Passionfruit

Strategic Agrichemical Review Process (SARP)

July 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 passionfruit industry across Australia. The information in this report will assist the industry with its agrichemical selection and usage into the future.

Date of report:
July 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 Passionfruit Fund. A Strategic Agrichemical Review Process (SARP), through the process of a desktop audit and industry liaison;
Assesses the importance of the diseases, insects and weeds (plant pests) that can affect a horticultural industry;

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

Alternative pesticides should ideally be selected for benefits of:

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

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

1.1 Diseases

The high priority diseases are:

Disease	Priority
Alternata Spot (*Alternaria alternata*)	H
Brown Spot (*Alternaria passiflorae*)	H
Septoria Blotch / Spot (*Septoria passiflorae*)	H

1.2 Insects and other pests

The high priority insects and other pests are:

Insects and Other Pests	Priority
Passionvine Mite (*Brevpalpus phoenicis*)	H
Fruit Spotting Bug (*Amblypelta nitida*)	H
Banana Spotting Bug (*Amblypelta lutescens*)	H

1.3 Weeds

The high priority weeds are:

Weeds	Priority
Nutgrass (*Cyperus rotundus*)	H
Couch Grass (*Cynodon dactylon*)	H
Flaxleaf Fleabane (*Conyza bonariensis*)	H

2. The Australian Passionfruit Industry

Passionfruit is grown in northern Australia, with the majority grown in Queensland. Production is all consumed in the domestic market, with 92% going to fresh supply and 8% into processing.

Production for the year ending June 2023 was 4,711 tonnes. The value of production was worth $29.6 million, with the wholesale value of fresh supply worth $34.5 million. Production and revenue are reasonably stable from year to year.

Fresh Passionfruit Seasonality by State[1]

State	22/23 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Queensland	2,828												
New South Wales	1,633												
Western Australia	236												
Victoria	5												
South Australia	5												
Availability Legend			High			Medium			Low			None	

There are no imports or exports of fresh passionfruit in Australia.

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

3. Introduction

3.1 Background

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

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

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

In combination with cultural practices, pesticides are important tools in passionfruit 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 passionfruit industry regarding pesticide access, Hort Innovation has undertaken the current project to update the Strategic Agrichemical Review Process (SARP) for passionfruit.

The SARP process identifies diseases, insect pests and weeds of major concern to the passionfruit 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 passionfruit 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 passionfruit 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 Passionfruit Industry in consultation with industry, government and scientists. The Biosecurity Plan outlines key threats to the industry, risk mitigation plans, identification and categorisation of exotic pests and contingency plans. High priority exotic pests have been assessed based on their potential to enter, establish, and spread in Australia (e.g. environmental factors, host range, vectors) and the cost to industry of control measures. More information is available at this link[2].

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

3.2 Minor use permits and registration

From a pesticide access perspective, the APVMA classifies passionfruit as a minor crop. They fit within the APVMA Crop Group 006: Assorted tropical and sub-tropical fruits – inedible peel and the subgroup 006E: Assorted tropical and sub-tropical, Inedible Peel - Vines. Access to minor use permits can be achieved as long as a reasonable justification is provided in accordance with the APVMA's minor use guidance[3]. Possible justification for future permit applications could be based on:

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

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

3.3 Methods

The current version of the Passionfruit 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: 2 February 2024
SARP data updated via a desktop audit	Updated registrations and permits Updated MRL tables Updated available and potential pesticides against low, moderate and high priority pests, including an assessment of their suitability Included information on regulatory risks from MT20007
Captured industry input	Collated and analysed survey results Consolidated and incorporated industry needs and insights

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

3.4 Results and discussions

3.4.1 Detail

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

3.4.2 Appendices

Refer to additional information in the appendices:

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

4. Diseases, pests and weeds of Passionfruit

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

Information on regulatory risk derived from project MT20007 (Chapter 4) - Regulatory support and coordination (Appendix 6) has been incorporated. Some of the suggested options have no overseas MRLs (see Appendix 5). If treated fruit is to be exported nil residues at harvest would be needed for these options. While care has been taken to ensure the accuracy of the information provided in this document the APVMA registered label and where relevant the APVMA approved permit must always be followed.

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

4.1 Diseases of Passionfruit

4.1.1 Disease priorities

Disease	Priority
Alternata Spot (*Alternaria alternata*)	H
Brown Spot (*Alternaria passiflorae*)	H
Septoria Blotch / Spot (*Septoria passiflorae*)	H
Anthracnose (*Colletotrichum gloeosporioides*)	M
Phytophthora Blight / Trunk & Stem Canker (*Phytophthora* spp.)	M
Fusarium Wilt (*Fusarium oxysporum*)	M
Cladosporium Rot / Scab (*Cladosporium oxysporum*)	M
Bacterial Spot (*Xanthomonas axonopodis*)	M
Botrytis Fruit Rot (*Botrytis cinerea*)	L
Passionfruit Woodiness Virus	L

Alternata Spot, Brown Spot and Septoria Blotch / Spot were identified as high priority diseases of passionfruit. Disease control is a major focus in passionfruit vineyards. It is recommended that an Integrated Disease Management Strategy is implemented, including a range of cultural practices to support fungicides, and potentially reduce the reliance on fungicides for disease control.

Cultural controls include:

- Use of resistant rootstocks.
- Biosecurity measures to prevent importing infections from other farms.
- Promoting good drainage and avoid waterlogging through irrigation.
- Canopy management to promote airflow.
- Plantation hygiene – remove dead plant material that could contain disease inoculum.
- Avoid vine stress through good nutrition and water management.

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

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

[5] https://www.croplife.org.au/resources/programs/resistance-management/passionfruit-alternaria-sp/

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
Alternata Spot (*Alternaria alternata*) **Priority: High**							
Rated as a high priority in QLD & NSW, and as a low priority in VIC. Alternata Spot causes small, haloed spots on leaves and can lead to defoliation. Spots on fruit have dark green and greasy margins. Infections are favoured by periods of extended wet weather. An integrated disease management strategy should include good vineyard hygiene, pruning to promote airflow and a protectant fungicide program.							
Azoxystrobin (Amistar)	11	Protectant & Curative	1	A	ALL	Registered in passionfruit for control of **Alternaria** and Cladosporium. Apply as a foliar spray using 2-3 applications during flowering with a retreatment interval of 14 days. Follow with a fungicide from an alternate mode of action group, and then apply a further 1-2 applications before harvest. Maximum of 5 treatments per season.	-
Copper as Copper Oxychloride	M1	Protectant	1	P-A	ALL	Registered in passionfruit for control of Brown Spot and Septoria Spot.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1 NG	P-A	ALL	Registered in passionfruit for control of Anthracnose (*Colletotrichum* spp.), Septoria Spot (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*).	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant & Curative	1 NG	P-A	ALL	Registered in passionfruit for control of Septoria Spot (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*).	-
Iprodione (Rovral)	2	Protectant & Curative	7	P-A	QLD, NSW, WA & NT	Registered in passionfruit for control of Alternaria Spot / Brown Spot (*Alternaria* spp.)	R3
Mancozeb	M3	Protectant	1	P-A	ALL	Registered in passionfruit for control of Septoria Leaf Spot and Brown Spot (*Alternaria passiflorae*).	R2
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P		Registered in grapes, strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of **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		Registered in grapevines and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of Bacterial Spot and in avocado and other tropical fruits (excluding banana) for control of Anthracnose and suppression of Stem End Rot. US registration for control of **Alternaria** in berries, brassica vegetables, bulb vegetables, citrus, fruiting vegetables, grapes, herbs / spices, root/tuber & corm vegetables, stone fruit and tree nuts.	**-**
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant		P		Registered for control of **Alternaria** in capsicum, chilli, eggplant, okra and tomato.	-
Penthiopyrad (Fontelis) Corteva	7	Protectant		P		Registered for control of **Alternaria** in pome fruit, onions, fruiting vegetables and root & tuber vegetables.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative		P		Registered for control of **Alternaria** in potato.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
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.	-
Brown Spot (*Alternaria passiflorae*) **Priority: High**							
Rated as a high priority in QLD & NSW, and as a low priority in VIC. Brown Spot causes reddish brown spots on leaves which are larger than Alternata Spot. It can also cause abscission of stems and fruit damage can reduce the marketability of the passionfruit. Infections are favoured by periods of extended wet weather. An integrated disease management strategy should include good vineyard hygiene, pruning to promote airflow and a protectant fungicide program.							
Azoxystrobin (Amistar)	11	Protectant & Curative	1	A	ALL	Registered in passionfruit for control of **Alternaria** and Cladosporium. Apply as a foliar spray using 2-3 applications during flowering with a retreatment interval of 14 days. Follow with a fungicide from an alternate mode of action group, and then apply a further 1-2 applications before harvest. Maximum of 5 treatments per season.	-
Copper as Copper Oxychloride	M1	Protectant	1	A	ALL	Registered in passionfruit for control of **Brown Spot** and Septoria Spot. Apply as a foliar spray at 14 day retreatment intervals (28 days in NSW) from October to May and 21-28 days (56 days in NSW) during winter. Maximum number of treatments per season not specified.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1 NG	A	ALL	Registered in passionfruit for control of Anthracnose (*Colletotrichum* spp.), Septoria Spot (*Septoria passiflorae*) and **Brown Spot** (*Alternaria passiflorae*). Apply as a foliar spray when crop development has reached susceptible stage for disease infection. Use a retreatment interval of 14-21 days. Maximum of 3 treatments per season.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant & Curative	1 NG	A	ALL	Registered in passionfruit for control of Septoria Spot (*Septoria passiflorae*) and **Brown Spot** (*Alternaria passiflorae*). Apply as a foliar spray when crop development has reached susceptible stage for disease infection. Use a retreatment interval of 14-21 days. Maximum of 3 treatments per season.	-
Iprodione (Rovral)	2	Protectant & Curative	7	A	QLD, NSW, WA & NT	Registered in passionfruit for control of **Alternaria Spot** / **Brown Spot** (*Alternaria* spp.) Apply as a foliar spray before and during extended wet periods. Use a retreatment interval of 14 days. Maximum of 4 treatments per season.	R3
Mancozeb	M3	Protectant	1	A	ALL	Registered in passionfruit for control of Septoria Leaf Spot and **Brown Spot** (*Alternaria passiflorae*). Apply as a foliar spray at 10-14 day intervals from October to May and every 21-28 days for remainder of the year. Maximum number of treatments per season not specified.	R2
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P		Registered in grapes, strawberries and berries (including blackberries, blueberries and raspberries) for control of Grey Mould (*Botrytis cinerea*). US registration for control of **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		Registered in grapevines and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of Bacterial Spot and in avocado and other tropical fruits (excluding banana) for control of Anthracnose and suppression of Stem End Rot. US registration for control of **Alternaria** in berries, brassica vegetables, bulb vegetables, citrus, fruiting vegetables, grapes, herbs / spices, root/tuber & corm vegetables, stone fruit and tree nuts.	**-**
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant		P		Registered for control of **Alternaria** in capsicum, chilli, eggplant, okra and tomato.	-
Penthiopyrad (Fontelis) Corteva	7	Protectant		P		Registered for control of **Alternaria** in pome fruit, onions, fruiting vegetables and root & tuber vegetables.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative		P		Registered for control of **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.	-
Septoria Blotch / Spot (*Septoria passiflorae*) **Priority: High**							
Rated as a high priority in QLD & NSW, and as a moderate priority in VIC. Septoria causes most damage to the foliage but can also cause abscission of flowers and fruit. Infections are favoured by periods of extended wet weather. An integrated disease management strategy should include good vineyard hygiene, pruning to promote airflow and a protectant fungicide program.							
Copper as Copper Oxychloride	M1	Protectant	1	A	ALL	Registered in passionfruit for control of Brown Spot and **Septoria Spot**. Apply as a foliar spray at 14 day retreatment intervals (28 days in NSW) from October to May and 21-28 days (56 days in NSW) during winter. Maximum number of treatments per season not specified.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1 NG	A	ALL	Registered in passionfruit for control of Anthracnose (*Colletotrichum* spp.), **Septoria Spot** (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*). Apply as a foliar spray when crop development has reached susceptible stage for disease infection. Use a retreatment interval of 14-21 days. Maximum of 3 treatments per season.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant & Curative	1 NG	A	ALL	Registered in passionfruit for control of **Septoria Spot** (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*). Apply as a foliar spray when crop development has reached susceptible stage for disease infection. Use a retreatment interval of 14-21 days. Maximum of 3 treatments per season.	-
Mancozeb	M3	Protectant	1	A	ALL	Registered in passionfruit for control of **Septoria Leaf Spot** and Brown Spot (*Alternaria passiflorae*). Apply as a foliar spray at 10-14 day intervals from October to May and every 21-28 days for remainder of the year. Maximum number of treatments per season not specified.	R2
Pyraclostrobin (Cabrio) PER12781	11	Protectant & Curative	1 NG	A	NSW, QLD, NT & WA	Permitted in passionfruit for control of Anthracnose (*Colletotrichum gloeosporioides*) and **Septoria Spot** (*Septoria passiflorae*). Apply as a foliar spray when symptoms first appear. Retreatment interval not specified. Maximum of 3 treatments per season, and do not apply consecutive applications.	-
Penthiopyrad (Fontelis) Corteva	7	Protectant		P		Registered for control of various diseases in strawberry, pome fruit, stone fruit, tree nuts and vegetables. US registration 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		P		Registered for control of various diseases in grapes, berries, leafy vegetables, lettuce and potato. 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
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 **Septoria** in leafy vegetables.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Anthracnose (*Colletotrichum gloeosporioides*) **Priority: Moderate**							
Rated as a moderate priority in QLD & NSW, and as a low priority in VIC. Anthracnose affects the whole vine and in severe cases will cause fruit deformities and loss of marketable yield. Infection is favoured by warm, moist weather. An integrated disease management strategy should include good vineyard hygiene, pruning to promote airflow and a protectant fungicide program.							
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1 NG	A	ALL	Registered in passionfruit for control of **Anthracnose** (*Colletotrichum* spp.), Septoria Spot (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*). Apply as a foliar spray when crop development has reached susceptible stage for disease infection. Use a retreatment interval of 14-21 days. Maximum of 3 treatments per season.	R3
Mancozeb	M3	Protectant	1	A	NSW	Registered in passionfruit for control of **Anthracnose**. Apply as a foliar spray at 7 day intervals during flowering and then at 14 day intervals until harvest. Maximum number of treatments per season not specified.	R2
Pyraclostrobin (Cabrio) PER12781	11	Protectant & Curative	1 NG	A	NSW, QLD, NT & WA	Permitted in passionfruit for control of **Anthracnose** (*Colletotrichum gloeosporioides*) and Septoria Spot (*Septoria passiflorae*). Apply as a foliar spray when symptoms first appear. Retreatment interval not specified. Maximum of 3 treatments per season, and do not apply consecutive applications.	-
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	P		Registered for suppression of **Anthracnose** in berries.	-
Bacillus amyloliquefaciens strain QST 713 (Serenade Opti) Bayer	BM 02	Biological / Protectant	NR	P		Registered for control of **Anthracnose** in avocado and other tropical fruits (excluding banana).	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative		P		Registered for control of ***Colletotrichum* spp.** in nursery stock and strawberries.	R3
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative		P		Registered for control of various diseases in grapes, berries, leafy vegetables, lettuce and potato. 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.	**-**
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.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Phytophthora Blight / Trunk & Stem Canker (*Phytophthora* spp.) **Priority: Moderate**							
Rated as a moderate priority in QLD & NSW, and as a low priority in VIC. Phytophthora is a widespread soil-borne pathogen that thrives in poorly drained soil and warm temperatures. Severe infections can lead to severe necrosis of roots and subsequent yellowing and wilting of above ground plant parts. Vines can eventually die. Management includes site selection to ensure good drainage, improving soil organic matter, careful irrigation management and fungicide treatments.							
Copper as Copper Hydroxide	M1	Protectant	1	A	QLD & NSW	Registered in passionfruit for control of **Phytophthora Stem Canker**. Mix to a smooth consistency and apply to infected area after removing dead tissue. Repeat frequently until healing commences. Maximum number of 5 treatments per season.	-
Copper as Tribasic Copper Sulfate / Copper Ammonium Acetate Complex / Cuprous Oxide					ALL	Registered in passionfruit for control of **Phytophthora Stem Canker**. Mix to a smooth consistency and apply to infected area after removing dead tissue. Repeat frequently until healing commences. Maximum number of 5 treatments per season.	
Copper as Copper Oxychloride					QLD & NSW	Registered in passionfruit for control of **Phytophthora Blight**. Mix to a smooth consistency and apply to infected area after removing dead tissue. Repeat frequently until healing commences. Maximum number of treatments per season not specified.	
Phosphorous Acid PER87607	33	Protectant & Curative	NR	A	ALL (excl. VIC)	Permitted in passionfruit for control of **Phytophthora Blight** (*Phytophthora parasitica*). Apply as a foliar spray, ensuring thorough coverage of foliage and branches. Apply every 5-6 weeks when used as a preventative treatment, and every 3 weeks when used as a curative. Maximum of 4 treatments per season.	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM01	Biological	NR	P-A	ALL	Available in tree crops for application to soil to improve bioavailability of soil resources to horticultural crops. Registered for suppression of soil-borne diseases such as Black Scurf in potatoes and Pineapple Disease in sugarcane.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
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.	-
Metalaxyl-M (Ridomil Gold 25G) Syngenta	4	Protectant & Curative		P		Registered for control of **Phytophthora** in asparagus, avocados, macadamias, peaches and potatoes.	-
Oxathiopiprolin (Zorvec Enicade) Corteva	49	Protectant & Curative		P		Registered for control of Downy Mildew in bulb vegetables, brassicas, cucurbits, leafy vegetables and poppies. Permitted for control of **Phytophthora Root Rot** in raspberries and blackberries. US registration for control of **Phytophthora** Canker and Brown Rot in citrus.	-
Fusarium Wilt (*Fusarium oxysporum*) **Priority: Moderate**							
Rated as a moderate priority in QLD, a high priority in NSW, and as a low priority in VIC. Fusarium is a soil-borne disease that affects the vascular system of the plant. There are no treatment options once the disease is established, but planting in areas previously affected should be avoided, and disease-free seedlings should be used with care taken to avoid root damage when transplanting.							
Chloropicrin + 1,3-Dichloropropene	8B	Soil Fumigant	NR	A	ALL	Registered as a soil fumigant before planting for control of soil-borne diseases (including ***Fusarium*** & *Verticillium* Wilts, *Rhizoctonia*, *Pythium*). Restricted chemical. ***For use by professional and registered fumigators only.***	-
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime Soil Ameliorant and Biofungicide) Bayer	BM01	Biological	NR	P-A	ALL	Available in tree crops for application to soil to improve bioavailability of soil resources to horticultural crops. Registered for suppression of soil-borne diseases such as Black Scurf in potatoes and Pineapple Disease in sugarcane.	-
Bacillus amyloliquefaciens strain MBI 600 (Serifel) BASF	BM 02	Biological	NR	P		Registered for control of *Botrytis* in grapes and strawberries. US registration for the control of White Mould (*Sclerotinia sclerotium*), Botrytis Grey Mould, Powdery Mildew, **Fusarium Wilt**, Phytophthora Root Rot, Pythium Damping Off, Rhizoctonia Root Rot and Verticillium Wilt in legume vegetables.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Streptomyces lydicus WYEC108 (Actinovate) Novozymes Bioag	BM 02	Biological	NR	P		Registered for control of Phytophthora and as a seed treatment in vegetables for control of Pythium, ***Fusarium*** and Rhizoctonia in strawberries and tomato.	-
Cladosporium Rot / Scab (*Cladosporium oxysporum*) **Priority: Moderate**							
Rated as a moderate priority in QLD, a high priority in NSW, and as a low priority in VIC. Cladosporium affects young tissues of leaves, stems, flower buds and fruits and will cause significant damage if not controlled. It can cause death of twigs, can delay flowering and reduce the marketability of fruit.							
Azoxystrobin (Amistar)	11	Protectant & Curative	1	A	ALL	Registered in passionfruit for control of Alternaria and **Cladosporium**. Apply as a foliar spray using 2-3 applications during flowering with a retreatment interval of 14 days. Follow with a fungicide from an alternate mode of action group, and then apply a further 1-2 applications before harvest. Maximum of 5 treatments per season.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1 NG	P-A	ALL	Registered in passionfruit for control of Anthracnose (*Colletotrichum* spp.), Septoria Spot (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*). US registration for control of ***Cladosporium*** in tree nuts, stone fruit and bulb vegetables.	R3
Bacillus amyloliquefaciens strain QST 713 (Serenade Opti) Bayer	BM 02	Biological / Protectant	NR	P		Registered in grapevines and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of Bacterial Spot and in avocado and other tropical fruits (excluding banana) for control of Anthracnose and suppression of Stem End Rot. US registration for control of ***Cladosporium* spp.** in grapes.	**-**
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.	-

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 ***Cladosporium* spp.** in stone fruit and tree nuts	-
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
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative		P		Registered for control of various diseases in grapes, berries, leafy vegetables, lettuce and potato. US registration for control of ***Cladosporium* spp.** in bulb vegetables, cucurbits, pecans and specific tree nuts.	R3
Bacterial Spot (*Xanthomonas axonopodis*) **Priority: Moderate**							
Rated as a moderate priority in QLD, NSW & VIC. Bacterial Spot can cause significant damage to fruit resulting in loss of yield and reduced marketability. Control options are limited post infection and maintenance of good hygiene and healthy vines is the key to avoiding outbreaks.							
Copper as Copper Oxychloride	M1	Protectant	1	P-A	ALL	Registered in passionfruit for control of Brown Spot and Septoria Spot. Registered for control of ***Xanthomonas* spp.** in mangoes, walnuts, beans, brassica vegetables, capsicums, cucurbits and lettuce.	-
Acibenzolar-S-Methyl (Actigard Plant Activator) Syngenta	P01	Protective		P		Registered in tomatoes for suppression of **Bacterial Spot** ***(Xanthamonas campestris)***, Bacterial Speck and Bacterial Canker.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacillus amyloliquefaciens strain QST 713 (Serenade Opti) Bayer	BM 02	Biological / Protectant	NR	P		Registered in grapevines and strawberries for control of Botrytis, in tomatoes, capsicums and chillies for suppression of **Bacterial Spot** and in avocado and other tropical fruits (excluding banana) for control of Anthracnose and suppression of Stem End Rot.	**-**
Botrytis Fruit Rot (*Botrytis cinerea*) **Priority: Low**							
Rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Botrytis is a minor disease in passionfruit and does not warrant control measures.							
Copper	M1	Protectant	1	P-A	ALL	Registered in passionfruit for control of Brown Spot and Septoria Spot. Registered for control of ***Botrytis* spp.** in beans and faba beans.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant & Curative	1 NG	P-A	ALL	Registered in passionfruit for control of Anthracnose (*Colletotrichum* spp.), Septoria Spot (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*). Registered for control of ***Botrytis* spp.** in citrus, grapevines, strawberries, macadamias and pistachios.	R3
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant & Curative	1 NG	P-A	ALL	Registered in passionfruit for control of Septoria Spot (*Septoria passiflorae*) and Brown Spot (*Alternaria passiflorae*). Registered for control of ***Botrytis* spp.** in strawberries and caneberries.	-
Aureobasidium pullulans Strain DSM 14940 & DSM 14941 (Botector) Nufarm	-	Biological / Protectant	NR	P		Registered for control of ***Botrytis* spp.** in berries, fruiting vegetables and grapes.	-
Bacillius amyloliquefaciens (Serifel) BASF	BM02	Biological	NR	P		Registered for control of Grey Mould (***Botrytis cinerea***) in grapes, strawberries and berries (including blackberries, blueberries and raspberries).	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacillus amyloliquefaciens strain QST 713 (Serenade Opti) Bayer	BM 02	Biological / Protectant	NR	P		Registered for control of **Botrytis** in grapevines and strawberries.	-
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.	-
Cyprodinil + Fludioxonil (Switch) Syngenta	9+12	Protectant / Curative		P		Registered for control of **Botrytis** in capsicum, cut flowers, grapes, lettuce, onions, alliums and strawberries.	R3
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 control of **Botrytis** in grapes.	-
Florylpicoxamid (Verpixo Adavelt) Corteva	21	Protectant		P		Registered for control of **Botrytis** in strawberries.	-
Ipflufenoquin (Migiwa Kinoprol) AgNova	52	Protectant		P		Registered for control of **Botrytis** in strawberries.	-
Isofetamid (Kenja) AgNova	7	Protectant		P		Registered for control of **Botrytis** in low growing berries, cane berries and bush berries.	-
Penthiopyrad (Fontelis) Corteva	7	Protectant		P		Registered for control of **Botrytis** in leafy vegetables, strawberry, onions, shallots, spring onions, cucurbits and fruiting vegetables.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Protectant		P		Registered for control of **Botrytis** in almonds, berries and grapes.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant / Curative		P		Registered for control of **Botrytis** in berries, strawberries, grapes, lettuce and potato.	R3
Passionfruit Woodiness Virus **Priority: Low**							
Rated as a low priority in QLD, NSW & VIC. Passionfruit Woodiness Virus causes plants to produce woody and deformed fruit and can lead to defoliation and premature death of vines. It is usually transmitted by aphids, but it can also be spread by mechanical means. Cultural practices are critical for avoiding infection. Virus-free seedlings should be used, as well as good general hygiene and careful attention to hygiene with pruning equipment and other vineyard machinery. Chemical control of vectors is not effective.							
No fungicide options available.							

4.2 Insect and other pests of Passionfruit

4.2.1 Insect and other pest priorities

Insects and Other Pests	Priority
Passionvine Mite (*Brevpalpus phoenicis*)	H
Fruit Spotting Bug (*Amblypelta nitida*)	H
Banana Spotting Bug (*Amblypelta lutescens*)	H
Swarming Leaf Beetle (*Rhyparida* spp.)	M
Queensland Fruit Fly (*Bactrocera tryoni*)	M
Mediterranean Fruit Fly (*Ceratitis capitata*)	M
Pacific Spider Mite (*Tetranychus pacificus*)	M
Two Spotted Mite (*Tetranychus urticae*)	M
Passionvine Mealybug (*Planococcus minor*)	M
Green Vegetable Bug (*Nezara viridula*)	M
Passionvine Bug (*Fabrictilis gonagra*)	M
Western Flower Thrips (*Frankliniella occidentalis*)	M
Citrus Mealybug (*Planococcus citri*)	L
Longtail Mealybug (*Pseudococcus longispinus*)	L
Hemispherical Scale (*Saissetia coffeae*)	L
Black Scale (*Saissetia oleae*)	L
Red Scale (*Aonidiella aurantii*)	L
White Louse Scale (*Unaspis citri*)	L
Red Shouldered Leaf Beetle (*Monolepta australis*)	L
Leafhoppers / Jassids (Cicadellidae)	L

Passionfruit are impacted by a wide variety of insect and other pests, with Passionvine Mite, Fruit Spotting Bug and Banana Spotting Bug rated as high priority pests.

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

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

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

4.2.2 Available and potential products for priority insects and other pests

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

Availability		Regulatory risk (refer to Appendix 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
Passionvine Mite (*Brevpalpus phoenicis*) **Priority: High**								
Rated as a high priority in QLD & NSW, and as a low priority in VIC. Passionvine Mite causes discolouration of leaves and ultimately leads to leaf drop. Severe infestations can cause significant decline in vine health which impacts on fruit yield. The use of broad spectrum chemistry to control other insect pests can cause mite numbers to flare. An integrated pest management approach will assist to preserve beneficial insects and reduce the severity of mite outbreaks. Early treatment of mite outbreaks is critical to prevent them spreading.								
Abamectin	6	Contact & Ingestion	1	A	ALL	Registered in passionfruit for control of **Passionvine Mite** (*Brevipalpus phoenicis Geijskes*) and Two-Spotted Mite (*Tetranychus urticae*). Apply as a foliar spray before pest populations reach damaging levels. A second application may be applied 14-20 days later. Maximum of 2 treatments per season.	M Bee:H	-
Etoxazole (Paramite) Sumitomo PER88379	10B	Contact / IGR	3 NG	A	ALL (excl. VIC)	Permitted in passionfruit for control of **Passionvine Mite** (*Brevipalpus phoenicis Geijskes*) and Two-Spotted Mite (*Tetranychus urticae*). Apply as a foliar spray before pests reach economic threshold level. Target increasing nymph populations before large numbers of adults are present. Maximum of 1 treatment per season.	L Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Fenbutatin Oxide (Torque) PER90591	12A	Contact	1 NG	A	ALL (excl. VIC)	Permitted in passionfruit for control of **Passionvine Mite** (*Brevpalpus phoenicis*) and Two-Spotted Mite (*Tetranychus urticae*). Apply as a foliar spray at first sign of mite activity. Use a retreatment interval of 7 days. Maximum of 2 treatments per season.	L Bee:L	R2
Petroleum Oil PER14662	-	Contact	NR	A	ALL (excl. VIC)	Permitted in passionfruit for control of **Passionvine Mite** (*Brevpalpus phoenicis*) and Two-Spotted Mite (*Tetranychus urticae*). Apply as a foliar spray at first sign of mite activity. Use a minimum retreatment interval of 14 days in the first month, and additional applications on a monthly interval for up to 6 months. Maximum of 6 treatments per season.	L Bee:L	-
Propargite	12C	Contact	7	A	QLD & WA	Registered in passionfruit for control of **Passionvine Mite** (*Brevpalpus phoenicis*). Apply as a foliar spray when pests are present. Retreatment interval not specified. Maximum of 2 treatments per season.	M Bee:L	R3
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	P-A	ALL	Registered in fruit for control of Aphids, Thrips, Mealybug, Two-Spotted Mite, Spider Mite and Whitefly.	L Bee:L	-
Acequinocyl (Kanemite) UPL	20B	Contact & Ingestion		P		Registered for control of Two-Spotted Mite in pome fruit and stone fruit.	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
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.	M Bee:VL	-
Fruit Spotting Bug (*Amblypelta nitida*) **Banana Spotting Bug** (*Amblypelta lutescens*) **Priority: High**								
Rated as a high priority in QLD, a moderate priority in NSW, and as a low priority in VIC. Fruit Spotting Bugs are a damaging pest that feed by piercing fruit and sucking the juice from tissue. An Integrated Pest Management (IPM) approach is recommended, including reducing vine density, use of cover crops in the inter-row, promotion of beneficials such as egg parasitoids and predators and minimising the use of broad-spectrum insecticides through effective pest monitoring and adopting a strategic approach to product selection.								
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Ingestion / IGR	28 NG	A	ALL (excl. VIC)	Permitted in passionfruit for control of **Fruit Spotting Bugs** (*Amblypelta nitida* & *Amblypelta lutescens*). Apply as a foliar spray when monitoring indicates that pests are active in the crop. Use a retreatment interval of 14 days. Maximum of 2 applications per season.	M Bee:H	R2
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion	3	A	ALL	Registered in tropical & sub-tropical fruit, inedible peel (excluding bananas, pineapples) for control of **Banana Spotting Bug** (*Amblypelta lutescens*), **Fruit Spotting Bug** (*Amblypelta nitida*), Green Planthopper and Mango Planthopper. Apply as a foliar spray once monitoring indicates that thresholds have been reached. Use a minimum retreatment interval of 14 days. Maximum of 2 treatments per season, and do not apply more than 1 application during flowering.	L Bee:L	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	3	A	ALL	Registered in tropical & sub-tropical fruit – inedible peel for control of **Banana Spotting Bug** and **Fruit Spotting Bug**. Apply as a foliar spray when pests are active in crop. Use a minimum retreatment interval of 14 days. Maximum of 2 treatments per season.	M Bee:VH	-
Trichlorfon	1B	Contact	2	P-A	QLD & NT	Registered in passionfruit for control of Passionvine Bug and Green Vegetable Bug.	H Bee:H	R2

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. No current registrations for control of Hemiptera but there is international research that indicates some activity on bug species.	H Bee:VH	-
Swarming Leaf Beetle (*Rhyparida* spp.) **Priority: Moderate**								
Rated as a high priority in QLD, and as a low priority in NSW & VIC. Swarming Leaf Beetle is only a pest of Panama varieties, to which it can cause regular and severe damage. The pest tends to swarm after the first heavy rains of the season and is more prevalent in tropical areas. Most severe damage occurs to the growing terminal, although developing fruits may also be attacked. Control is difficult with insecticides, especially when multiple infestations occur.								
Indoxacarb (Avatar) FMC	22A	Contact & Ingestion		P		Registered in pome and stone fruit for control of Curculio Beetle and control of various weevils in asparagus, celery, grapes, pome and stone fruit and strawberries.	L-M Bee:H	R3
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. No current registrations for control of Coleoptera but there is international research that indicates activity on beetle species.	H Bee:VH	-

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 Carpophilus Beetle in almonds, Macadamia Seed Weevil in macadamia, Weevils, Codling Moth and Light Brown Apple Moth in pome fruit and Dried Fruit Beetle, Oriental Fruit Moth, Mediterranean Fruit Fly and Weevils in stone fruit.	L-M Bee:VH	-
Queensland Fruit Fly (*Bactrocera tryoni*) **Mediterranean Fruit Fly** (*Ceratitis capitata*) **Priority: Moderate**								
Queensland Fruit Fly is rated as a moderate priority in QLD, a high priority in NSW, and as a low priority in VIC. Mediterranean Fruit Fly is rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Fruit Fly management is critical to ensure protection of fruit from stings in the vineyard and to ensure that infested fruit is not sent to market. Fruit fly traps as well as general vineyard hygiene and post-harvest dips are the key to managing Fruit Fly.								
Chlorpyrifos	1B	Contact	14	A	NSW & QLD	Registered in passionfruit for control of **Queensland Fruit Fly** (*Bactrocera tryoni*). Apply as a bait mixture in a strip along the bottom of the vines. Repeat every 7-10 days during periods of fruit fly susceptibility. Maximum number of treatments not specified. NOTE: The APVMA has published its proposed decision for reconsideration of label uses for chlorpyrifos. They are still receiving submissions but at this stage they are not supporting the continued use of chlorpyrifos in passionfruit.	H Bee:H	R1
Dimethoate PER13859	1B	Contact	NR	A	ALL	Permitted in non-bearing fruit fly host crops for control of **Fruit Fly**. Apply as a foliar and/or ground cover spray to both fallen and retained fruit after final harvest. Do not use more than 2 applications per season.	H Bee:H	R1
Spinosad (Naturalure) Corteva	5	Ingestion	NR	A	ALL	Registered in tree, fruit, nut, vine & vegetable crops 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	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Trichlorfon PER12450	1B	Contact	7 G:7	A	ACT, NSW, NT, QLD, SA & WA	Permitted in passionfruit for control of **Queensland Fruit Fly** (*Bactrocera tryoni*) and **Mediterranean Fruit Fly** (*Ceratitis capitata*). Apply as a cover spray. Retreatment interval not specified. Maximum of 4 treatments per season.	H Bee:H	R2
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Ingestion / IGR	28 NG	P-A	ALL (excl. VIC)	Permitted in passionfruit for control of Fruit Spotting Bugs (*Amblypelta nitida* & *Amblypelta lutescens*). Registered for control of Fruit Fly in avocados, citrus and mangoes.	M Bee:H	R2
Abamectin	6	Contact & Ingestion	1	P-A	ALL	Registered in passionfruit for control of Passionvine Mite (*Brevipalpus phoenicis Geijskes*) and Two-Spotted Mite (*Tetranychus urticae*). Registered for control of **Queensland Fruit Fly** in citrus, blueberries, blackberries and raspberries.	M Bee:H	-
Tetraniliprole (Vayego) Bayer	28	Ingestion		P		Registered for control of **Mediterranean Fruit Fly** in stone fruit.	L-M Bee:VH	-
Pacific Spider Mite (*Tetranychus pacificus*) **Two Spotted Mite** (*Tetranychus urticae*) **Priority: Moderate**								
Pacific Spider Mite is rated as a moderate priority in QLD, a high priority in NSW, and as a low priority in VIC. Two Spotted Mite is rated as a moderate priority in QLD & NSW, and as a low priority in VIC. Pacific Spider Mite and Two Spotted Mite cause similar damage to Passionvine Mite, including discolouration of leaves and leaf drop. Severe infestations can cause significant decline in vine health which impacts on fruit yield. The use of broad spectrum chemistry to control other insect pests can cause mite numbers to flare. An integrated pest management approach will assist to preserve beneficial insects and reduce the severity of mite outbreaks. Early treatment of mite outbreaks is critical to prevent them spreading.								
Abamectin	6	Contact & Ingestion	1	A	ALL	Registered in passionfruit for control of Passionvine Mite (*Brevipalpus phoenicis Geijskes*) and **Two-Spotted Mite** (*Tetranychus urticae*). Apply as a foliar spray before pest populations reach damaging levels. A second application may be applied 14-20 days later. Maximum of 2 treatments per season.	M Bee:H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Etoxazole (Paramite) Sumitomo PER88379	10B	Contact / IGR	3 NG	A	ALL (excl. VIC)	Permitted in passionfruit for control of Passionvine Mite (*Brevipalpus phoenicis Geijskes*) and **Two-Spotted Mite** (*Tetranychus urticae*). Apply as a foliar spray before pests reach economic threshold level. Target increasing nymph populations before large numbers of adults are present. Maximum of 1 treatment per season.	L Bee:VL	-
Fenbutatin Oxide (Torque) PER90591	12A	Contact	1 NG	A	ALL (excl. VIC)	Permitted in passionfruit for control of Passionvine Mite (*Brevpalpus phoenicis*) and **Two-Spotted Mite** (*Tetranychus urticae*). Apply as a foliar spray at first sign of mite activity. Use a retreatment interval of 7 days. Maximum of 2 treatments per season.	L Bee:L	R2
Petroleum Oil PER14662	-	Contact	NR	A	ALL (excl. VIC)	Permitted in passionfruit for control of Passionvine Mite (*Brevpalpus phoenicis*) and **Two-Spotted Mite** (*Tetranychus urticae*). Apply as a foliar spray at first sign of mite activity. Use a minimum retreatment interval of 14 days in the first month, and additional applications on a monthly interval for up to 6 months. Maximum of 6 treatments per season.	L Bee:L	-
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit for control of Aphids, Thrips, Mealybug, **Two-Spotted Mite**, **Spider Mite** and Whitefly. Apply as a cover spray. Retreatment interval and maximum number of treatments not specified.	L Bee:L	-
Propargite	12C	Contact	7	P-A	QLD & WA	Registered in passionfruit for control of Passionvine Mite (*Brevpalpus phoenicis*).	M Bee:L	R3
Acequinocyl (Kanemite) UPL	20B	Contact & Ingestion		P		Registered for control of Two-Spotted Mite in pome fruit and stone fruit.	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.	M Bee:VL	-
Passionvine Mealybug (*Planococcus minor*) **Priority: Moderate**								
Rated as a moderate priority in QLD & NSW, and as a low priority in VIC. Passionvine Mealybug causes poor vine health through feeding damage on the leaves and stems and through contamination of fruit by a sticky honeydew. The use of broad spectrum chemistry to control other insect pests can cause mealybug numbers to flare. An integrated pest management approach will assist to preserve beneficial insects and reduce the severity of outbreaks.								
Buprofezin (Applaud)	16	Ingestion	1	A	ALL	Registered in passionfruit for control of **Mealybugs** and Scale Insects. Apply as a foliar spray when significant pest infestations develop. Use a retreatment interval of 21 days. Maximum of 2 treatments per season.	L Bee:L	-
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit for control of Aphids, Thrips, **Mealybug**, Two-Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Retreatment interval and maximum number of treatments not specified.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	3	A	ALL	Registered in passionfruit for control of Black Scale, Citrus Snow (White Louse) Scale, Red Scale, Citrus Mealybug, Longtailed Mealybug and **Passionvine Mealybug**. Apply as a foliar spray targeting crawlers when they are exposed and before they are protected under fruit calyces or established between touching fruit. Make 2 applications 14-21 days apart when crawlers are active.	M Bee:VH	-
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Ingestion / IGR	28 NG	P-A	ALL (excl. VIC)	Permitted in passionfruit for control of Fruit Spotting Bugs (*Amblypelta nitida* & *Amblypelta lutescens*). Registered for control of **Mealybugs** in citrus, grapevines and macadamias.	M Bee:H	R2
Spirotetramat (Movento) Bayer	23	Ingestion	3	P-A	ALL	Registered in passionfruit for control of Red Scale and suppression of Citrus Mealybug.	M Bee:L	-
Green Vegetable Bug (*Nezara viridula*) **Passionvine Bug** (*Fabrictilis gonagra*) **Priority: Moderate**								
Green Vegetables Bug is rated as a moderate priority in QLD, a high priority in NSW, and as a low priority in VIC. Passionvine Bug is rated as a moderate priority in QLD & NSW, and as a low priority in VIC. Green Vegetable Bug and Passionvine Bug are sporadic pests of passionfruit. They are often seen but feeding damage to the fruit is rarely observed.								
Trichlorfon	1B	Contact	2	A	QLD & NT	Registered in passionfruit for control of **Passionvine Bug** and **Green Vegetable Bug**. Apply as a foliar spray when pests are first seen. Retreatment interval and maximum number of treatments not specified.	H Bee:H	R2
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion	3	P-A	ALL	Registered in tropical & sub-tropical fruit, inedible peel (excluding bananas, pineapples) for control of Banana Spotting Bug (*Amblypelta lutescens*), Fruit Spotting Bug (*Amblypelta nitida*), Green Planthopper and Mango Planthopper.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Ingestion / IGR	28 NG	P-A	ALL (excl. VIC)	Permitted in passionfruit for control of Fruit Spotting Bugs (*Amblypelta nitida* & *Amblypelta lutescens*).	M Bee:H	R2
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	3	P-A	ALL	Registered in tropical & sub-tropical fruit – inedible peel for control of Banana Spotting Bug and Fruit Spotting Bug.	M Bee:VH	-
Western Flower Thrips (*Frankliniella occidentalis*) **Priority: Moderate**								
Rated as a moderate priority in QLD & NSW, and as a low priority in VIC. Western Flower Thrips can damage leaves, flowers and fruit, however in passionfruit this damage is minor and infrequent. Control is rarely warranted.								
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit for control of Aphids, **Thrips**, Mealybug, Two-Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Retreatment interval and maximum number of treatments not specified.	L Bee:L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion	3	P-A	ALL	Registered in tropical & sub-tropical fruit, inedible peel (excluding bananas, pineapples) for control of Banana Spotting Bug (*Amblypelta lutescens*), Fruit Spotting Bug (*Amblypelta nitida*), Green Planthopper and Mango Planthopper. Registered for suppression of Scirtothrips in macadamias.	L Bee:L	-
Spinetoram (Success Neo) Corteva	5	Ingestion	NR NG	P-A	ALL	Registered in tropical & sub-tropical fruit – inedible peel for control of Flower-Eating Caterpillar, Leafrollers, Loopers, Yellow Peach Moth, Red-Banded Thrips & Sorghum Head Caterpillar.	M Bee:VH	-
Spinosad (Entrust Organic) Corteva	5	Ingestion	NR	P-A	ALL	Registered in tropical & sub-tropical fruit – inedible peel for control of Flower-Eating Caterpillar, Leafrollers, Loopers, Yellow Peach Moth, Red-Banded Thrips & Sorghum Head Caterpillar.	L Bee:H	-
Spirotetramat (Movento) Bayer	23	Ingestion	3	P-A	ALL	Registered in passionfruit for control of Red Scale and suppression of Citrus Mealybug. Registered for control of various Thrips in green beans, celery, rhubarb, fruiting vegetables, herbs, lettuce, bulb onions, bulb vegetables, citrus and grapes.	M 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		P		Registered for suppression of various Thrips in bulb vegetables, fruiting vegetables, cucurbits, potatoes and strawberries.	L-M Bee:VH	-
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	-
Citrus Mealybug (*Planococcus citri*) **Longtail Mealybug** (*Pseudococcus longispinus*) **Priority: Low**								
Citrus Mealybug is rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Longtail Mealybug is rated as a low priority in QLD, NSW & VIC. Citrus Mealybug and Longtail Mealybug are a minor and infrequent pest of passionfruit. They can cause poor vine health through feeding damage on the leaves and stems and through contamination of fruit by a sticky honeydew. The use of broad spectrum chemistry to control other insect pests can cause mealybug numbers to flare. An integrated pest management approach will assist to preserve beneficial insects and reduce the severity of outbreaks.								
Buprofezin (Applaud)	16	Ingestion	1	A	ALL	Registered in passionfruit for control of **Mealybugs** and Scale Insects. Apply as a foliar spray when significant pest infestations develop. Use a retreatment interval of 21 days. Maximum of 2 treatments per season.	L Bee:L	-
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit for control of Aphids, Thrips, **Mealybug**, Two-Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Retreatment interval and maximum number of treatments not specified.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spirotetramat (Movento) Bayer	23	Ingestion	3	A	ALL	Registered in passionfruit for control of Red Scale and suppression of **Citrus Mealybug**. Apply as a foliar spray immediately after peak flower coinciding with the onset of crawler emergence or when pest numbers reach economic threshold. Use a minimum retreatment interval of 21 days. Maximum of 2 applications per season.	M Bee:L	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	3	A	ALL	Registered in passionfruit for control of Black Scale, Citrus Snow (White Louse) Scale, Red Scale, **Citrus Mealybug**, **Longtailed Mealybug** and Passionvine Mealybug. Apply as a foliar spray targeting crawlers when they are exposed and before they are protected under fruit calyces or established between touching fruit. Make 2 applications 14-21 days apart when crawlers are active.	M Bee:VH	-
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Ingestion / IGR	28 NG	P-A	ALL (excl. VIC)	Permitted in passionfruit for control of Fruit Spotting Bugs (*Amblypelta nitida* & *Amblypelta lutescens*). Registered for control of **Mealybugs** in citrus, grapevines and macadamias.	M Bee:H	R2
Hemispherical Scale (*Saissetia coffeae*) **Black Scale** (*Saissetia oleae*) **Red Scale** (*Aonidiella aurantii*) **White Louse Scale** (*Unaspis citri*) **Priority: Low**								
Rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Scale infestations are infrequent but can cause poor general health of vines when severe. The use of broad-spectrum chemistry can contribute to outbreaks of scale, as well as excessive dust from roads around the vineyard.								
Buprofezin (Applaud)	16	Ingestion	1	A	ALL	Registered in passionfruit for control of Mealybugs and **Scale Insects**. Apply as a foliar spray when significant pest infestations develop. Use a retreatment interval of 21 days. Maximum of 2 treatments per season.	L Bee:L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spirotetramat (Movento) Bayer	23	Ingestion	3	A	ALL	Registered in passionfruit for control of **Red Scale** and suppression of Citrus Mealybug. Apply as a foliar spray immediately after peak flower coinciding with the onset of crawler emergence or when pest numbers reach economic threshold. Use a minimum retreatment interval of 21 days. Maximum of 2 applications per season.	M Bee:L	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	3	A	ALL	Registered in passionfruit for control of Black Scale, Citrus Snow (White Louse) Scale, **Red Scale**, Citrus Mealybug, Longtailed Mealybug and Passionvine Mealybug. Apply as a foliar spray targeting crawlers when they are exposed and before they are protected under fruit calyces or established between touching fruit. Make 2 applications 14-21 days apart when crawlers are active.	M Bee:VH	-
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Ingestion / IGR	28 NG	P-A	ALL (excl. VIC)	Permitted in passionfruit for control of Fruit Spotting Bugs (*Amblypelta nitida* & *Amblypelta lutescens*). Registered for control of various species of **Scale** in avocados, citrus, grapevines, macadamias and mangoes.	M Bee:H	R2
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion	3	P-A	ALL	Registered in tropical & sub-tropical fruit, inedible peel (excluding bananas, pineapples) for control of Banana Spotting Bug (*Amblypelta lutescens*), Fruit Spotting Bug (*Amblypelta nitida*), Green Planthopper and Mango Planthopper. Registered for suppression of Scirtothrips in macadamias. US registration for control of **Scale Insects** in citrus, pome fruit and stone fruit.	L Bee:L	-
Fenoxycarb (Insegar) Syngenta	7B	Contact & Ingestion		P		Registered for control of **Scale** in apples, pears and olives.	L Bee:VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Red Shouldered Leaf Beetle (*Monolepta australis*) **Priority: Low**								
Rated as a low priority in QLD, NSW & VIC. Red Shouldered Leaf Beetle are a minor and infrequent pest of passionfruit. They rarely warrant control measures.								
Indoxacarb (Avatar) FMC	22A	Contact & Ingestion		P		Registered in pome and stone fruit for control of Curculio Beetle and control of various weevils in asparagus, celery, grapes, pome and stone fruit and strawberries.	L-M Bee:H	R3
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. No current registrations for control of Coleoptera but there is international research that indicates activity on beetle species.	H Bee:VH	-
Tetraniliprole (Vayego) Bayer	28	Ingestion		P		Registered for control of Carpophilus Beetle in almonds, Macadamia Seed Weevil in macadamia, Weevils, Codling Moth and Light Brown Apple Moth in pome fruit and Dried Fruit Beetle, Oriental Fruit Moth, Mediterranean Fruit Fly and Weevils in stone fruit.	L-M Bee:VH	-
Leafhoppers / Jassids (Cicadellidae) **Priority: Low**								
Rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Leafhoppers are a minor and infrequent pest of passionfruit. They rarely warrant control measures.								
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Ingestion / IGR	28 NG	P-A	ALL (excl. VIC)	Permitted in passionfruit for control of Fruit Spotting Bugs (*Amblypelta nitida* & *Amblypelta lutescens*). Permitted for control of **Leafhoppers** in lychee, papaya, passionfruit, blackberries & raspberries.	M Bee:H	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Buprofezin (Applaud)	16	Ingestion	1	P-A	ALL	Registered in passionfruit for control of Mealybugs and Scale Insects. Registered for control of **Leafhoppers** in citrus.	L Bee:L	-
Flonicamid (Mainman) UPL	29	Ingestion		P		Registered for control of Aphids and Mealybug in apples, pears and nursery stock, Aphids and Silverleaf Whitefly in cucurbits, Aphids in potatoes, Whitefly in tomatoes and Aphids, Whiteflies and Green Mirids in strawberries. Permitted for control of **Jassids** / **Leafhoppers** in blackberries & raspberries.	M Bee:VL	-

4.3 Weeds of Passionfruit

4.3.1 Weed priorities

Weeds	Priority
Nutgrass (*Cyperus rotundus*)	H
Couch Grass (*Cynodon dactylon*)	H
Flaxleaf Fleabane (*Conyza bonariensis*)	H
Wild Carrot (*Cotula australis*)	M
Paspalum (*Paspalum dilatatum*)	M
Marshmallow (*Malva parviflora*)	M
Crowsfoot Grass (*Dactyloctenium aegyptium*)	L
Pigweed (*Portulaca* spp.)	L
Johnson Grass (*Sorghum halepense*)	L
Blackberry Nightshade (*Solanum nigrum*)	L
Dandelion (*Taraxacum officinale*)	L
Fat-Hen (*Chenopodium album*)	L

Weed priorities can vary substantially between regions, and weed management generally is guided more by cultural methods than by specific problem weed species. An integrated weed management program incorporating mulch and inter-row grass cover should be used to reduce the need for herbicides in plantations. Our industry consultation identified Nutgrass, Couch Grass and Flaxleaf Fleabane as high priorities. These are invasive species which are difficult to kill and must be managed using a sustained management program incorporating multiple control measures.

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

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

4.3.2 Available and potential products for weed control

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

Availability			
A	Available via either registration or permit approval		
P	Potential – a possible candidate to pursue for registration or permit		
P-A	Potential, already approved in the crop for another use		
Resistance risk		**Regulatory risk (refer to Appendix 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
Nutgrass (*Cyperus rotundus*) **Priority: High**							
Rated as a moderate priority in QLD, a high priority in NSW, and as a low priority in VIC. Prefers damp, water-logged soils but the nuts can survive for years underground during dry times. Herbicide options are limited and unreliable. Improve soil drainage if possible.							
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds and **Nutgrass**. Do not allow spray to contact any part of the vine, including the trunk. Time application to flowering nutgrass. Multiple applications will be required.	NR	A	ALL (excl. VIC)	R3
Cyhalofop-Butyl + Florpyrauxifen-Benzyl (Agixa Rinskor) Corteva	1*** + 4**		Registered for control of **Nutgrass** in rice.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
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 in bulb onions.		P		-
Halosulfuron-Methyl (Sempra)	2***		Registered for control of **Nutgrass** in turf and sugarcane.		P		-
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Nutgrass** in asparagus.		P		-
Couch Grass (*Cynodon dactylon*) **Priority: High**							
Rated as a moderate priority in QLD & VIC, and as a high priority in NSW. Couch Grass is a widespread, perennial weed that grows year-round in most areas. Herbicide control is effective provided it is targeted to young, actively growing weeds. Multiple applications are usually required.							
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Couch Grass**. Apply as a directed or shielded spray to young, actively growing weeds.	NR G:56	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Haloxyfop (Verdict)	1***	Passionfruit / Directed Spray or Spot Spray	Registered in passionfruit for control of grass weeds, including **Couch Grass**. Apply as a directed spray.	NR	A	ALL	-
Carfentrazone-Ethyl + Glyphosate (Broadway)	14** + 9**	Tropical & Sub-Tropical Fruit	Registered in tropical & sub-tropical fruit for control of grass & broadleaf weeds. Registered for control of **Couch Grass** in broadacre fallows.	NR G:14	P-A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fluazifop-P (Fusilade)	1***	Passionfruit / Directed Spray	Registered in passionfruit for control of Barnyard Grass, Crowsfoot Grass, Giant Paspalum (seedling), Green Panic (seedling), Johnson Grass, Para Grass, Prairie Grass, Rhodes Grass, Stinkgrass and Summer Grass (Crabgrass). Registered for control of **Couch Grass** in citrus, onions, potatoes, cucurbits, strawberries, pineapples and ornamentals.	14	P-A	NSW, QLD, NT & WA	-
Norflurazon (Zoliar) AgNova	12**		Registered for suppression of **Couch Grass** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Flaxleaf Fleabane (*Conyza bonariensis*) **Priority: High**							
Rated as a high priority in QLD, NSW & VIC. Flaxleaf Fleabane is a widespread weed that is difficult to control with herbicides. It seeds prolifically and can germinate year-round. Weed control should be targeted at small, actively growing weeds and usually multiple applications will be required. A combination of residual and knockdown herbicides should form part of an integrated approach to managing Flaxleaf Fleabane.							
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Flaxleaf Fleabane**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Flaxleaf Fleabane**. Apply as a directed or shielded spray to young, actively growing weeds.	NR G:56	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:7	A	ALL	R3
Amitrole	34**		Registered for control of **Fleabane** in fallow and pine plantations.		P		-
Flumioxazin (Chateau) Sumitomo	14**		Registered for control of **Flaxleaf Fleabane** in grapes, pome fruit, stone fruit, citrus, nut trees, olives, avocados and berries.		P		-
Saflufenacil (Sharpen) BASF	14**		Registered for control of **Flaxleaf Fleabane** in citrus, pome fruit & almonds.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Wild Carrot (*Cotula australis*) **Priority: Moderate**							
Rated as a moderate priority in QLD, a high priority in NSW, and as a low priority in VIC. Annual, broadleaf weed that is most abundant in winter. It likes moist soil conditions and seedlings can be controlled with herbicides.							
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Wild Carrot**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Wild Carrot**. Apply as a directed or shielded spray to young, actively growing weeds.	NR G:56	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:7	A	ALL	R3
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Paspalum (*Paspalum dilatatum*) **Priority: Moderate**							
Rated as a low priority in QLD, a high priority in NSW, and as a moderate priority in VIC. 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-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Paspalum**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Paspalum**. Apply as a directed or shielded spray to young, actively growing weeds.	NR G:56	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Haloxyfop (Verdict)	1***	Passionfruit / Directed Spray or Spot Spray	Registered in passionfruit for control of grass weeds, including **Paspalum**. Apply as a directed spray.	NR	A	ALL	-
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:7	A	ALL	R3
Fluazifop-P (Fusilade)	1***	Passionfruit / Directed Spray	Registered in passionfruit for control of Barnyard Grass, Crowsfoot Grass, Giant Paspalum (seedling), Green Panic (seedling), Johnson Grass, Para Grass, Prairie Grass, Rhodes Grass, Stinkgrass and Summer Grass (Crabgrass). Registered for control of **Paspalum** in blueberries, hops, various vegetables, citrus, potatoes, strawberries, pineapples and ornamentals.	14	P-A	NSW, QLD, NT & WA	-
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Paspalum** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Marshmallow (*Malva parviflora*) **Priority: Moderate**							
Rated as a low priority in QLD & VIC, and as a high priority in NSW. Marshmallow is adapted to a wide variety of environments and highly competitive weed. Control with knockdown herbicides can be unreliable.							
Carfentrazone	14**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Marshmallow**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR G:14	A	ALL	-
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Marshmallow**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3
Carfentrazone-Ethyl + Glyphosate (Broadway)	14** + 9**	Tropical & Sub-Tropical Fruit	Registered in tropical & sub-tropical fruit for control of grass & broadleaf weeds, including **Marshmallow**. Apply as a directed spray or spot spray.	NR G:14	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Oxyfluorfen (Goal)	14**	Tropical & Sub-Tropical Fruit (Inedible Peel) / Directed Spray	Registered in tropical & sub-tropical fruit (inedible peel) for control of various grass and broadleaf weeds, including **Marshmallow**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:7	A	ALL	R3
Fluroxypyr (Starane) Corteva	4**		Registered for control of **Marshmallow** in summer fallows.		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		-
Crowsfoot Grass (*Dactyloctenium aegyptium*) **Priority: Low**							
Rated as a low priority in QLD & VIC, and as a high priority in NSW. 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.							
Fluazifop-P (Fusilade)	1***	Passionfruit / Directed Spray	Registered in passionfruit for control of Barnyard Grass, **Crowsfoot Grass**, Giant Paspalum (seedling), Green Panic (seedling), Johnson Grass, Para Grass, Prairie Grass, Rhodes Grass, Stinkgrass and Summer Grass (Crabgrass). Apply as a directed spray to young, actively growing weeds.	14	A	NSW, QLD, NT & WA	-
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Crowsfoot Grass**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Crowsfoot Grass**. Apply as a directed or shielded spray to young, actively growing weeds.	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) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Haloxyfop (Verdict)	1***	Passionfruit / Directed Spray or Spot Spray	Registered in passionfruit for control of grass weeds, including **Crowsfoot Grass**. Apply as a directed spray.	NR	A	ALL	-
Oxyfluorfen (Goal)	14**	Tropical & Sub-Tropical Fruit (Inedible Peel) / Directed Spray	Registered in tropical & sub-tropical fruit (inedible peel) for control of various grass and broadleaf weeds, including **Crowsfoot Grass**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:7	A	ALL	R3
Trifluralin	3**	Orchards & Vineyards / Residual Weed Control	Registered in orchards & vineyards for residual control of Johnson Grass and Liverseed Grass (Urochloa). Registered for control of **Crowsfoot Grass** in pigeon peas and tobacco.	NR	P-A	ALL (excl. NSW)	-
Dimethenamid-P (Outlook) BASF	15**		Registered for control of grass and broadleaf weeds, including **Crowsfoot Grass** in sweet corn, beans, peas, pumpkins and kabocha.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Pigweed (*Portulaca* spp.) **Priority: Low**							
Rated as a low priority in QLD & VIC, and as a high priority in NSW. Summer growing broadleaf weed that competes aggressively and can be difficult to control with herbicides.							
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Pigweed**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Pigweed**. Apply as a directed or shielded spray to young, actively growing weeds.	NR G:56	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Isoxaben (Gallery) Corteva	29**	Vineyards / Residual Weed Control	Registered in vineyards for residual control of broadleaf weeds, including **Pigweed**. Apply to bare soil prior to weed emergence. Rainfall or irrigation is required within 21 days to activate the herbicide.	NR	A	ALL	-
Oryzalin	3**	Passionfruit / Non-Bearing / Directed Spray	Registered in passionfruit (non-bearing) for control of grass & broadleaf weeds, including **Pigweed**. Apply to bare soil using a directed spray at the base of the trees. Requires at least 15mm of irrigation or rain to activate.	NR	A	ALL	-
Oxyfluorfen (Goal)	14**	Tropical & Sub-Tropical Fruit (Inedible Peel) / Directed Spray	Registered in tropical & sub-tropical fruit (inedible peel) for control of various grass and broadleaf weeds, including **Pigweed**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:7	A	ALL	R3
Trifluralin	3**	Orchards & Vineyards / Residual Weed Control	Registered in orchards & vineyards for residual control of Johnson Grass and Liverseed Grass (Urochloa). Registered for control of **Pigweed** in tobacco, various vegetables, grain legumes and oilseeds.	NR	P-A	ALL (excl. NSW)	-
Clomazone	13**		Registered for control of broadleaf weeds including **Pigweed** in beans, poppies, potato and tobacco transplants.		P		-
Dimethenamid-P (Outlook) BASF	15**		Registered for control of grass and broadleaf weeds, including **Pigweed** in sweet corn, beans, peas, pumpkins and kabocha.		P		-
Fluroxypyr (Starane) Corteva	4**		Registered for control of **Pigweed** in summer fallow, lucerne, sorghum, maize, millets and sweet corn.		P		-
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Pigweed** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Johnson Grass (*Sorghum halepense*) **Priority: Low**							
Rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Johnson Grass is a large, summer growing perennial that is difficult to eradicate with herbicides.							
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Johnson Grass**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3
Fluazifop-P (Fusilade)	1***	Passionfruit / Directed Spray	Registered in passionfruit for control of Barnyard Grass, Crowsfoot Grass, Giant Paspalum (seedling), Green Panic (seedling), **Johnson Grass**, Para Grass, Prairie Grass, Rhodes Grass, Stinkgrass and Summer Grass (Crabgrass). Apply as a directed spray to young, actively growing weeds.	14	A	NSW, QLD, NT & WA	-
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Johnson Grass**. Apply as a directed or shielded spray to young, actively growing weeds.	NR G:56	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Haloxyfop (Verdict)	1***	Passionfruit / Directed Spray or Spot Spray	Registered in passionfruit for control of grass weeds, including **Johnson Grass**. Apply as a directed spray.	NR	A	ALL	-
Trifluralin	3**	Orchards & Vineyards / Residual Weed Control	Registered in orchards & vineyards for residual control of **Johnson Grass** and Liverseed Grass (Urochloa). Apply to new planting during pre-plant cultivation or to established crops in spring after weeds and green manure crop have been ploughed in. Mechanical incorporation required within 4 hours of application.	NR	A	ALL (excl. NSW)	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Norflurazon (Zoliar) AgNova	12**		Registered for suppression of **Johnson Grass** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Blackberry Nightshade (*Solanum nigrum*) **Priority: Low**							
Rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Blackberry Nightshade 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.							
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Isoxaben (Gallery) Corteva	29**	Vineyards / Residual Weed Control	Registered in vineyards for residual control of broadleaf weeds, including **Blackberry Nightshade**. Apply to bare soil prior to weed emergence. Rainfall or irrigation is required within 21 days to activate the herbicide.	NR	A	ALL	-
Oryzalin	3**	Passionfruit / Non-Bearing / Directed Spray	Registered in passionfruit (non-bearing) for control of grass & broadleaf weeds, including **Blackberry Nightshade**. Apply to bare soil using a directed spray at the base of the trees. Requires at least 15mm of irrigation or rain to activate.	NR	A	ALL	-
Oxyfluorfen (Goal)	14**	Tropical & Sub-Tropical Fruit (Inedible Peel) / Directed Spray	Registered in tropical & sub-tropical fruit (inedible peel) for control of various grass and broadleaf weeds, including **Blackberry Nightshade**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR 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 **Blackberry Nightshade** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Dandelion (*Taraxacum officinale*) **Priority: Low**							
Rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Dandelions are an annual broadleaf weed that can grow year-round in most regions. They are prolific and very hardy weeds that will require sustained control measures to eradicate.							
Glyphosate	9**	Tropical & Subtropical Fruit / Directed Spray, Shielded Spray or Wick Wiper	Registered in tropical & subtropical fruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL	R3
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:7	A	ALL	R3
Norflurazon (Zoliar) AgNova	12**		Registered for control of **Dandelion** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-
Fat-Hen (*Chenopodium album*) **Priority: Low**							
Rated as a low priority in QLD & VIC, and as a moderate priority in NSW. Herbicide control can be difficult and targeting weeds at early growth stages is critical.							
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits for control of grass & broadleaf weeds, including **Fat Hen**. Apply as a directed or shielded spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Registered in tropical & sub-tropical fruits (inedible peel) for control of grass & broadleaf weeds, including **Fat Hen**. Apply as a directed or shielded spray to young, actively growing weeds.	NR G:56	A	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Spray, Shielded Spray or Wick Wiper	Permitted in passionfruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	NR	A	ALL (excl. VIC)	R3
Isoxaben (Gallery) Corteva	29**	Vineyards / Residual Weed Control	Registered in vineyards for residual control of broadleaf weeds, including **Fat Hen**. Apply to bare soil prior to weed emergence. Rainfall or irrigation is required within 21 days to activate the herbicide.	NR	A	ALL	-
Oryzalin	3**	Passionfruit / Non-Bearing / Directed Spray	Registered in passionfruit (non-bearing) for control of grass & broadleaf weeds, including **Fat Hen**. Apply to bare soil using a directed spray at the base of the trees. Requires at least 15mm of irrigation or rain to activate.	NR	A	ALL	-
Oxyfluorfen (Goal)	14**	Tropical & Sub-Tropical Fruit (Inedible Peel) / Directed Spray	Registered in tropical & sub-tropical fruit (inedible peel) for control of various grass and broadleaf weeds, including **Fat Hen**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass and broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Registered in orchards & vineyards for control of annual grass & broadleaf weeds. Apply as a directed spray or spot spray. Do not allow spray to contact any part of the tree, including the trunk.	NR 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. **Fat Hen** is listed as susceptible.		P		-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Clomazone	13**		Registered for control of broadleaf weeds including **Fat Hen** in beans, poppies, potato and tobacco transplants.		P		-
Dimethenamid-P (Outlook) BASF	15**		Registered for control of grass and broadleaf weeds, including **Fat Hen** in sweet corn, beans, peas, pumpkins and kabocha.		P		-
Norflurazon (Zoliar) AgNova	12**		Registered for suppression of **Fat Hen** in citrus, grapes, almonds, pome fruit and stone fruit.		P		-
S-Metolachlor (Dual Gold) Syngenta	15**		Registered for control of grass and broadleaf weeds in Brassica vegetables, Brassica leafy vegetables, sweet potatoes, spring onions, shallots, spinach, silverbeet, rhubarb, culinary herbs and beans.		P		-

5. References

5.1 Information:

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

5.2 Abbreviations and Definitions:

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

5.3 Acknowledgements:

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

6. Appendices

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

Appendix 1. Products available for disease control in passionfruit

Active Ingredient (Trade Name)	Chemical Group	Situation	Diseases / Comments	States	WHP Days	Regulatory Risk
Azoxystrobin (Amistar)	11	Passionfruit	Alternaria Cladosporium	ALL	1	-
Bromo Chloro Dimethyl Hydatoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	External Rot Causing Organisms	ALL	NR	-
Chlorine	-	Sanitiser / Post-Harvest Treatment	Bacteria and Fungi	ALL	NR	-
Chloropicrin + 1,3-Dichloropropene	8B	Soil Fumigant	Soil-borne diseases (including *Fusarium* & *Verticillium* Wilts, *Rhizoctonia*, *Pythium*)	ALL	NR	-
Copper as Copper Hydroxide	M1	Passionfruit	Phytophthora Stem Canker	QLD & NSW	1	-
Copper as Tribasic Copper Sulfate / Copper Ammonium Acetate Complex / Cuprous Oxide			Phytophthora Stem Canker	ALL		
Copper as Copper Oxychloride			Brown Spot Septoria Spot			
			Phytophthora Blight	QLD & NSW		
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Passionfruit	Anthracnose (*Colletotrichum* spp.) Septoria Spot (*Septoria passiflorae*) Brown Spot (*Alternaria passiflorae*)	ALL	1 NG	R3
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Passionfruit	Septoria Spot (*Septoria passiflorae*) Brown Spot (*Alternaria passiflorae*)	ALL	1 NG	-
Iprodione (Rovral)	2	Passionfruit	Alternaria Spot / Brown Spot (*Alternaria* spp.)	QLD, NSW, WA & NT	7	R3

Active Ingredient (Trade Name)	Chemical Group	Situation	Diseases / Comments	States	WHP Days	Regulatory Risk
Mancozeb	M3	Passionfruit	Septoria Leaf Spot Brown Spot (*Alternaria passiflorae*)	ALL	1	R2
			Anthracnose	NSW		
Peroxyacetic Acid	-	Sanitiser / Post-Harvest Treatment	Bacteria	ALL	NR	-
Phosphorous Acid PER87607	33	Passionfruit	Phytophthora Blight (*Phytophthora parasitica*)	ALL (excl. VIC)	NR	-
Pyraclostrobin (Cabrio) PER12781	11	Passionfruit	Anthracnose (*Colletotrichum gloeosporioides*) Septoria Spot (*Septoria passiflorae*)	NSW, QLD, NT & WA	1 NG	-

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

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory Risk
1,3-Dichloropropene	-	Soil Fumigant	Plant parasitic nematodes	ALL	NR	-
Abamectin	6	Passionfruit	Passionvine Mite (*Brevipalpus phoenicis Geijskes*) Two-Spotted Mite (*Tetranychus urticae*)	ALL	1	-
Acetamiprid + Pyriproxyfen (Trivor) Adama PER89943	4A+7C	Passionfruit	Fruit Spotting Bugs (*Amblypelta nitida* & *Amblypelta lutescens*)	ALL (excl. VIC)	28 NG	R2
Bacillus thuringiensis Berliner Subsp Aizawai (Bacchus WG)	11C	Fruits	Armyworm (*Spodoptera* spp.) Cotton Bollworm (*Helicoverpa armigera*) Native Budworm (*Helicoverpa punctigera*) Cabbage Moth (*Plutella xylostella*) Cabbage White Butterfly (*Pieris rapae*) Loopers (*Chrysodeixis* spp., *Ectropis excursaria*, *Thysanoplusia orichalcea*) Light Brown Apple Moth (*Epiphyas postvittana*) Vine Moth (*Phalaenoides glycinae*, *Agarista agricola*)	ALL	NR	-
Buprofezin (Applaud)	16	Passionfruit	Mealybugs Scale Insects	ALL	1	-
Chloropicrin + 1,3-Dichloropropene	-	Soil Fumigant	Plant Parasitic Nematodes Symphylans Wireworms	ALL	NR	-
Chlorpyrifos	1B	Passionfruit	Queensland Fruit Fly (*Bactrocera tryoni*)	NSW & QLD	14	R1
Copper (Cu) as a buffered copper complex		Passionfruit / Repellant	Snails	ALL	1	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory Risk
Dimethoate PER13859	1B	Fruit Fly Host Crops (non-bearing) / Orchard Cleanup	Fruit Fly	ALL	NR	R1
Etoxazole (Paramite) Sumitomo PER88379	10B	Passionfruit	Passionvine Mite (*Brevpalpus phoenicis*) Two-Spotted Mite (*Tetranychus urticae*)	ALL (excl. VIC)	3 NG	-
Fenbutatin Oxide (Torque) PER90591	12A	Passionfruit	Passionvine Mite (*Brevpalpus phoenicis*) Two-Spotted Mite (*Tetranychus urticae*)	ALL (excl. VIC)	1 NG	R2
Flupyradifurone (Sivanto Prime) Bayer	4D	Tropical & sub-tropical fruits, inedible peel (excluding bananas, pineapples)	Banana Spotting Bug (*Amblypelta utescens*) Fruit Spotting Bug (*Amblypelta nitida*) Green Planthopper Mango Planthopper	ALL	3	-
Metaldehyde	-	Horticultural Crops	Snails & Slugs	ALL	7	-
Petroleum Oil PER14662	-	Passionfruit	Passionvine Mite (*Brevpalpus phoenicis*) Two-Spotted Mite (*Tetranychus urticae*)	ALL (excl. VIC)	NR	-
Potassium Salts of Fatty Acid (Natrasoap)	-	Fruit	Aphids Thrips Mealybug Two-Spotted Mite Spider Mite Whitefly	ALL	NR	-
Propargite	12C	Passionfruit	Passionvine Mite (*Brevpalpus phoenicis*)	QLD & WA	7	R3
Pyriproxyfen (Distance Ant Bait) Sumitomo	7C	Ant Bait	Invasive and Nuisance Ants	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory Risk
Spinetoram (Success Neo) Corteva	5	Tropical & Sub-tropical Fruit – Inedible Peel	Flower-Eating Caterpillar Leafrollers Loopers Yellow Peach Moth Red-Banded Thrips Sorghum Head Caterpillar	ALL	NR NG	-
Spinosad (Entrust Organic) Corteva	5	Tropical & Sub-tropical Fruit – Inedible Peel	Flower-Eating Caterpillar Leafrollers Loopers Yellow Peach Moth Red-Banded Thrips Sorghum Head Caterpillar	ALL	NR	-
Spinosad (Entrust Organic) Corteva PER89870	5	Tropical & Sub-Tropical Fruit – Inedible Peel	Fall Armyworm (*Spodoptera frugiperda*)	ALL (excl. VIC)	NR G:14	-
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	Passionfruit	Red Scale Suppression of: Citrus Mealybug	ALL	3	-
Sulfoxaflor (Transform) Corteva	4C	Tropical & Sub-tropical Fruit – Inedible Peel	Banana Spotting Bug Fruit Spotting Bug	ALL	3	-
		Passionfruit	Black Scale Citrus Snow (White Louse) Scale Red Scale Citrus Mealybug Longtailed Mealybug Passionvine Mealybug			

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory Risk
Trichlorfon	1B	Passionfruit	Passionvine Bug Green Vegetable Bug	QLD & NT	2	R2
Trichlorfon PER12450	1B	Passionfruit	Queensland Fruit Fly (*Bactrocera tryoni*) Mediterranean Fruit Fly (*Ceratitis capitata*)	ACT, NSW, NT, QLD, SA & WA	7 G:7	R2

Appendix 3. Products available for weed control in passionfruit

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory Risk
Carfentrazone	14**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Grass & Broadleaf Weeds	NR G:14	ALL	-
Carfentrazone-Ethyl + Glufosinate (Hellcat) AgNova	14** + 10**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Grass & Broadleaf Weeds	NR G:56	ALL	R3
Carfentrazone-Ethyl + Glyphosate (Broadway)	14** + 9**	Tropical & Sub-Tropical Fruits / Directed or Shielded Spray	Broadleaf Weeds	NR G:14	ALL	R3
Fluazifop-P (Fusilade)	1***	Passionfruit / Directed Spray	Barnyard Grass, Crowsfoot Grass, Giant Paspalum (seedling), Green Panic (seedling), Johnson Grass, Para Grass, Prairie Grass, Rhodes Grass, Stinkgrass, Summer Grass (Crabgrass)	NSW, QLD, NT & WA	14	-
Glufosinate (Basta)	10**	Tropical & Sub-Tropical Fruits (Inedible Peel) / Directed or Shielded Spray	Grass and broadleaf weeds	NR G:56	ALL	R3
Glyphosate (Roundup) PER14421	9**	Passionfruit / Directed Application with a Shielded Sprayer	Grass and broadleaf weeds	NR NG	ALL (excl. VIC)	R3
Haloxyfop (Verdict)	1***	Passionfruit / Directed Spray or Spot Spray	Grass weeds	NR	ALL	-
Isoxaben (Gallery) Corteva	29**	Vineyards / Residual Weed Control	Broadleaf weeds	NR	ALL	-
Oryzalin	3**	Passionfruit / Non-Bearing / Directed Spray	Grass and broadleaf weeds	NR	ALL	-
Oxyfluorfen (Goal)	14**	Tropical & Sub-Tropical Fruit (Inedible Peel) / Directed Spray	Grass and broadleaf weeds	NR NG	ALL	-

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory Risk
Paraquat (Gramoxone)	22**	Orchards & Vineyards / Directed Spray	Grass and broadleaf weeds	NR G:1	ALL	R3
Paraquat + Diquat (SpraySeed)	22**	Orchards & Vineyards / Directed Spray or Spot Spray	Grass and broadleaf weeds	NR G:7	ALL	R3
Trifluralin	3**	Orchards & Vineyards / Residual Weed Control	Johnson Grass Liverseed Grass (Urochloa)	NR	ALL (excl. NSW)	-

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

Appendix 4. Current permits for use in passionfruit

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER13859 Version 3	Dimethoate / Orchard Cleanup - Fruit Fly Host Crops Following Harvest / Fruit Fly	9-Feb-15	30-Jun-25	Hort Innovation
PER14662 Version 2	Petroleum Oil / Passionfruit / Passionvine Mite & Two-Spotted Mites	29-Mar-15	30-Jun-25	Hort Innovation
PER89870 Version 2	Spinosad (Entrust Organic) / Tropical & Sub-Tropical Fruit Crops, Inedible Peel / Fall Armyworm	3-Jul-23	31-Jul-25	Hort Innovation
PER12450 Version 7	Trichlorfon / Specified Fruit Crops / Fruit Fly	06-Oct-11	30-Nov-25	Hort Innovation
PER89943 Version 2	Acetamiprid + Pyriproxyfen (Trivor) / Passionfruit / Fruit Spotting Bugs	29-Jan-21	30-Nov-25	Hort Innovation
PER90591 Version 2	Fenbutatin Oxide (Torque) / Passionfruit / Passionvine Mite & Two-Spotted Mite	09-Apr-21	31-Jul-27	Hort Innovation
PER12781 Version 4	Pyraclostrobin (Cabrio) / Passionfruit / Anthracnose & Septoria Spot	13-Mar-12	30-Apr-28	Hort Innovation
PER14421 Version 4	Glyphosate / Passionfruit / Grass & Broadleaf Weeds	31-Oct-13	31-May-28	Hort Innovation
PER88379 Version 2	Etoxazole (Paramite) / Passionfruit / Passionvine Mite & Two Spotted Mite	22-Feb-21	31-Dec-28	Hort Innovation
PER87607 Version 2	Phosphorous Acid / Passionfruit / Phytophthora Blight	05-Apr-19	28-Feb-29	Hort Innovation

Appendix 5. Passionfruit Maximum Residue Limits (MRLs)

CODEX commodity groupings of passionfruit and subgroups:

	Fruits
FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel
FI 2025	Assorted Tropical & Sub-Tropical, Inedible Peel - Vines
FI 0351	Passion Fruit

Note: The Australian passionfruit industry supplies the domestic market only. There are no expors or imports of fresh passionfruit in Australia. Available information indicates that in the absence of specific limits in legislation, that some countries defer to Codex, followed by EU MRL standards, or apply a 0.01ppm default value. Food exported to New Zealand from Australia may be legally sold if it complies with Australian requirements. MRLs and legislation are subject to change; the values presented should not be relied on.

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Abamectin	FI 0351	Passion Fruit	0.2	-
Acetamiprid	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	0.2	-
Afidopyropen	FI 0351	Passion Fruit	0.1	-
Aldrin & Dieldrin		Fruits	E0.05	-
Amitraz	FI 0351	Passion Fruit	*0.01	-
Azoxystrobin	FI 0351	Passion Fruit	0.5	-
Buprofezin	FI 0351	Passion Fruit	2	-
Carfentrazone-ethyl	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	*0.05	-
Chlorpyrifos	FI 0351	Passion Fruit	*0.05	-
DDT		Fruits	E1	-
Diazinon		Fruits {except citrus fruits, grapes, olives, peach}	0.5	-
Dicofol		Fruits {except strawberry}	5	-
Didecyl Dimethyl Ammonium Chloride	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	20	-
Difenoconazole	FI 0351	Passion Fruit	-	0.05
Diphenylamine		Fruits {except apple, pear}	0.5	-
Diquat		Fruits	*0.05	-
Dithianon		Fruits {except blueberries}	2	-
Dithiocarbamates	FI 0351	Passion Fruit	3	-
Etoxazole	FI 0351	Passion Fruit	T0.1	-
Fenbutatin Oxide	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	5	-
Fipronil	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except banana, custard apple}	T*0.01	-
Fluazifop-p-butyl	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except avocado, banana}	0.05	-
Fluopyram	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except banana, pineapple}	2	-
Flupyradifurone	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except banana, manago, papaya, pineapple}	1.5	-

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Glufosinate and Glufosinate-ammonium	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	0.2	-
		Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except banana, kiwifruit}	-	0.1
Glyphosate	FI 0351	Passion Fruit	3	-
Haloxyfop	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	*0.05	-
Inorganic Bromide		Fruits {except avocado, citrus fruits, dried fruits, strawberry}	20	-
Iprodione	FI 0351	Passion Fruit	10	-
Isoxaben	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	*0.01	-
Lindane		Fruits {except apples, cherries, cranberry, grapes, peach, pineapple, plums, strawberry}	E0.5	-
Malathion / Maldison		Fruits {except berries & other small fruits, citrus fruits, dried fruits, stone fruits}	2	-
Metaldehyde		Fruits	1	-
Methiocarb		Fruits {except citrus fruits, grapes}	T0.1	-
Methyl bromide		Fruits {except jackfruit, litchi, mango, papaya}	T*0.05	-
Oryzalin		Fruits	0.1	-
Oxyfluorfen	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	*0.01	-
Paclobutrazol	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except avocado, mango}	*0.01	-
Paraquat		Fruits {except olives}	*0.05	-
	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	-	*0.01
Pendimethalin	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	*0.05	-
Phosphine	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	T*0.01	-
Phosphorous Acid	FI 0351	Passion Fruit	T500	-
Piperonyl butoxide		Fruits	8	-
Pirimicarb		Fruits {except blackberries}	0.5	-
Prochloraz	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	-	Po7
Propargite	FI 0351	Passion Fruit	3	-
Pyraclostrobin	FI 0351	Passion Fruit	T1	0.2
Pyrethrins		Fruits	1	-
Pyriproxyfen	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	0.3	-
Simazine		Fruits	*0.1	-
Spinetoram	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	0.3	-
	FI 0351	Passion Fruit	-	0.4
Spinosad	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	0.3	-
	FI 0351	Passion Fruit	-	0.7

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Spirotetramat	FI 0351	Passion Fruit	0.5	-
Sulfoxaflor	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except banana, pineapple}	0.5	-
Tebuconazole	FI 0351	Passion Fruit	0.5	0.1
Trichlorfon	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel	T3	-
Trifloxystrobin	FI 0030	Assorted Tropical & Sub-Tropical Fruits – Inedible Peel {except banana, pineapple}	2	-
Trifluralin		Fruits	*0.05	-

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 3. Prepared 1 March 2024.
CODEX MRLs: CODEX Alimentarius International Food Standards database (January 2024), http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/

Appendix 6. Passionfruit regulatory risk assessment

Passion fruit
Agrichemical Regulatory
Risk Assessment

March 2024

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

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

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

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

Passionfruit Agrichemical Regulatory Risk Assessment

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

Active Constituents	Chemical group	Problem	Comment
INSECT AND OTHER PESTS			
Abamectin	**6**	Passionvine mite Two-spotted mite	APVMA: Nominated for spray drift label review Canada: Some uses amended, & use in greenhouse gown cut flowers cancelled EU: Use restricted to permanent greenhouses
Acetamiprid + pyriproxyfen	**4A + 7C**	Fruit-spotting bugs (PER89943) Fruit flies (PER89943) Leaf hoppers (PER89943) Mealybug (PER89943)	Acetamiprid APVMA: Under review
Bacillus thuringiensis	**11C**	Susceptible Lepidoptera	EU: Under review for renewal
Buprofezin	**16**	Mealybug Scale insects	EU: MRLs set to limit of quantification
Chlorpyrifos (Bait spray)	**1B**	Queensland fruit fly	APVMA: Proposed deletion of uses. Codex: All MRLs revoked Canada: Cancellation of all uses. EU/UK: No authorisation in place USA: EPA decision to cancel use on food crops
Dimethoate	**1B**	Aphids Fruit flies (PER13895 After harvest Orchard clean-up)	Codex: No MRLs. EU/UK: Not authorised
Etoxazole	**10B**	Passionvine mite (PER88379) Two-spotted mite (PER88379)	EU: Only uses on greenhouse ornamentals approved & Candidate for substitution EU: MRLs set to limit of quantification

Active Constituents	Chemical group	Problem	Comment
Fenbutatin oxide	**12B**	Passionvine mite (PER90591) Two-spotted mite (PER90591)	APVMA: nominated for review Codex: To be reviewed by JMPR. EU/UK: No authorisation in place USA: Under review
Flupyradifurone	**4D**	Banana spotting bug/Fruit spotting bugs Green plant hopper Mango plant hopper	EU: Under review
Lambda-cyhalothrin	**3A**	Fruit flies (PER12961 – SA Biosecurity) (Soil drench)	EU: Candidate for substitution
Malathion/maldison	**1B**	Fruit flies	APVMA: Under review Codex: Re-evaluation scheduled for 2025/26 EU: Restricted use to permanent greenhouses
Paraffinic oil	**UNM**	Hemispherical scale Passionvine mealybug Red scale Passionvine mite (PER14662) Two-spotted mite (PER14662)	
Propargite	**12C**	Passionvine mite	APVMA: nominated for review EU/UK: No authorisations
Pyrethrins	**3A**	Ants Aphids Caterpillars Leafhoppers Thrips Whiteflies	Canada: Under review
Spinetoram	**5**	Flower eating caterpillars Leafroller caterpillars Loopers Redbanded thrips Sorghum head caterpillar Yellow peach moth	EU: Approval expiry June 2024

Active Constituents	Chemical group	Problem	Comment
Spinosad	**5**	Flower eating caterpillars	
		Leafroller caterpillars	
		Loopers	
		Redbanded thrips	
		Sorghum head caterpillar	
		Yellow peach moth	
		Fall armyworm (PER89870)	
Spirotetramat	**23**	Citrus mealybug	EU: Approval expiry April 2024
		Red scale	
Sulfoxaflor	**4C**	Banana-spotting bug/Fruit-spotting bug	USA: Pollinator concerns EU: Restricted to permanent glasshouses only
		Black scale	
		Citrus snow scale	
		Red scale	
		Citrus mealy bug	
		Longtailed mealy bug	
		Passionvine mealybug	
Trichlorfon	**1B**	Green vegetable bug	APVMA: nominated for review Codex: No MRLs EU/UK: No authorisations USA: No MRLs
		Passion vine bug	
		Fruit flies (PER12450)	

Active Constituents	Chemical group	Problem	Comment
DISEASES			
Azoxystrobin	**11**	Alternaria spot	Canada: Proposed review
		Scab	
Copper	**M1**	Alternaria spot	EU: Candidates for substitution
		Brown spot	
		Phytophthora blight	
		Root and collar rot	
		Septoria spot	
		Trunk canker	
Fluopyram + tebuconazole	**7+3**	Anthracnose	Tebuconazole APVMA: nominated for review Canada: Under review EU: Candidate for substitution USA: Under review
		Brown spot	
		Septoria spot	
Fluopyram + trifloxystrobin	**7 + 11**	Brown spot	
		Septoria spot	
Iprodione	**2**	Alternaria spot	Canada: Majority of food crop uses deleted Codex: Review scheduled EU/UK: No authorisation in place USA: Proposed deletion or restriction of uses
		Brown spot	
Mancozeb	**M3**	Alternaria spot	APVMA: nominated for review Canada: Many uses cancelled Codex: To be reviewed EU/UK: No authorisation
		Brown spot	
		Septoria spot	
Phosphorous acid	**33**	Phytophthora blight (PER87607)	
Pyraclostrobin	**11**	Anthracnose (PER12781)	Canada: Under review
		Septoria spot (PER12781)	

Active Constituents	Chemical Group	Comment
WEEDS		
Clethodim (Non-bearing vines)	**1**	Codex: MRLs proposed for deletion
Diquat	**22**	APVMA: Currently under review EU/UK: Not authorised
Fluazifop	**1**	
Glufosinate	**10**	Canada: Review proposed EU/UK: No authorisation in place
Glyphosate (PER14421)	**9**	Ongoing issues internationally
Haloxyfop-P	**1**	EU/UK: No authorisation in place
Oryzalin	**3**	EU/UK: No authorisation in place
Oxyfluorfen	**14**	EU: Candidate for substitution USA: Interim review decision Label amendments proposed
Paraquat	**22**	APVMA: Currently under review Canada: Review initiated EU/UK: No authorisation in place Rotterdam Convention - nomination

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Passionfruit Agrichemical Regulatory Risk Assessment

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