
Phosphorous Acid	FB 0275	Strawberry	T500	-
Piperonyl butoxide		Fruit	8	-
Pirimicarb		Fruit {except blackberries}	0.5	-
	FB 0018	Berries and other small fruits {except grapes, strawberry}	-	1
	FB 0264	Blackberries	2	-
Propamocarb	FB 2005	Cane berries	T15	-
Propargite	FB 0275	Strawberry	7	-
Propiconazole	FB 0020	Blueberries	2	-

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Prothioconazole	FB 2006	Bush berries	-	1.5
Pydiflumetofen	FB 0018	Berries and other small fruits {except grapes, strawberries}	3	-
	FB 0275	Strawberry	2	-
	FB 2006	Bush berries	-	5
	FB 2009	Low growing berries {except cranberry}	-	1
Pymetrozine	FB 0275	Strawberry	T0.3	-
Pyraclostrobin	FB 0020	Blueberries	T5	4
	FB 0264	Blackberries	T3	3
	FB 0272	Raspberries, red, black	T3	3
	FB 0275	Strawberry	-	1.5
Pyrethrins		Fruit	1	-
Pyridaben	FB 0275	Strawberry	1	-
Pyrimethanil	FB 0018	Berries and other small fruits {except grapes, strawberries}	T5	-
	FB 0020	Blueberries	-	8
	FB 0264	Blackberries	-	15
	FB 0272	Raspberries, red, black	-	15
	FB 0275	Strawberry	5	-
	FB 2009	Low growing berries	-	3
Pyriofenone	FB 2005	Cane berries	-	0.9
	FB 2006	Bush berries	-	1.5
	FB 2009	Low growing berries	-	0.5
Pyriproxyfen	FB 0275	Strawberry	T0.5	-
	FB 2005	Cane berries	1	-
Quinoxyfen	FB 0275	Strawberry	*0.01	1
Simazine		Fruit	*0.1	-
Spinetoram	FB 0018	Berries and other small fruits	0.5	-
	FB 0020	Blueberries	-	0.2
	FB 0272	Raspberries, red, black	-	0.8
	FB 0275	Strawberry	-	0.15
Spinosad	FB 0018	Berries and other small fruits {except grapes}	0.7	-
	FB 0020	Blueberries	-	0.4
	FB 0264	Blackberries	-	1
	FB 0272	Raspberries, red, black	-	1
Spirodiclofen	FB 0020	Blueberries	-	4
	FB 0275	Strawberry	-	2
Spiromesifen	FB 2009	Low growing berries	-	3
Spirotetramat	FB 0020	Blueberries	1	-
	FB 0275	Strawberry	-	0.3
	FB 2006	Bush berries	-	1.5

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Sulfoxaflor	FB 0020	Blueberries	T2	-
	FB 0275	Strawberry	0.7	0.4
	FB 2005	Cane berries	1.5	1.5
	FB 2006	Bush berries	-	2
Sulphur dioxide	FB 0020	Blueberries	10	-
	FB 0275	Strawberry	T30	-
Tebuconazole	FB 0275	Strawberry	2	-
Tebufenozide	FB 0020	Blueberries	T2	3
	FB 0272	Raspberries, red, black	-	2
Tetraniliprole	FB 2005	Cane berries	T0.5	-
Thiacloprid	FB 0018	Berries and other small fruits	-	1
Thiamethoxam	FB 0018	Berries and other small fruits	-	0.5
Triadimefon	FB 0275	Strawberry	-	0.7
Triadimenol	FB 0018	Berries and other small fruits {except grapes, strawberries}	T0.5	-
	FB 0275	Strawberry	-	0.7
Trichlorfon	FB 0018	Berries and other small fruits	T2	-
Trifloxystrobin	FB 0020	Blueberries	-	3
	FB 0275	Strawberry	2	1
	FB 2005	Cane berries	3	3
Trifluralin		Fruit	*0.05	-
Triforine	FB 0020	Blueberries	-	0.03

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

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

Sources:
APVMA MRLs: Agricultural and Veterinary Chemicals Code (MRL Standard) Instrument 2023. Compilation 2. Prepared 7 December 2023.
CODEX MRLs: CODEX Alimentarius International Food Standards database (January 2024), http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/

Appendix 7. Berry regulatory risk assessment

Berry
Agrichemical Regulatory
Risk Assessment

September 2023

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

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

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

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

Blackberries & Raspberries

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

Active Constituents	Chemical group	Problem	Comment
INSECT AND OTHER PESTS			
Abamectin	6	Two-spotted (Red spider) mite	APVMA: Nominated for spray drift label review
		Fruit flies	Canada: Some uses amended, & use in greenhouse gown cut flowers cancelled EU: Use restricted to permanent greenhouses
Acetamiprid + pyriproxyfen	4A + 7C	Cottonseed bug (PER91601)	Acetamiprid APVMA: Under review
		Fruit flies (PER91601 - Suppression only)	
		Green potato bug (PER91601)	
		Green vegetable bug (PER91601)	
		Leafhoppers/plant hoppers (PER91601)	
		Lightbrown apple moth (PER91601)	
		Scale insects (PER91601)	
Afidopyropen	9D	Green peach aphid (PER90178)	EU: No authorisations
		Greenhouse whitefly (PER90178)	
Bifenazate	20D	European red mite (PER14425)	Canada: Under review
		Two-spotted (Red spider) mite (PER14425)	EU: Use restricted to non-edible crops in permanent greenhouses
Bifenthrin	3A	Red-shouldered leaf beetle	Canada: Not authorised
		Plague thrips (PER84972)	EU: Not authorised

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Carbaryl	**1A**	Raspberry fruit caterpillar	Canada: Reviewed, large number of uses deleted Codex: Review scheduled, support uncertain EU: Authorisation not renewed USA: Under review
		Weevils	
		Armyworms (Raspberries)	
		Grasshoppers (Raspberries)	
		Lightbrown apple moth (Raspberries)	
		Mealybugs (Raspberries)	
		Rutherglen bug (Raspberries)	
		Wingless grasshopper (Raspberries)	
Chlorpyrifos	**1B**	European earwig(PER90216)	APVMA: Under review. Codex: All MRLs revoked Canada: Cancellation of all uses. EU: No authorisation in place USA: EPA decision to cancel use on food crops
Dimethoate	**1B**	Aphids	Codex: No MRL EU: Not authorised
		Jassids	
		Redlegged earth mite	
		Rutherglen bug	
		Spider mite	
		Strawberry bug	
		Thrips	
		Fruit flies (PER135859) (After harvest Orchard clean-up)	
Emulsifiable botanical oil	**UN**	Two-spotted (Red spider) mite (PER14234)	
Etoxazole	**10B**	Bean spider mite (PER89406)	EU: Only uses on greenhouse ornamentals approved & Candidate for substitution
		Two-spotted (Red spider) mite (PER89406)	

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Fenbutatin oxide	**12B**	Bean spider mite (PER89407)	APVMA: nominated for review Codex: To be reviewed by JMPR. No supporting registrant EU: No authorisation in place USA: Under review
		Broad mite (PER89407)	
		European red mite (PER89407)	
		Red berry mite (PER89407)	
		Two-spotted (Red spider) mite (PER89407)	
Fipronil	**2B**	English wasp	APVMA: Under review Codex: Re-evaluation underway EU: No authorisation in place USA: Under review
		European wasp	
		Fruit fly trap toxicant	
Flonicamid	**29**	Aphids (PER89214)	
		Green vegetable bug (PER89214)	
		Greenhouse whitefly (PER89214)	
		Jassids (PER89214)	
		Rutherglen bug (PER89214)	
Helicoverpa NPV	**31**	Helicoverpa species	
Indoxacarb	**22A**	Elephant weevil	Canada: No authorisations EU: No authorisation UK: Proposed non-renewal
		Lightbrown apple moth (PER13289)	
Lambda-cyhalothrin	**3A**	Fruit flies (PER12961 – SA Biosecurity) (Soil drench)	
Malathion/maldison	**1B**	Fruit flies	APVMA: Under review Codex: Re-evaluation scheduled EU: Restricted use to permanent greenhouses
Permethrin	**3A**	European wasp	Codex: Re-evaluation scheduled. Support uncertain EU: No authorisation
Petroleum oil	**UNM**	Scale insects (PER13957)	
		Two-spotted (Red spider) mite (PER13957)	
Pirimicarb	**1A**	Aphids	Codex: JMPR re-evaluation scheduled EU: Candidate for substitution
		Green peach aphid (Blackberries)	

Active Constituents	Chemical group	Problem	Comment
Pyrethrins	**3A**	Fruit flies	Canada: Under review
		Green stink bug (PER80070)	
		Green vegetable bug (PER80070)	
		Red-shouldered leaf beetle (PER80070)	
Spinetoram	**5**	Helicoverpa species	
		Lightbrown apple moth	
		Loopers	
		Western flower thrips	
		Fruit flies (PER87408)	
Spinosad	**5**	Caterpillars	
		Lightbrown apple moth	
		Loopers	
		Western flower thrips	
		Fall armyworm (PER89870)	
Sulfoxaflor	**4C**	Apple dimpling bug (PER90208)	USA: Pollinator concerns EU: Restricted to permanent glasshouses only
		Cottonseed bug (PER90208)	
		Green mirid & Brown mirid (PER90208)	
		Green peach aphid (PER90208)	
		Greenhouse whitefly (PER90208)	
		Rutherglen bug (PER90208)	
		Scale insects (PER90208)	
Sulfur	**M2**	Bean spider mite (Blackberries PER87245)	
		Broad mite (Blackberries PER87245)	
		Red berry mite (Blackberries)	

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Trichlorfon	**1B**	Fruit flies (PER12486)	APVMA: nominated for review
		Fruit flies (Bait spray)	Codex: No MRLs EU: No authorisations USA: No MRLs
Slugs/Snails			
Methiocarb	**1A**	Common garden snail	EU: No authorisation in place
Copper		Slugs/Snails	EU: Candidates for substitution
Iron EDTA complex			
Methiocarb	**1A**		EU: No authorisation in place
Methiocarb	**1A**	White bradybaena (Oriental) snail	
Methiocarb	**1A**	White Italian (Sand dune) snail	

Active Constituents	Chemical group	Problem	Comment
DISEASES			
A. pullulans	**NC**	Anthracnose	
		Botrytis flower and fruit rot	
		Botrytis/Grey mould	
		Phomopsis fruit rot	
		Rhizopus fruit rot	
Agrobacterium radiobacter	**-**	Crown gall (PER13150)	
Azoxystrobin	**11**	Anthracnose	Canada: Review proposed
		Botrytis/Grey mould	
		Blossom blight	
		Cane spot	
		Cladosporium rot	
Bacillus amyloliquefaciens	**BM02**	Botrytis/Grey mould (PER88058)	
Boscalid +pyraclostrobin	**7 + 11**	Blossom blight	Boscalid Canada: Under review Pyraclostrobin Canada: Under review
		Cane spot	
		Septoria leaf spot	
		Stem end rot	
		Alternaria leaf blotch (PER82986)	
		Anthracnose (PER82986)	
		Botrytis/Grey mould (PER82986)	
		Phomopsis fruit rot (PER82986)	
		Powdery mildew (PER82986)	
		Rust (PER82986)	
Captan	**M4**	Botrytis flower and fruit rot (PER13958)	EU: Under review proposed restriction to use in permanent greenhouses only USA: Under review
		Cane spot (PER13958)	
		Spur blight (PER13958)	

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Chlorothalonil	**M5**	Botrytis/Grey mould (PER14449)	APVMA: nominated for review Canada: Proposed cancellation of uses EU: Not authorised USA: Under review
		Downy mildew (PER14449)	
		Rust (PER14449)	
		Septoria leaf spot (PER14449)	
Copper	**M1**	Downy mildew	EU: Candidates for substitution
		Spur blight	
		Leaf diseases/spots (PER14443)	
		Rust (PER14443)	
Cyprodinil +fludioxonil	**9 + 12**	Botrytis/Grey mould (PER14422)	Cyprodinil: Canada: Under review EU: Candidate for substitution Fludioxonil: EU: Under review & candidate for substitution
Fenhexamid	**17**	Botrytis/Grey mould	
Iodine	**M**	Bactericide	
Iprodione (Boysenberry, Raspberry, Youngberry)	**2**	Botrytis/Grey mould	Canada: Majority of food crop uses deleted Codex: Review scheduled EU: No authorisation in place USA: Proposed deletion or restriction of uses
Mancozeb	**M3**	Downy mildew	APVMA: nominated for review Canada: Many uses cancelled Codex: To be reviewed 2024/25 EU: Authorisation not renewed
		Botrytis/Grey mould (PER13958)	
		Rust (PER13958)	
Metalaxyl/Metalaxyl-M	**4**	Phytophthora (PER13958)	Metalaxyl EU: Candidate for substitution Metalaxyl-M EU: Restricted use approval
	4	Downy mildew (PER84973)	
Myclobutanil	**3**	Yellow rust	APVMA: nominated for review EU: No authorisation in place
Oxathiapiprolin	**49**	Phytophthora (PER91060-Hydroponic substrate or field grown)	
Phosphorous acid	**33**	Phytophthora (PER13958)	
Pydiflumetofen + fludioxonil	**7 + 12**	Grey mould (*Botrytis cinerea*)	Fludioxonil: EU: Under review & candidate for substitution

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Pyrimethanil	9	Botrytis/Grey mould (PER13958)	Canada: Under review
Triadimenol	3	Powdery mildew (PER13958)	APVMA: nominated for review Canada: No authorisation in place EU: No authorisation in place USA: Registration cancelled

Active Constituents	Chemical Group	Comment
WEEDS		
Carfentrazone-ethyl	14	
Glufosinate-ammonium	10	Canada: Review proposed EU: No authorisation in place
Glyphosate	9	Ongoing issues internationally EU: Under review
Oryzalin	3	EU: No authorisations
Simazine	5	APVMA: nominated for review EU: No authorisation in place

Blueberries

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

Active Constituents	Chemical Group	Problem	Comment
INSECT AND OTHER PESTS			
Abamectin	**6**	Fruit fly (Bait spray)	EU: Restricted use to permanent greenhouses
		Six-spotted mite (PER91106)	
		Two-spotted mite (PER91106)	
Alpha-cypermethrin	**3A**	Fruit flies (PER90027)	EU: Approval withdrawn, grace period expired December 2022 UK: Approval withdrawn
Bifenthrin	**3A**	Elephant weevil	Canada: Not authorised EU: Not authorised
		Monolepta beetle (PER84972)	
		Plague thrips (PER84972)	
Botanical oil	**UNE**	Two-spotted mites (PER14234)	
Chlorantraniliprole	**28**	Caterpillars (PER84178)	
Chlorpyrifos	**1B**	European earwig (PER90216)	APVMA: Under review. Codex: All MRLs revoked Canada: Cancellation of all uses. EU: No authorisation in place USA: EPA decision to cancel use on food crops
		Scarab Beetles (PER90666)	
Diazinon	**1B**	Scale insects	APVMA: Under review EU: No authorisation in place Codex: Withdrawal of Codex MRLs recommended

Berries regulatory risk assessment

Active Constituents	Chemical Group	Problem	Comment
Dimethoate	**1B**	Aphids	Codex: No MRL. EU: Not authorised
		Fruit flies (PER13859) After harvest Orchard clean-up	
		Jassids	
		Queensland fruit fly (PER88174 Qld)	
		Redlegged earth mite	
		Rutherglen bug	
		Spider mites (Red spider)	
		Strawberry bug	
		Thrips	
Emamectin benzoate	**6**	Lepidopteran pests (PER85422)	EU: Candidate for substitution
Ethyl formate(Po)	**8A**	Lightbrown apple moth	EU: No authorisation
		Plague thrips	
		Two-spotted (Red spider) mite	
		Western flower thrips	
Fipronil	**2B**	English wasp	APVMA: Under review Codex: Re-evaluation underway EU: No authorisation in place USA: Under review
		European wasp	
Helicoverpa NPV	**31**	Helicoverpa species	
Imidacloprid	**4A**	Scarab beetles – Larvae (PER12534)	APVMA: Under review Canada: Field uses cancelled or amended EU: No authorisation Grace period expires June 2022 USA: Re-registration with new risk mitigation measures

Berries regulatory risk assessment

Active Constituents	Chemical Group	Problem	Comment
Indoxacarb	**22A**	Elephant weevil borer (PER13289) Lightbrown apple moth	Canada: No authorisation EU: Not authorised. Grace period expired Sept 2022 UK: Non-renewal proposed
Malathion	**1B**	Fruit flies (Bait spray)	APVMA: Under review Codex: Re-evaluation scheduled for 2025/26 EU: Restricted use to permanent greenhouses
Methomyl	**1A**	Caterpillars	APVMA: nominated for review Canada: Re-evaluation completed. Majority of uses removed EU: No authorisations in place USA: Under review
		Helicoverpa species (PER87495)	
		Plague thrips (PER87495)	
		Redshouldered leaf beetle (PER87495)	
Methoxyfenozide	**18**	Lightbrown apple moth	EU: Candidate for substitution
NPVirus	**31**	*Helicoverpa* spp.	
Paraffinic oil	**UNM**	Mites	
		Scale insects	
Pirimicarb	**1A**	Aphids	Codex: JMPR re-evaluation scheduled EU: Candidate for substitution
Pyrethrins	**3A**	Fruit flies	Canada: Under review
		Green stink bug (PER80070)	
		Green vegetable bug (PER80070)	
		Redshouldered leaf beetle (PER80070)	
Spinetoram	**5**	Caterpillars	
		Helicoverpa species	
		Lightbrown apple moth	
		Loopers	
		Western flower thrips	
		Fruit flies (PER87408)	
Spinosad	**5**	Helicoverpa species	
		Lightbrown apple moth	
		Loopers	
		Western flower thrips	

Berries regulatory risk assessment

Active Constituents	Chemical Group	Problem	Comment
Spirotetramat	**23**	Soft brown scale White wax scale (PER91301)	
Sulfoxaflor	**4C**	Cottonseed bug (PER91327)	USA: Pollinator concerns EU: Use restricted to permanent glasshouses only
		Flatid Leaf Hopper (PER91327)	
		Green Peach Aphid (PER91327)	
		Green Stink Bug (PER91327)	
		Scale insects (PER91327)	
Tebufenozide	**18**	Lepidopteran pests (PER91907)	
Trichlorfon	**1B**	Fruit flies (Bait spray)	APVMA: nominated for review Codex: No MRLs EU: No authorisations USA: No MRLs
		Fruit flies (PER12486)	

Active Constituents	Chemical Group	Problem	Comment
DISEASES			
Agrobacterium radiobacter	**NC**	Crown Gall	
Aureobasidium pullulans	**NC**	Anthracnose	
		Botrytis / Grey mould	
		Phomopsis fruit rot	
		Rhizopus rot	
Azoxystrobin	**11**	Blueberry Rust (PER89953)	Canada: Review proposed
		Stem Blight and Dieback (PER89953)	
		Twig Blight (PER89953)	
Boscalid + pyraclostrobin	**7 + 11**	Anthracnose (PER82986)	Boscalid Canada: Under review
		Botrytis / Grey mould (PER82986)	
		Rust (PER82986)	
Captan	**M4**	Anthracnose (PER13958)	
Chlorothalonil	**M5**	Botrytis / Grey mould (PER91300)	APVMA: nominated for review Canada: Proposed cancellation of use EU: No authorisation in place USA: Under review
		Downy mildew	
		Rust (PER91300)	
Copper	**M1**	Rust	EU: Candidate for substitution
		Anthracnose (PER84176)	
Cyprodinil + fludioxonil	**9 + 12**	Anthracnose (PER84891)	Cyprodinil: Canada: Under review EU: Candidate for substitution Fludioxonil: EU: Under review EU: Candidate for substitution
		Botrytis / Grey mould (PER84891)	
Dithianon	**M9**	Rust (PER82601)	EU: Restricted use to non-edible crops
Fenhexamid	**17**	Botrytis / Grey mould (PER86489)	
Iodine		Post-harvest sanitizer	

Berries regulatory risk assessment

Active Constituents	Chemical Group	Problem	Comment
Iprodione	**2**	Botrytis / Grey mould	Canada: Majority of food crop uses deleted Codex: Review scheduled EU: No authorisation in place USA: Proposed deletion or restriction of uses
Isofetamid	**7**	Botrytis / Grey mould	
Mancozeb	**M3**	Botrytis / Grey mould (PER13958) Rust (PER13958)	APVMA: nominated for review Canada: Many uses cancelled Codex: To be reviewed 2024/25 EU: Authorisation not renewed
Metalaxyl & Metalaxyl-M	**4**	Phytophthora spp. (PER13958)	Metalaxyl EU: Candidate for substitution Metalaxyl-M EU: Restricted use approval
Phosphorous acid	**33**	Phytophthora spp. (PER13958)	
Polyoxin-D	**19**	Botrytis / Grey mould Powdery mildew Blueberry rust suppression (PER92997)	
Propiconazole	**3**	Rust (PER14740)	APVMA: nominated for review EU: No authorisations USA: Under review
Pydiflumetofen + fludioxonil	**7 + 12**	Grey mould (*Botrytis cinerea*)	Fludioxonil: EU: Under review & Candidate for substitution
Pyrimethanil	**9**	Botrytis / Grey mould (PER13958)	Canada: Under review
Sodium metabisulfite	**M**	Storage rot Botrytis / Grey mould (PER13955)	

Berries regulatory risk assessment

Active Constituents	Chemical Group	Comment
WEEDS		
Dichlobenil (PER12219)	**29**	EU: Not authorised
Fluazifop-P (PER86586)	**1**	
Flumioxazin	**14**	EU: Candidate for substitution
Glufosinate	**10**	APVMA: Nominated for spray drift label review Canada: Review proposed EU: No authorisation in place
Glyphosate	**9**	APVMA: Nominated for spray drift label review Ongoing issues internationally EU: Under review
Haloxyfop-P	**1**	EU: Not authorised
Oryzalin	**3**	EU: Not authorised
Paraquat	**22**	APVMA: Currently under review Canada: Review initiated EU: No authorisation in place Rotterdam Convention - nomination
Simazine	**5**	APVMA: nominated for review EU: Not authorised
Plant growth regulators		
Ethephon (PER86213)	**-**	Harvest aid

Strawberries

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

Active Constituents	Chemical group	Problem	Comment
		INSECT AND OTHER PESTS	
1,3-dichloropropene + chloropicrin	**8B**	Symphylids	EU: No authorisations
Abamectin	**6**	Two-spotted (Red spider) mite Western flower thrips	APVMA: Nominated for spray drift label review Canada: Some uses amended, & use in greenhouse gown cut flowers cancelled EU: Use restricted to permanent greenhouses
Afidopyropen	**9D**	Cabbage aphid Cotton (Melon) aphid Green peach aphid Silverleaf (Poinsettia) whitefly	EU: No authorisations
Bifenazate	**20D**	Bryobia mite Two-spotted (Red spider) mite	Canada: Under review EU: Use restricted to non-edible crops in permanent greenhouses
Carbaryl	**1A**	Grasshoppers	Canada: Reviewed, large number of uses deleted Codex: Review scheduled, support uncertain EU: Authorisation not renewed USA: Under review
Chlorantraniliprole	**28**	Cluster caterpillar Helicoverpa spp.	
Chlorpyrifos	**1B**	Field crickets Mole crickets Scarab beetles (PER81745) European earwig (PER90216)	APVMA: Under review. Codex: All MRLs revoked Canada: Cancellation of all uses. EU: No authorisation in place USA: EPA decision to cancel use on food crops

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Cyantraniliprole	**28**	Cluster caterpillar	
		Cotton (Melon) aphid	
		Green peach aphid	
		Helicoverpa species	
		Lightbrown apple moth	
		Onion thrips	
		Plague thrips	
		Strawberry aphid	
		Western flower thrips	
Dimethoate	**1B**	Aphids	Codex: No MRL. EU: Not authorised
		Green vegetable bug	
		Jassids	
		Redlegged earth mite	
		Rutherglen bug	
		Spider mite	
		Strawberry bug	
		Thrips	
		Wingless grasshopper	
Emamectin benzoate	**6**	Cluster caterpillar	EU: Candidate for substitution
		Helicoverpa species	
		Lightbrown apple moth	
		Loopers	
Fenbutatin oxide	**12B**	Two-spotted (Red spider) mite	APVMA: nominated for review Codex: To be reviewed by JMPR. No supporting registrant EU: No authorisation in place USA: Under review
Fenbutatin oxide + hexythiazox	**12+ 10A**		Fenbutatin oxide APVMA: nominated for review Codex: To be reviewed by JMPR. No supporting registrant EU: No authorisation in place USA: Under review

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Flonicamid	**29**	Aphids (PER82598)	
		Green mirid (PER82598)	
		Green peach aphid (PER82598)	
		Silverleaf (Poinsettia) whitefly (PER82598)	
Flubendiamide	**28**	Cluster caterpillar	
		Helicoverpa species	
Helicoverpa NPV	**31**	Helicoverpa species	
Hexythiazox	**10A**	Two-spotted (Red spider) mite	
Milbemectin	**6**	Two-spotted mite	
Indoxacarb	**22A**	Garden weevil	Canada: No authorisations EU: No authorisation UK: No authorisation
		Whitefringed weevil (PER14192)	
Malathion	**1B**	Fruit flies	APVMA: Under review Codex: Re-evaluation scheduled EU: Restricted use to permanent greenhouses
		Rutherglen bug (PER13542)	
Methomyl	**1A**	Australian cabbage looper	APVMA: nominated for review Canada: Re-evaluation completed. Majority of uses removed EU: No authorisations in place USA: Under review
		Cluster caterpillar	
		Helicoverpa species	
		Lightbrown apple moth	
		Loopers	
Orange oil	**UN**	Silverleaf whitefly	
		Two-spotted mites	
Paraffinic/petroleum oil	**UNM**	Aphids	
		Mites	
Pirimicarb	**1A**	Aphids	Codex: JMPR re-evaluation scheduled EU: Candidate for substitution
Propargite	**12C**	Mites	APVMA: nominated for review EU: No authorisations
		Two-spotted (Red spider) mite	

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Pyrethrins	**3A**	Cabbage aphid	Canada: Under review
		Cabbage white butterfly	
		Caterpillars	
		Fruit flies	
		Greenhouse whitefly	
		Lightbrown apple moth	
		Plague thrips	
		Rutherglen bug	
Pyriproxyfen	**7C**	Greenhouse whitefly (PER13331)	
		Silverleaf (Poinsettia) whitefly (PER13331)	
Spinetoram	**5**	Caterpillars	
		Helicoverpa species	
		Lightbrown apple moth	
		Loopers	
		Western flower thrips	
		Fruit flies (PER87408)	
Spinosad	**5**	Helicoverpa spp.	
		Lightbrown apple moth	
		Loopers	
		Western flower thrips	
Sulfoxaflor	**4C**	Green mirid	USA: Pollinator concerns EU: Restricted to permanent glasshouses only
		Green peach aphid	
Trichlorfon	**1B**	Cluster caterpillar	APVMA: nominated for review Codex: No MRLs EU: No authorisations USA: No MRLs
		Cutworms	
		Fruit flies (PER12486)	

Active Constituents	Chemical group	Problem	Comment
OTHER PESTS			
Copper complex		Slugs & snails	
Iron-EDTA complex		Slugs & snails	
Iron-EDTA complex		White Italian (Sand dune) snail	
Methiocarb	**1A**	Slugs & snails	EU: No authorisations
Methiocarb	**1A**	White bradybaena (Oriental) snail	EU: No authorisations
Nematodes			
Abamectin	**6**	Root-knot nematodes (PER91777)	EU: Restricted use to permanent greenhouses
Fenamiphos	**1B**	Crimp nematode (PER91381 runner production only)	EU: No authorisation

Active Constituents	Chemical group	Problem	Comment
DISEASES			
1,3-dichloropropene +chloropicrin	**-**	Fusarium wilt	EU: No authorisation
		Pythium diseases - soil borne	
		Rhizoctonia rot	
		Verticillium wilt	
Aureobasidium pullulans	**NC**	Grey mould	
		Phomopsis leaf blight/fruit rot	
		Rhizopus fruit rot	
Bacillus amyloliquefaciens	**BM02**	Botrytis rot	
		Grey mould	
Captan	**M4**	Black spot	EU: Under review proposed restriction to use in permanent greenhouses only USA: Under review
		Grey mould	
		Leaf scorch (Red spot)	
		Phomopsis leaf blight/fruit rot	
		Phytophthora fruit rot	
		Ripe fruit spot	
Copper	**M1**	Leaf diseases/spots	EU: Candidates for substitution
		Leaf scorch (Red spot)	
		Eye spot	

		Grey mould	
Active Constituents	**Chemical group**	**Problem**	**Comment**
Cyanogen (ethanedinitrile)	-	Charcoal stem rot	
		Damping off	
		Fusarium wilt	
		Phytophthora trunk/collar rot	
		Pythium diseases - soil borne	
		Rhizoctonia rot	
		Root and collar rot	
		Sclerotium crown rot	
		Spot blotch	
Cyflufenamid	**U6**	Powdery mildew	
Cyprodinil +fludioxonil	**9 + 12**	Colletotrichum crown rot	Cyprodinil Canada: Under review EU: Candidate for substitution Fludioxonil EU: Under review & Candidate for substitution
		Grey mould	
Fenhexamid	**17**	Grey mould	
Florylpicoxamid	**21**	Botrytis/Grey mould	EU: Pending
		Powdery mildew	
Fluazinam	**29**	Gnomoniopsis fruit rot/leaf blotch (PER83871 runners only)	Canada: Under review
Fluopyram + tebuconazole	**7 + 3**	Botrytis/Grey mould	
Fluopyram + trifloxystrobin	**7 + 11**	Powdery mildew	
Iodine	**M**	Bactericide	
Ipflufenoquin	**52**	Botrytis	EU: Pending
Iprodione	**2**	Grey mould	Canada: Majority of food crop uses deleted Codex: Review scheduled EU: No authorisation in place USA: Proposed deletion or restriction of uses
Isofetamid	**7**	Grey mould	

Berries regulatory risk assessment

Active Constituents	Chemical group	Problem	Comment
Mancozeb +metalaxyl	**M3 + 4**	Eye spot Leaf scorch (Red spot) Phomopsis leaf blight/fruit rot Phytophthora fruit rot	Mancozeb APVMA: nominated for review Canada: Many uses cancelled Codex: To be reviewed 2024/25 EU: Authorisation not renewed Metalaxyl EU: Candidate for substitution Metalaxyl-M EU: Restricted use approval
Metalaxyl-M	**4**	Root and crown rot (PER13697: runners only)	EU: Restricted use approval
Myclobutanil	**3**	Powdery mildew	APVMA: nominated for review EU: No authorisation in place
Orange oil	**UN**	Powdery mildew	
Penthiopyrad	**7**	Grey mould	
Phosphorous acid	**33**	Root and crown rot (PER13697: runners only) Phytophthora crown rot (PER80064)	
Potassium bicarbonate	**M2**	Powdery mildew	EU: No authorisation in place
Polyoxin-D	**19**	Grey mould Powdery mildew	EU: No authorisation
Prochloraz	**3**	Colletotrichum crown rot	Codex: Periodic re-evaluation scheduled EU: No authorisation
Pydiflumetofen + fludioxonil	**7 + 12**	Botrytis	Fludioxonil EU: Under review & Candidate for substitution
Pyraclostrobin	**11**	Colletotrichum crown rot (PER14483 - runners only)	
Pyrimethanil	**9**	Grey mould	Canada: Under review
Quinoxyfen	**13**	Powdery mildew (PER14577 – Runner production)	EU: No authorisations
Streptomyces lydicus	**BM02**	Phytophthora crown rot Powdery mildew	
Sulfur	**M2**	Powdery mildew (PER83325)	
Thiram	**M3**	Black spot Grey mould	APVMA: nominated for review Canada: All foliar uses cancelled Codex: To be reviewed 2024/25 EU: No authorisation in place

Active Constituents	Chemical group	Problem	Comment
Trifloxystrobin	**11**	Powdery mildew	Canada: Under review
Zineb	**M3**	Leaf diseases/spots Leaf scorch (Red spot)	APVMA: nominated for review Codex: To be reviewed 2024/25 EU: No authorisation in place

Active Constituents	Chemical Group	Comment
BROADLEAF WEEDS AND GRASSES		
Chlorthal-dimethyl	**3**	EU: No authorisation in place
Fluazifop-P	**1**	
Glufosinate-ammonium	**10**	Canada: Review proposed EU: No authorisation in place
Glyphosate	**9**	Ongoing issues internationally EU: Under review
Simazine	**5**	APVMA: nominated for review EU: No authorisation in place

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