Summerfruit
(Stone Fruit excluding Cherries)

Strategic Agrichemical Review Process
(SARP)

December 2020

Hort Innovation
Project – MT19008

Hort Innovation Project Number:
MT19008 – 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 summerfruit industry across Australia. The information in this report will assist the industry with its agrichemical selection and usage into the future.

Date of report:
December 2020

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Hort Innovation Strategic levy investment | SUMMERFRUIT FUND

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

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1. Summary

The Strategic Agrichemical Review Process (SARP) - Updates (MT19008) project is a strategic levy investment of the Hort Innovation Summerfruit 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 summerfruit 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 of summerfruit are:

Common name	Scientific name
Brown Rot (Post-Harvest)	*Monilinia* spp.
Blossom Blight / Brown Rot	*Monilinia* spp.
Bacterial Canker	*Pseudomonas syringae*
Bacterial Spot	*Xanthomonas arboricola*
Leaf Curl	*Taphrina deformans*

1.2 Insects, Mites and Other Pests

The high priority insects, mites and other pests of summerfruit are:

Common name	Scientific name
Queensland Fruit Fly	*Bactrocera tryoni*
Lesser Queensland Fruit Fly	*Bactrocera neohumeralis*
Mediterranean Fruit Fly	*Ceratitis capitata*
Two-Spotted Mite	*Tetranychus urticae*
Dried Fruit Beetle	*Carpophilus* spp.
Plague Thrips	*Thrips imaginis*
Western Flower Thrips	*Frankliniella occidentalis*
San Jose Scale	*Diaspidiotus perniciosus*
Rutherglen Bug	*Nysius vinitor*

1.3 Weeds

The high priority weeds of summerfruit are:

Common name	Scientific name
Couch Grass	*Cynodon dactylon*
Flaxleaf Fleabane	*Conyza bonariensis*
Johnson Grass	*Sorghum halepense*
Capeweed	*Arctotheca calendula*

1.4 Plant Growth Regulators

The high priority Plant Growth Regulator issues of summerfruit are:

Issue
Increase fruit Firmness and Size
Improve Fruit Quality and Storage Potential
Improve Fruit Set
Promote Crop Evenness
Restriction of vegetative growth

2. The Australian Summerfruit Industry

Summerfruit is commonly referred to as stone-fruit, and this SARP report includes peaches, nectarines, apricots and plums. Cherries are excluded from this SARP project.

The majority of summerfruit production occurs in the southern states, with Victoria the largest producer of all types. Production for the year ending June 2019 was 161,044 tonnes and the value of production was $461 m while the wholesale value of the fresh supply was $449 m. Apricot production was 9,027 tonnes valued at $35.1m, nectarines / peaches production was 119,775 tonnes valued at $350 m, and fresh plums production was 32,241 tonnes valued at $75.7 m.

Table 1 Fresh Apricots Seasonality by State[1]

State	18/19 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
New South Wales	292												
Victoria	5,033												
Queensland	136												
Western Australia	239												
South Australia	2,059												
Tasmania	1,269												
Availability Legend			High			Medium			Low			None	

Table 2 Fresh Nectarines / Peaches Seasonality by State[1]

State	18/19 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
New South Wales	9,500												
Victoria	91,696												
Queensland	4,834												
Western Australia	5,394												
South Australia	8,075												
Tasmania	276												
Imported	2,027												
Availability Legend			High			Medium			Low			None	

Table 3 Fresh Plums Seasonality by State[1]

State	18/19 Tonnes	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
New South Wales	6,102												
Victoria	16,355												
Queensland	1,632												
Western Australia	6,397												
South Australia	1,665												
Tasmania	90												
Imported	339												
Availability Legend			High			Medium			Low			None	

[1] Hort Innovation (2020). Australian Horticulture Statistics Handbook 2018/19. [online] Available at: https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/australian-horticulture-statistics-handbook/

Australia is a net summerfruit exporter. For the year ending June 2019, 23,045 tonnes of fresh summerfruit were exported, representing approximately 14% of total production. Nectarines, peaches and plums represent the most significant export volumes, and of those crops the majority is sent to China, with other markets being South East Asia and the Middle East.

Production increases in recent years have been taken up by increased domestic consumption, while imports have fallen slightly. Total production increased by 12% in 2018 and 5% in 2019. Areas under production are not increasing and year to year production will be affected by seasonal variations.

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 Summerfruit 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 Summerfruit industry regarding pesticide access, Hort Innovation has undertaken the current project to update the Strategic Agrichemical Review Process (SARP) for summerfruit.

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

Exotic plant pests, not present in Australia, are not addressed in this document. A biosecurity plan has been developed for the Summerfruit 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.

For more information visit:
https://www.planthealthaustralia.com.au/industries/summerfruits/

3.2 Minor use permits and registration

From a pesticide access perspective, the APVMA classifies stone fruit as a major crop. The crop fits within the APVMA Crop Group 003: Stone Fruits, and Subgroup 003B, Plums and Subgroup 003C, Peaches (including Nectarine and Apricots). Therefore, access to minor use permits can be difficult unless a reasonable justification is provided in accordance with the APVMA's minor use guidance[2].

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 summerfruit industry is for manufacturers to register new pesticides uses in the crop.

3.3 Methods

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

Process of Review	Activity / Date
Industry survey	Preparation and circulation of online industry survey to update priority pests and identify priority control gaps. Survey released: 14 January 2020 Survey closed: 31 March 2020
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 MT17019
Captured industry input	Collated and analysed survey results Consolidated and incorporated industry needs and insights

[2] Guide for Determining Minor Uses can be found at www.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 summerfruit
Appendix 2. Products available for control of insects, mites and other pests in summerfruit
Appendix 3. Products available for weed control in summerfruit
Appendix 4. Plant Growth Regulators available in summerfruit
Appendix 5. Current permits for use in summerfruit
Appendix 6. Summerfruit (Stone Fruits) Maximum Residue Limits (MRLs)
Appendix 7. Summerfruit Agrichemical Regulatory Risk Assessment

4. Diseases, pests and weeds of summerfruit

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

Information on regulatory risk derived from project MT17019 (Chapter 4) - Regulatory support and coordination (Appendix 7) has been incorporated.

While care has been taken to ensure the accuracy of the information provided in this document the APVMA registered label and where relevant the APVMA approved permit must always be followed.

4.1 Diseases of summerfruit

4.1.1 Disease priorities

Common name	Scientific name
High	
Brown Rot (Post-Harvest)	*Monilinia* spp.
Blossom Blight / Brown Rot	*Monilinia* spp.
Bacterial Canker	*Pseudomonas syringae*
Bacterial Spot	*Xanthomonas arboricola*
Leaf Curl	*Taphrina deformans*
Moderate	
Root Rot / Collar Rot	*Phytophthora* spp.
Fungal Gummosis	*Eutypa armeniacae*
Phytophthora Stem Rot	*Phytophthora* spp.
Rust	*Tranzschelia discolor*
Trunk and Stem Canker	*Phytophthora cinnamomi*
Crown Gall	*Agrobacterium* spp.
Transit Rot	*Rhizopus stolonifer*
Freckle and Scab	*Cladosporium carpophilum*
Armillaria Root Rot	*Armillaria mellea*
Silver Leaf	*Chondrostereum purpureum*
Low	
Shot-Hole	*Wilsonomyces carpophilus*
Grey Mould	*Botrytis cinerea*

The diseases rated as a high priority are Brown Rot (Post-Harvest), Blossom Blight / Brown Rot, Bacterial Canker, Bacterial Spot and Leaf Curl. These pathogens can all impact adversely on production and require a combination of cultural controls and fungicide options to protect orchards and maintain fruit quality. Timeliness of management is critical to prevent infections.

Most of these diseases, including Brown Rot, Armillaria and Rust, impact all species of stone fruit. Freckle / Scab will also infect most stone fruit, but it is most important on mid-season to late-season peaches and nectarines and apricots. Cherries and apricots are more susceptible to Bacterial Canker than peaches, nectarines and plums. Bacterial Spot affects all species of stone fruit, but the most serious symptoms appear in plums. Species differences may help to guide which types of stone fruit can be grown in an area if the disease risks are known.

In managing fungal and bacterial diseases, the industry should be mindful of resistance management. CropLife Australia has a resistance management strategy and users must refer to it before using any product[3].

CropLife Australia recommends that in the absence of a specific resistance management strategy the use of fungicides from a specific mode of action be limited to a maximum of one-third of the total. The number of consecutive applications of the same group should also be limited by rotating/alternating between products from different activity groups. An exception is the use of Group M fungicides as they have a low risk of resistance development.

[3] https://www.croplife.org.au/resources/programs/resistance-management/fungicide-resistance-management-strategies1/fungicide-resistance-management-strategies1-draft/

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
Brown Rot (Post-Harvest) (*Monilinia* spp.) **Priority: High**							
Rated as a high priority in all growing regions except QLD, where it is rated as a moderate priority and WA, where it is rated as a low priority. Brown Rot is the most serious post-harvest disease in stone fruit. The initial infection usually occurs in crop, but these infections may not be obvious at harvest. There are a number of post-harvest strategies available to maintain fruit quality during storage and distribution to market. A pre-harvest rot incubation can be used on farm to determine the need for post-harvest treatments.							
Bromo Chloro Dimethyl Hydantoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit as a post-harvest treatment for control of External Rot Causing Organisms. Post-harvest spray or dip. Minimum contact time 60 seconds. Can also be used as a general disinfectant for equipment.	-
Chlorine	-	Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit as a post-harvest treatment for control of bacteria and fungi. Post-harvest spray. Must make contact with the fruit for at least 30 seconds. Can also be used as a general disinfectant for equipment.	-
Fludioxonil (Scholar) Syngenta	12	Protectant / Post-Harvest Treatment	NR	A	ALL	Registered in stone fruit as a post-harvest treatment for **Brown Rot**, Grey Mould and Rhizopus Rot. Apply as a post-harvest dip for 30-60 seconds or as a drench for a minimum of 30 seconds.	R3
Iodine	M	Sanitiser / Post-Harvest Dip	NR	A	ALL	Registered in stone fruit as a post-harvest dip for control of bacteria and fungi. Dip the fruit for a minimum of 1 minute.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Iprodione	2	Post-Harvest Dip	NR	A	QLD, NSW, VIC, TAS, SA & WA	Registered in apricot, nectarine, peach and plum as a post-harvest treatment for control of **Brown Rot** and suppression of Transit Rot. Dip promptly after harvest. When dipping, allow sufficient time to thoroughly wet the fruit.	R2
Triforine	3	Post-Harvest Dip	NR	A	QLD, NSW, ACT, VIC, TAS, SA & WA	Registered in apricot, nectarine, peach and plum as a post-harvest treatment for control of **Brown Rot**. Dip for 30 seconds to ensure thorough wetting as soon as practical after harvest.	R3
Florylpicoxamid (Adavelt) Corteva	21	Protectant / Curative		P		New Mode of Action fungicide being developed for registration in Australia, with activity on *Septoria*, Powdery Mildew, *Botrytis*, Anthracnose, *Alternaria*, Scab, ***Monilinia***, Rust and *Mycosphaerella* spp. Due for registration in 2023.	-
Fludioxonil + Azoxystrobin (Graduate A+) Syngenta	12+11	Protectant / Post-harvest treatment		P		Registered as a post-harvest treatment for control of Side Rot and Stem End Rot in avocado. Fludioxonil is registered as a post-harvest treatment for *Monilinia* spp. Fludioxonil: AU MRLs 5 mg/kg (stone fruit), 10 mg/kg (apricot, peach). Codex MRL Po5 mg/kg. Azoxystrobin: Codex MRL 2 mg/kg.	-
Mefentrifluconazole (Belanty) BASF	3	Protectant / Curative		P		Registered for control of Black Spot in apples and Powdery Mildew in grapes. US registration for control of *Alternaria*, ***Monilinia***, *Tranzschelia* and *Wilsonomyces* in stone fruit. Being reviewed by the JMPR in 2020.	-
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Biological	NR	P		Registration pending for control of various diseases in berries and pome fruit. MRL not required.	-
Pydiflumetofen + Fludioxonil (Miravis Prime) Syngenta	7+12	Protectant & Curative		P		Registration pending in Australia for control of Botrytis, Alternaria, Powdery Mildew & Anthracnose in berries. Registered in the US for control of ***Monilinia* spp.** in bushberries. Fludioxonil: AU MRLs 5 mg/kg (stone fruit), 10 mg/kg (apricot, peach). Codex MRL Po5 mg/kg.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Blossom Blight / Brown Rot (*Monilinia* spp.) **Priority: High**							
Rated as a high priority in VIC, a moderate priority in NSW, and a low priority in QLD and WA. Blossom Blight / Brown Rot infects stone fruit during flowering or fruit set, having serious impacts on fruit quality and marketability. Management controls include the removal of rotten/mummified fruit and cankered and dead twigs to reduce over-wintering of inoculum, monitoring orchards during critical infection periods, and the use of a strategic fungicide program.							
BLAD (Problad Plus)	BM 01	Biological	NR	A	ALL	Registered in stone fruit for suppression of **Brown Rot / Blossom Blight**. Begin application at pink, white or red bud. Make a second application at full bloom and if conditions remain favourable for disease, make another application at petal fall. For Brown Rot on fruit, a second set of treatments should be applied at least a month before harvest. Apply at 7-14 day intervals depending on the conditions that may favour disease development.	-
Captan	M4	Protectant	NR	A	ALL	Registered in stone fruit (except apricots) for control of **Blossom Blight** and **Brown Rot**. Apply at any of the following times as part of a Blossom blight program – pink bud, 10% blossom, full bloom, petal fall and shuck fall and pre-harvest applications at 6, 3 and 1 week prior to harvest. Apply no more than 5 applications per season.	-
Chlorothalonil (Bravo)	M5	Protectant	7	A	NSW, VIC, TAS, SA & WA	Registered in apricots for control of **Brown Rot**, **Blossom Blight**, Stone Fruit Rust, Shot Hole and Freckle. Apply at budswell, budburst, pink bud and full bloom. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Applications per season not limited.	R3
					NSW, VIC, TAS, SA & WA	Registered in nectarines for control of Shot Hole, **Brown Rot** and **Blossom Blight**. Apply at budswell, budburst, pink bud, early blossom and full bloom. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Applications per season not limited.	
					ALL	Registered in peaches for control of **Brown Rot**, **Blossom Blight**, Shot Hole, Stone Fruit Rust and Leaf Curl. Apply at budswell, pink bud, early blossom and full bloom. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Applications per season not limited.	
					ALL	Registered in plums for control of **Brown Rot**, **Blossom Blight**, Stone Fruit Rust and Shot Hole. Apply at budswell, budburst, early blossom, pink bud and full bloom. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Applications per season not limited.	

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Copper (Cu) present as Copper Oxychloride	M1	Protectant	1	A	NSW, VIC, TAS, SA & WA	Registered in stone fruit for control of **Blossom Blight**, Freckle, Rust, Leaf Curl and Shot Hole. Apply from late budswell to early blossom. Treatments per season not limited.	-
Cyprodinil (Chorus) Syngenta	9	Protectant / Curative	NR	A	ALL	Registered in apricot, nectarine, peach and plum for control of **Blossom Blight** and **Brown Rot**. Apply a maximum of 3 applications between early blossom and shuckfall. Critical application timings are: 10% blossom, 100% blossom and shuck fall. After shuckfall continue with a disease control program using alternative chemistry.	-
Dithianon (Delan) BASF	M9	Protectant / Curative	1	A	NSW, TAS, VIC & SA	Registered in canning peaches for control of **Brown Rot**. Apply according to local recommendations or at budswell, full bloom, petal fall, shuck fall and at 3 weeks and 1-7 days before harvest. Treatments per season not limited.	R3
					QLD	Registered in canning peaches for control of **Brown Rot**. Apply according to local recommendations or at budswell, full bloom, petal fall, shuck fall and at 4 weeks, 2 weeks and 1-3 days before harvest. Treatments per season not limited.	
			21		NSW, TAS, VIC & SA	Registered in apricot, nectarine, peach and plum for control of **Brown Rot**. Apply according to local recommendations or at budswell, full bloom, petal fall, shuck fall and at 3 weeks before harvest. Within 21 days of harvest use another registered fungicide. Treatments per season not limited.	
					QLD	Registered in apricot, nectarine, peach and plum for control of **Brown Rot**. Apply according to local recommendations or at budswell, full bloom, petal fall, shuck fall and at 4 weeks before harvest. Within 21 days of harvest use another registered fungicide. Treatments per season not limited.	
Dodine (Syllit) Campbell	U12	Protectant / Curative	H:NR NG	A	ALL	Registered in nectarine and peach for control of peach Leaf Curl and **Blossom Blight**. Apply at bud swell, early bloom and petal fall. Do not apply after petal fall. Do not use more than 3 consecutive applications. Treatments per season not limited.	-

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	A	ALL	Registered in stone fruit for control of **Blossom Blight**, Shot Hole and **Brown Rot**. The critical application timings for Blossom Blight are early (1-10%) blossom, full bloom and petal fall / shuck fall. The critical period for Brown Rot control begins at fruit ripening and extends through to harvest. A re-treatment interval of 7-10 days should be used. Apply a maximum of 2 applications per season.	-
Iprodione	2	Protectant / Curative	NR	A	QLD, NSW, VIC, TAS, SA & WA	Registered in stone fruit for control of **Blossom Blight** and **Brown Rot**. For control of Blossom Blight, spray at 10% blossom, full bloom and petal / shuck fall. For control of subsequent Brown Rot in fruit, spray at 3 weeks and 1 week pre-harvest. Do not use more than 2 consecutive applications. Treatments per season not limited.	R2
Mancozeb	M3	Protectant	14	A	ALL	Registered in stone fruit (except Wilson plums) for control of **Brown Rot**, Freckle, Rust and Shot Hole. Apply at early bloom (1-10%), then repeat at mid to full bloom (50-100%), at petal fall and at shuck fall. Continue with a protective spray program at 2 week intervals. Treatments per season not limited.	R2
Mandestrobin (Intuity) Sumitomo	11	Protectant / Curative	H:7 G:7	A	ALL	Registered in stone fruit for control of **Blossom Blight** and **Brown Rot**. For Blossom Blight control, treat at 20% and again at 90% flowering. For Brown Rot control, treat at 3 weeks and then 1 week pre-harvest. Do not use more than 2 applications per season.	-
Penthiopyrad (Fontelis) Corteva	7	Protectant / Curative	NR	A	ALL	Registered in stone fruit for control of **Brown Rot** / **Blossom Blight** and Scab / Freckle. Begin applications prior to disease development and continue on a 7-14 day interval. Do not use more than 2 sequential applications, and no more than a total of 3 applications per season.	-
Potassium Silicate + Potassium Bicarbonate (EcoCarb Plus) OCP	M2	Protectant	NR	A	ALL	Registered in nectarines for control of **Brown Rot**. Begin application at first sign of disease. Repeat applications at intervals of 7 days as new infection occurs, or if conditions favour disease. Treatments per season not limited.	-
Procymidone (Sumisclex) Sumitomo	2	Protectant	9	A	VIC, NSW, SA, TAS & QLD	Registered in stone fruit for control of **Blossom Blight**. Apply at 10% blossom, full bloom, late petal and shuck fall. Do not apply after shuck fall. Treatments per season not limited.	R2

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Propiconazole (Tilt)	3	Protectant / Curative	1	A	VIC, WA & TAS	Registered in stone fruit for control of **Brown Rot** / **Blossom Blight** (Blossom Phase) (*Monilinia laxa*). Apply at early (1-10%) blossom and again at full bloom. A further application is made at shuck fall. Only 2 consecutive applications of DMI fungicides can be made during this period.	R3
					NSW, SA, QLD, TAS & WA	Registered in stone fruit for control of **Brown Rot** (Blossom Phase) (*Monilinia fructicola*). Apply at early (1-10%) blossom and again at full bloom. A further application is made at shuck fall. Only 2 consecutive applications of DMI fungicides can be made during this period.	
					QLD, NSW, TAS, VIC, SA & WA	Registered in stone fruit for control of **Brown Rot** (Fruit Phase) (*Monilinia fructicola*). Apply 3 weeks and 1 week before harvest. Only 2 consecutive applications of DMI fungicides can be made during this period. For varieties with extended harvesting periods, a third treatment during the picking period may be applied if conditions are favourable for disease development.	
Sulphur	M2	Protectant	NR	A	NSW, VIC, TAS, SA, WA & ACT	Registered in stone fruit (except apricots) for control of **Brown Rot**. Apply at 4 weeks after petal fall and then as cover sprays. Treatments per season not limited.	-
					QLD	Registered in stone fruit (except apricots) for control of **Brown Rot**. Apply at petal fall only.	
Thiram	M3	Protectant	7	A	ALL	Registered in stone fruit for control of **Brown Rot**, Freckle and Shot Hole. Apply early full bloom, after bud swell copper sprays, at petal fall, at shuck fall and then every 3-4 weeks if required, until 7 days before harvest. Treatments per season not limited.	R2
Triforine	3	Protectant / Curative	NR	A	NSW, ACT, VIC, TAS, SA & WA	Registered in apricot, nectarine, peach and plum for control of **Blossom Blight** and **Brown Rot**. For Blossom Blight, apply at early blossom, early petal and shuck fall. For Brown Rot, apply 3 treatments at 5, 3 and 1 week before harvest in addition to Blossom Blight treatments.	R3
					QLD	Registered in apricot, nectarine, peach and plum for control of **Blossom Blight** and **Brown Rot**. For Blossom Blight, apply at early blossom, early petal and shuck fall. For Brown Rot, apply 2 treatments at 3-4 weeks and 1-2 weeks before harvest.	

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Ziram	M3	Protectant	7	A	ALL	Registered in stone fruit (except apricots) for control of **Blossom Blight**, **Brown Rot**, Shot Hole, Freckle and Leaf Curl. Apply at mid full bloom, early petal fall and at shuck fall. Apply cover sprays at 14 day intervals after fruit commences to ripen. Also apply at 21 and 7 days before harvest. Treatments per season not limited.	R2
Florylpicoxamid (Adavelt) Corteva	21	Protectant / Curative		P		New Mode of Action fungicide being developed for registration in Australia, with activity on *Septoria*, Powdery Mildew, *Botrytis*, Anthracnose, *Alternaria*, Scab, ***Monilinia***, Rust and *Mycosphaerella* spp. Due for registration in 2023.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative		P		Registered in bananas for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot. US registration for control of **Brown Rot / Blossom Blight** in stonefruit. Fluopyram - AU MRL 2 mg/kg. Codex MRL 0.5 mg/kg (plums), 1 mg/kg (peaches). Tebuconazole - AU MRL *0.01 mg/kg. Codex MRL 1 mg/kg (plums), 2 mg/kg (apricot, peaches), 3 mg/kg (prunes, dried).	R3
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant / Curative		P		Registered in almonds for control of Alternaria Leaf Spot, Black Spot, **Brown Rot**, Nut Scab, Shot-Hole and Stone Fruit Rust. US registration for control of **Blossom Blight / Brown Rot** in stone fruit. Fluxapyroxad: Codex MRL 1.5 mg/kg (plums, peaches), 5 mg/kg (prunes, dried) Pyraclostrobin: Codex MRL 0.8 mg/kg (plums), 0.3 mg/kg (peaches)	-
Mefentrifluconazole (Belanty) BASF	3	Protectant / Curative		P		Registered for control of Black Spot in apples and Powdery Mildew in grapes. US registration for control of *Alternaria*, ***Monilinia***, *Tranzschelia* and *Wilsonomyces* in stone fruit. Being reviewed by the JMPR in 2020.	-
Polyoxin D Zinc Salt (Intervene) Nufarm	19	Biological	NR	P		Registration pending for control of various diseases in berries and pome fruit. MRL not required.	-

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		Registration pending in Australia for control of Botrytis, Alternaria, Powdery Mildew & Anthracnose in berries. Registered in the US for control of ***Monilinia* spp.** in bushberries. Fludioxonil: AU MRLs 5 mg/kg (stone fruit), 10 mg/kg (apricot, peach). Codex MRL Po5 mg/kg.	R3
Bacterial Canker (*Pseudomonas syringae*) **Priority: High**							
Rated as a high priority in VIC, and as a moderate priority in NSW, QLD and WA. Bacterial Canker can affect all parts of the tree. Economic losses result from a reduction in fruit yield, and branches or whole trees dying. Avoid damage to trees during the highly susceptible autumn period. Avoid overhead irrigation and excess nitrogen fertiliser mid-late summer. Careful monitoring and removal of diseased tissues are recommended.							
Copper (Cu) present as Copper Oxychloride	M1	Protectant	1	A	QLD	Registered in stone fruit for control of Bacterial Spot, **Bacterial Canker**, Leaf Curl and Shot Hole. Apply at early bud movement, 7-10 days later (pink stage in apricots) and on plums only, at blossoming. Treatments per season not limited.	-
Bacillus amyloliquefaciens (strain QST 713) (Serenade Opti) Bayer	BM 02	Biofungicide Protectant	NR	P		Registered for suppression of Bacterial Spot in capsicum, chilli and tomato. No MRLs required for biological product.	-
Bacterial Spot (*Xanthomonas arboricola*) **Priority: High**							
Rated as a high priority in VIC, a moderate priority in NSW, and a low priority in QLD and WA. Bacterial Spot reduces marketable yield as a result of direct infection of fruit, although the disease can also affect leaves and branches and can cause extensive loss of tree parts in severe cases. Control options are limited. Plant trees into sheltered sites where wind damage is low, avoid overhead irrigation and prune and shape trees to maintain good airflow.							
Copper (Cu) present as Copper Oxychloride	M1	Protectant	1	A	QLD	Registered in stone fruit for control of **Bacterial Spot**, Bacterial Canker, Leaf Curl and Shot Hole. Apply at early bud movement, 7-10 days later (pink stage in apricots) and on plums only, at blossoming. Treatments per season not limited.	-

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	Biofungicide Protectant	NR	P		Registered for suppression of **Bacterial Spot** in capsicum, chilli and tomato. No MRLs required for biological product.	-
Leaf Curl (*Taphrina deformans*) **Priority: High**							
Rated as a high priority in VIC, a moderate priority in NSW, and a low priority in QLD and WA. Leaf Curl, if left uncontrolled, can destroy new leaves in spring and cause shoot dieback and loss of yield. If unchecked over several years, it will gradually weaken the tree until it dies. Fungicides are effective at managing Leaf Curl, and poor disease management is usually the result of treating too late.							
Chlorothalonil (Bravo)	M5	Protectant	7	A	ALL	Registered in peaches for control of Brown Rot, Blossom Blight, Shot Hole, Stone Fruit Rust and **Leaf Curl**. Apply at budswell and continue at 7-14 day intervals. QLD: apply at budswell only. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	R3
Copper (Cu) present as Copper Ammonium Acetate	M1	Protectant	1	A	ALL	Registered in nectarines and peaches for control of Shot Hole, **Leaf Curl** and Phytophthora Stem Canker. Treat when buds are swelling but before and within 1 week of bud opening. Where Leaf Curl is likely to be a problem based on previous experience, the following program should be followed: 1. Autumn – apply at leaf fall 2. Apply at first sign of bud swell and repeat 1 week later.	-
Copper (Cu) present as Copper Octanoate	M1	Protectant	1	A	ALL	Registered in nectarines and peaches for control of **Leaf Curl**. Treat at bud swell prior to early signs of leaf / bloom development. Treatments per season not limited.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Copper (Cu) present as Copper Oxychloride	M1	Protectant	1	A	ALL	Registered in nectarines and peaches for control of **Leaf Curl**. Treat when buds are swelling but before and within 1 week of bud opening. Where Leaf Curl is likely to be a problem based on previous experience, the following program should be followed: 1. Autumn – apply at leaf fall 2. Apply at first sign of bud swell and repeat 1 week later.	-
					NSW, VIC, TAS, SA & WA	Registered in stone fruit for control of Blossom Blight, Freckle, Rust, **Leaf Curl** and Shot Hole. Apply at early bud swell. Additional applications in autumn when leaves begin to fall will improve control. Treatments per season not limited.	
					QLD	Registered in stone fruit for control of Bacterial Spot, Bacterial Canker, **Leaf Curl** and Shot Hole. Apply at early bud movement, 7-10 days later (pink stage in apricots) and on plums only, at blossoming.	
Copper (Cu) present as Cupric Hydroxide	M1	Protectant	1	A	ALL	Registered in nectarines and peaches for control of Shot Hole and **Leaf Curl**. Treat when buds are swelling but before and within 1 week of bud opening. Where Leaf Curl is likely to be a problem based on previous experience, the following program should be followed: 1. Autumn – apply at leaf fall 2. Apply at first sign of bud swell and repeat 1 week later.	-
Copper (Cu) present as Cuprous Oxide	M1	Protectant	1	A	ALL	Registered in nectarines and peaches for control of **Leaf Curl** and Shot Hole. Treat when buds are swelling but before and within 1 week of bud opening. Where Leaf Curl is likely to be a problem based on previous experience, the following program should be followed: 1. Autumn – apply at leaf fall 2. Apply at first sign of bud swell and repeat 1 week later.	-
Copper (Cu) present as Tribasic Copper Sulphate	M1	Protectant	1	A	ALL	Registered in nectarines and peaches for control of **Leaf Curl**. Treat when buds are swelling but before and within 1 week of bud opening. Where Leaf Curl is likely to be a problem based on previous experience, the following program should be followed: 1. Autumn – apply at leaf fall 2. Apply at first sign of bud swell and repeat 1 week later.	-
Dithianon (Delan) BASF	M9	Protectant / Curative	21	A	ALL	Registered in nectarines and peaches for control of **Leaf Curl**. Apply at early bud swell. Treatments per season not limited.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Dodine (Syllit) Campbell	U12	Protectant / Curative	H:NR NG	A	ALL	Registered in nectarines and peaches for control of **Peach Leaf Curl** and Blossom Blight. Apply at bud swell, early bloom and petal fall. Do not apply after petal fall. Do not use more than 3 consecutive applications. Treatments per season not limited.	-
Ziram	M3	Protectant	7	A	ALL	Registered in stone fruit (except apricots) for control of Blossom Blight, Brown Rot, Shot Hole, Freckle and **Leaf Curl**. Apply at early bud swell and then again at petal fall. Treatments per season not limited.	R2
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative		P		Registered in bananas for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot. US registration for control of **Peach Leaf Curl** in stonefruit. Fluopyram - AU MRL 2 mg/kg. Codex MRL 0.5 mg/kg (plums), 1 mg/kg (peaches). Tebuconazole - AU MRL *0.01 mg/kg. Codex MRL 1 mg/kg (plums), 2 mg/kg (apricot, peaches), 3 mg/kg (prunes, dried).	R3
Root Rot / Collar Rot (*Phytophthora* spp.) **Priority: Moderate**							
Rated as a high priority in VIC, and as a low priority in NSW, QLD and WA. Root Rot is a soil-borne disease that infects the roots and crowns of trees. Affected trees initially suffer nutrient and moisture deficiencies as a result of damaged roots, and the tree may eventually die as a result of the disease. An integrated management system is required to protect trees, including selection of planting sites with good drainage, irrigation management to avoid excessive watering, fungicide application and general tree health through nutrition and pruning management.							
Fosetyl-Aluminium (Aliette) Bayer	33	Protectant	NR	A	NSW, VIC, TAS, SA & WA	Registered in peaches for control of **Collar Rot** (*Phytophthora cactorum*). Apply 2 foliar treatments per season. Apply the first treatment in early spring when trees are in full leaf. Apply the second treatment 12 weeks later when the spring flush has matured. Can also be applied as a soil drench. This treatment should be used for very diseased trees, that have inadequate leaf area for a foliar spray to be effective.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fosetyl-Aluminium (Aliette) Bayer PER85273	33	Protectant	NR	A	ALL	Permitted in apricots, peaches, nectarines and plums for control of **Phytophthora Trunk/Collar Rot** (*Phytophthora cactorum*, *Phytophthora cinnamomi* and *Phytophthora cambivora*). Apply as a foliar application or soil drench. Soil drench should be used for very diseased trees, that have inadequate leaf area for a foliar spray to be effective. Do not use more than 2 applications in a single year. Apply first treatment in early spring when trees are in full leaf. Apply second treatment 12 weeks later when the spring growth flush has matured. Do not use more than 2 consecutive foliar applications before changing to a different fungicide group.	-
Metalaxyl-M (Ridomil Gold 25G) Syngenta	4	Protectant / Curative	42	A	VIC, SA	Registered in peaches (five years or older) for control of **Phytophthora Trunk Rot** (*Phytophthora cactorum*). Apply the granules in autumn after harvesting is completed and again in the spring when trees have a good leaf cover. Apply in a shallow gutter dug around the base of the tree trunk. To ensure movement into the soil add approximately 20L of water per tree or apply an appropriate amount of overhead irrigation within 24 hours.	-
					QLD	Registered in peaches (five years or older) for control of **Phytophthora Trunk Rot** (*Phytophthora cinnamomi*). Apply the granules in autumn after harvesting is completed and again in the spring when trees have a good leaf cover. Apply in a shallow gutter dug around the base of the tree trunk. To ensure movement into the soil add approximately 20L of water per tree or apply an appropriate amount of overhead irrigation within 24 hours.	
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime) Bayer	BM 02	Biological Soil Ameliorant	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.	-
Mandipropamid (Revus) Syngenta	40	Protectant / Curative		P		Mandipropamid has US registrations for **Phytophthora** in various crops, including as a foliar application for protection of citrus from **Phytophthora Root Rot**.	-
Oxathiapiprolin (Zorvec Enicade) Corteva	49	Protectant / Curative		P		Current AU registrations only for Downy Mildew but known to have broad activity in the oomycete group. US registration for control of **Phytophthora** Canker and Brown Rot in citrus.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Streptomyces lydicus (Actinovate)	BM 02	Biological	NR	P		Registered in strawberries for the suppression of Powdery Mildew and **Phytophthora**. No MRLs required for biological product.	-
Fungal Gummosis (*Eutypa armeniacae*) **Priority: Moderate**							
Rated as a moderate priority in VIC and as a low priority in NSW, QLD and WA. Fungal Gummosis is a serious disease of apricots. It causes loss of branches and can lead to complete loss of trees if unchecked. Pruning hygiene is a key control measure, as well as monitoring and removal of infected tissue. No fungicide controls are available.							
No control options available.							
Phytophthora Stem Rot (*Phytophthora* spp.) **Priority: Moderate**							
Rated as a moderate priority in NSW and VIC, and as a low priority in all other regions. Phytophthora is the same pathogen that causes root rot and infections can also affect the branches and stems of the tree. Management options are the same as those employed to reduce the incidence of root rot, including keeping good drainage, irrigation management to avoid excessive watering and general tree health through nutrition and pruning management. Fungicides used to manage root rot will also provide protection against Phytophthora Stem Rot.							
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime)	BM 02	Biological Soil Ameliorant	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.	-
Mandipropamid (Revus) Syngenta	40	Protectant / Curative		P		Mandipropamid has US registrations for **Phytophthora** in various crops, including as a foliar application for protection of citrus from **Phytophthora Root Rot**.	-
Oxathiapiprolin (Zorvec Enicade) Corteva	49	Protectant / Curative		P		Current AU registrations only for Downy Mildew but known to have broad activity in the oomycete group. US registration for control of **Phytophthora** Canker and Brown Rot in citrus.	-
Streptomyces lydicus (Actinovate)	BM 02	Biological	NR	P		Registered in strawberries for the suppression of Powdery Mildew and **Phytophthora**. No MRLs required for biological product.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Rust (*Tranzschelia discolor*) **Priority: Moderate**							
Rated as a moderate priority in VIC and NSW, and as a low priority in QLD and WA. Rust causes spots on the upper and lower sides of the leaf, and if left uncontrolled can lead to premature leaf-fall. Defoliation can lead to yield losses and general decline in tree health. Rust infection of the fruit can also occur in peaches, nectarines and apricots. Affected fruit is rendered unsaleable. Management options include selection of less susceptible varieties, improving airflow in the orchard, and close monitoring and removal of diseased plant tissue in conjunction with protectant fungicides.							
Chlorothalonil (Bravo)	M5	Protectant	7	A	NSW, VIC, TAS, SA & WA	Registered in apricots for control of Brown Rot, Blossom Blight, **Stone Fruit Rust**, Shot Hole and Freckle. Apply at budswell, budburst, pink bud and full bloom. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	R3
					ALL	Registered in peaches for control of Brown Rot, Blossom Blight, Shot Hole, **Stone Fruit Rust** and Leaf Curl. Apply at budswell and continue at 7-14 day intervals. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	
						Registered in plums for control of Brown Rot, Blossom Blight, **Stone Fruit Rust** and Shot Hole. Apply at budswell, budburst, pink bud, shuckfall and capfall. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	
Copper (Cu) present as Copper Oxychloride	M1	Protectant	1	A	NSW, VIC, TAS, SA & WA	Registered in stone fruit for control of Blossom Blight, Freckle, **Rust**, Leaf Curl and Shot Hole. Apply from late bud swell to early blossom. Treatments per season not limited.	-
Dithianon (Delan) BASF	M9	Protectant / Curative	21	A	ALL	Registered in apricots, nectarines and peaches for control of Leaf Curl and **Rust**. Apply according to local recommendations or at about monthly intervals from shuck fall until 21 days before harvest. Treatments per season not limited.	R3
Mancozeb	M3	Protectant	14	A	ALL	Registered in stone fruit (except Wilson plums) for control of Brown Rot, Freckle, **Rust** and Shot Hole. Apply at early bloom (1-10%), then repeat at mid to full bloom (50-100%), at petal fall and at shuck fall. Continue with a protective spray program at 2 week intervals. Treatments per season not limited.	R2

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Metiram (Polyram) BASF	M3	Protectant	14	A	ALL	Registered in stone fruit for control of **Rust** and Shot Hole. Apply at petal fall, shuck fall, then 4 weeks after shuck fall. For late varieties, apply a further treatment in mid December. In WA only, apply the first treatment at petal fall, the second treatment 4 weeks later and the third treatment a further 4 weeks later.	R2
Propiconazole (Tilt)	3	Protectant / Curative	1	A	SA	Registered in apricots for control of **Prune Rust**. Apply as a curative treatment when the disease first occurs. Further applications should be made when the disease occurs on new growth. Do not make more than 5 applications to any individual tree during the season. Can be applied as a protective treatment mixed with mancozeb or zineb.	R3
					NSW, SA, VIC & WA	Registered in plums (prune production only) for control of **Prune Rust**. Apply as a curative treatment when the disease first occurs. Further applications should be made when the disease occurs on new growth. Do not make more than 5 applications to any individual tree during the season. Can be applied as a protective treatment mixed with mancozeb or zineb.	
Sulphur	M2	Protectant	NR	A	NSW, VIC, SA, WA & TAS	Registered in stone fruit (except apricots) for control of **Rust**. Apply about 4 weeks after petal fall or at petal fall (in QLD only) and at intervals of 3-4 weeks until mid to late January. Treatments per season not limited.	-
Zineb	M3	Protectant	14	A	ALL	Registered in stone fruit (except apricots) for control of **Rust**. Apply monthly between December and March.	R2
Azoxystrobin + Tebuconazole (Custodia) Adama	11+3	Protectant / Curative		P		Registered in almonds for control of **Rust**. Azoxystrobin: Codex MRL 2 mg/kg. Tebuconazole: AU MRL *0.01 mg/kg. Codex MRLs 1mg/kg (plums, except prunes); 2 mg/kg (apricot, peach); 3 mg/kg (prunes, dried).	R3
Cyprodinil (Solaris) Adama	9	Protectant / Curative		P		Registered in almonds for control of **Rust**. AU MRLs *0.01 mg/kg (stone fruit); *0.05 mg/kg (stone fruit, dried). Codex MRLs 2 mg/kg (stone fruit); 5 mg/kg (prunes, dried).	-
Florylpicoxamid (Adavelt) Corteva	21	Protectant / Curative		P		New Mode of Action fungicide being developed for registration in Australia, with activity on *Septoria*, Powdery Mildew, *Botrytis*, Anthracnose, *Alternaria*, Scab, *Monilinia*, **Rust** and *Mycosphaerella* spp. Due for registration in 2023.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative		P		Registered in bananas for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot. US registration for control of **Rust** in stonefruit. Fluopyram - AU MRL 2 mg/kg. Codex MRL 0.5 mg/kg (plums), 1 mg/kg (peaches). Tebuconazole - AU MRL *0.01 mg/kg. Codex MRL 1 mg/kg (plums), 2 mg/kg (apricot, peaches), 3 mg/kg (prunes, dried).	R3
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant / Curative		P		Registered in almonds for control of Alternaria Leaf Spot, Black Spot, Brown Rot, Nut Scab, Shot-Hole and **Stone Fruit Rust**. US registration for control of **Rust** in stone fruit. Fluxapyroxad: Codex MRL 1.5 mg/kg (plums, peaches), 5 mg/kg (prunes, dried) Pyraclostrobin: Codex MRL 0.8 mg/kg (plums), 0.3 mg/kg (peaches)	-
Mefentrifluconazole (Belanty) BASF	3	Protectant / Curative		P		Registered for control of Black Spot in apples and Powdery Mildew in grapes. US registration for control of *Alternaria*, *Monilinia*, ***Tranzschelia*** and *Wilsonomyces* in stone fruit. Being reviewed by the JMPR in 2020.	-
Trunk and Stem Canker (*Phytophthora cinnamomi*) **Priority: Moderate**							
Rated as a moderate priority in VIC, and as a low priority in NSW, QLD and WA. Cankers often form at a wound site in the branch. The infection causes localised necrosis and lesions, which can lead to the death of branches and will reduce overall tree health if left unchecked. Management options include avoidance of pruning and other types of wounds, and removing infected tissue in conjunction with copper treatment.							
Copper (Cu) present as Copper Ammonium Acetate	M1	Protectant	1	A	ALL	Registered in nectarines and peaches for control of Shot Hole, Leaf Curl and **Phytophthora Stem Canker**. Apply only to stems of trees wherever cankers appear, after removing dead tissue. Repeat applications up to a maximum of 5 treatments per season. Registered in plums for control of Shot Hole and **Phytophthora Stem Canker**. Apply only to stems of trees wherever cankers appear, after removing dead tissue. Repeat applications up to a maximum of 5 treatments per season.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Copper (Cu) present as Cuprous Oxide	M1	Protectant	1	A	ALL	Registered in nectarines, peaches and plums for control of **Phytophthora Stem Canker**. Apply only to stems of trees wherever cankers appear, after removing dead tissue. Repeat applications up to a maximum of 5 treatments per season until natural healing has commenced.	-
Copper (Cu) present as Tribasic Copper Sulphate	M1	Protectant	1	A	ALL	Registered in nectarines, peaches and plums for control of **Phytophthora Stem Canker**. Apply only to stems of trees wherever cankers appear, after removing dead tissue. Repeat applications up to a maximum of 5 treatments per season until natural healing has commenced.	-
Mandipropamid (Revus) Syngenta	40	Protectant / Curative		P		US registrations for **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 Trunk and Stem Canker** in macadamia and peaches. AU MRL 0.2 mg/kg. Codex MRL 0.2 mg/kg.	-
Oxathiapiprolin (Zorvec Enicade) Corteva	49	Protectant / Curative		P		Current AU registrations only for Downy Mildew but known to have broad activity in the oomycete group. US registration for control of **Phytophthora** Canker and Brown Rot in citrus.	-
Phosphorous Acid	33	Systemic		P		Phosphorous Acid is registered for control of ***Phytopthora* spp.** in various crops. AU MRL T100mg/kg (stone fruit, except peach); 100 mg/kg (peach).	-
Crown Gall (*Agrobacterium* spp.) **Priority: Moderate**							
Rated as a moderate priority in VIC, and as a low priority in NSW, QLD and WA. Galls form in the crown of the plant and on the roots. If infection occurs in young plants it may cause trees to be unthrifty and die. Control can be achieved through strict hygiene with pruning and grafting tools and with the use of NoGall as a protective treatment for transplants.							
Agrobacterium radiobacter var. *radiobacter* (NoGall) BASF	-	Biological / Protectant / Pre-Planting	NR	A	ALL	Registered in stone fruit for control of **Crown Gall**. Apply as a pre-planting dip (seeds, seedlings, cuttings).	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime) Bayer	BM 02	Biological Soil Ameliorant	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.	-
Transit Rot (*Rhizopus stolonifer*) **Priority: Moderate**							
Rated as a moderate priority in VIC, and as a low priority in NSW, QLD and WA. Transit Rot appears after harvest and can cause sporadic loss of fruit in humid conditions. Use good packing shed hygiene and sanitation and post-harvest fungicide treatments to avoid disease onset during transportation and storage.							
Bromo Chloro Dimethyl Hydantoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit as a post-harvest treatment for control of External Rot Causing Organisms. Post-harvest spray or dip. Minimum contact time 60 seconds. Can also be used as a general disinfectant for equipment.	-
Chlorine	-	Sanitiser / Post-Harvest Treatment	NR	A	ALL	Registered in fruit as a post-harvest treatment for control of bacteria and fungi. Post-harvest spray. Must make contact with the fruit for at least 30 seconds. Can also be used as a general disinfectant for equipment.	-
Fludioxonil (Scholar) Syngenta	12	Protectant / Post-Harvest Treatment	NR	A	ALL	Registered in stone fruit as a post-harvest treatment for Brown Rot, Grey Mould and **Rhizopus Rot**. Apply as a post-harvest dip for 30-60 seconds or as a drench for a minimum of 30 seconds.	R3
Iodine	M	Sanitiser / Post Harvest Dip	NR	A	ALL	Registered in stone fruit as a post-harvest dip for control of bacteria and fungi. Dip the fruit for a minimum of 1 minute.	-
Iprodione	2	Post-Harvest Dip	NR	A	QLD, NSW, VIC, TAS, SA & WA	Registered in apricot, nectarine, peach and plum as a post-harvest treatment for control of Brown Rot and suppression of **Transit Rot**. Dip promptly after harvest. When dipping, allow sufficient time to thoroughly wet the fruit.	R2
Aureobasidium pullulans (Botector) Nufarm	-	Biological / Protectant	NR	P		Registered for suppression of *Rhizopus* spp. in berries. No MRLs required for biological product.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Azoxystrobin + Tebuconazole (Custodia) Adama	11+3	Protectant / Curative		P		Registered in almonds for control of Hull Rot (***Rhizopus* spp.**) Azoxystrobin: Codex MRL 2 mg/kg. Tebuconazole: AU MRL *0.01 mg/kg. Codex MRLs 1mg/kg (plums, except prunes); 2 mg/kg (apricot, peach); 3 mg/kg (prunes, dried).	R3
Freckle and Scab (*Cladosporium carpophilum*) **Priority: Moderate**							
Rated as a moderate priority in VIC, and as a low priority in NSW, QLD and WA. Infections occur during wet and humid weather during spring and summer, causing defoliation and scabbing of fruit. Management options include keeping an open tree canopy and avoiding overhead irrigation, pruning out infected shoots and using a protectant fungicide program.							
Chlorothalonil (Bravo)	M5	Protectant	7	A	NSW, VIC, TAS, SA & WA	Registered in apricots for control of Brown Rot, Blossom Blight, Stone Fruit Rust, Shot Hole and **Freckle**. Apply at budswell, budburst, pink bud, shuck fall, capfall, then every 10-14 days. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	R3
Copper (Cu) present as Copper Ammonium Acetate	M1	Protectant	1	A	ALL	Registered in apricots for control of Shot Hole, **Freckle** and Bacterial Gummosis. Apply at bud swell prior to earliest signs of leaf / bud movement. Apply at least 1 post-harvest application. Treatments per season not limited.	-
Copper (Cu) present as Copper Oxychloride	M1	Protectant	1	A	ALL	Registered in apricots for control of **Freckle** and Shot Hole. Apply at bud swell but before the earliest sign of leaf bud development. Apply a minimum of 1 post-harvest treatment. Treatments per season not limited.	-
					NSW, VIC, TAS, SA & WA	Registered in stone fruit for control of Blossom Blight, **Freckle**, Rust, Leaf Curl and Shot Hole. Apply from late bud swell to early blossom. Treatments per season not limited.	
Copper (Cu) present as Cupric Hydroxide	M1	Protectant	1	A	ALL	Registered in apricots for control of Shot Hole and **Freckle.** Apply at bud swell but before the earliest sign of leaf bud development. Apply at least 1 post-harvest treatment. Treatments per season not limited.	-
Copper (Cu) present as Cuprous Oxide	M1	Protectant	1	A	ALL	Registered in apricots for control of Shot Hole and **Freckle.** Apply at bud swell but before the earliest sign of leaf bud development. Apply at least 1 post-harvest treatment. Treatments per season not limited.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Copper (Cu) present as Tribasic Copper Sulphate	M1	Protectant	1	A	ALL	Registered in apricots for control of Shot Hole, **Freckle** and Bacterial Gummosis**.** Apply at bud swell but before the earliest sign of leaf bud development. Apply at least 1 post-harvest treatment. Treatments per season not limited.	-
Dithianon (Delan) BASF	M9	Protectant / Curative	21	A	ALL	Registered in apricots, nectarines and peaches for control of **Freckle**. Apply according to local recommendations or at early bloom and shuck fall and then at monthly intervals until 21 days before harvest. Treatments per season not limited.	R3
Mancozeb	M3	Protectant	14	A	ALL	Registered in stone fruit (except Wilson plums) for control of Brown Rot, **Freckle**, Rust and Shot Hole. Apply at early bloom (1-10%), then repeat at mid to full bloom (50-100%), at petal fall and at shuck fall. Continue with a protective spray program at 2 week intervals. Treatments per season not limited.	R2
Penthiopyrad (Fontelis) Corteva	7	Protectant / Curative	NR	A	ALL	Registered in stone fruit for control of Brown Rot / Blossom Blight and **Scab / Freckle**. Begin applications prior to disease development and continue on a 7-14 day interval. Do not use more than 2 sequential applications, and no more than a total of 3 applications per season.	-
Thiram	M3	Protectant	7	A	ALL	Registered in stone fruit for control of Brown Rot, **Freckle** and Shot Hole. Apply at shuck fall, after early bud swell copper sprays and again 4-8 weeks later. (Apply 2 weeks after shuck fall for susceptible varieties). Treatments per season not limited.	R2
Ziram	M3	Protectant	7	A	ALL	Registered in stone fruit (except apricots) for control of Blossom Blight, Brown Rot, Shot Hole, **Freckle** and Leaf Curl. Apply at shuck fall and then every 3 weeks until 8 weeks before harvest. Treatments per season not limited.	R2
Florylpicoxamid (Adavelt) Corteva	21	Protectant / Curative		P		New Mode of Action fungicide being developed for registration in Australia, with activity on Septoria, Powdery Mildew, Botrytis, Anthracnose, Alternaria, **Scab**, Monilinia, Rust and *Mycosphaerella* spp. Due for registration in 2023.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative		P		Registered in bananas for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot. US registration for control of **Scab** in stonefruit. Fluopyram - AU MRL 2 mg/kg. Codex MRL 0.5 mg/kg (plums), 1 mg/kg (peaches). Tebuconazole - AU MRL *0.01 mg/kg. Codex MRL 1 mg/kg (plums), 2 mg/kg (apricot, peaches), 3 mg/kg (prunes, dried).	R3
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant / Curative		P		Registered in almonds for control of Alternaria Leaf Spot, Black Spot, Brown Rot, **Nut Scab**, Shot-Hole and Stone Fruit Rust. US registration for control of **Scab** in stone fruit. Fluxapyroxad: Codex MRL 1.5 mg/kg (plums, peaches), 5 mg/kg (prunes, dried) Pyraclostrobin: Codex MRL 0.8 mg/kg (plums), 0.3 mg/kg (peaches)	-
Armillaria Root Rot (*Armillaria mellea*) **Priority: Moderate**							
Rated as a moderate priority in VIC, and as a low priority in NSW, QLD and WA. Incidence of Armillaria Root Rot is rare, although it can be destructive and difficult to manage if it gets into an orchard.							
Bacillus amyloliquefaciens Strain QST 713 (Serenade Prime) Bayer	BM 02	Biological Soil Ameliorant	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.	-
Silver Leaf (*Chondrostereum purpureum*) **Priority: Moderate**							
Rated as a moderate priority in VIC, and as a low priority in NSW, QLD and WA. Silver Leaf is favoured by damp, humid conditions. Severe infections can lead to leaf-fall and death of branches or whole trees. Control by careful pruning and using wound dressings. Avoid winter pruning, particularly on damp, overcast days.							
Iodocarb + Cyproconazole (Pruning Wound Dressing)	28+3	Protectant	NR	A	ACT, NSW, NT, SA, QLD, TAS & VIC	Registered in apricots, peaches and plums as a pruning wound dressing for control of **Silverleaf Fungus**. Apply undiluted product thickly to dry wound surface with paintbrush. Do not apply during the growing season. Apply on the same day as the pruning cut is made or wind damage occurs. Large wounds >50mm in diameter on a main trunk will benefit from a second application.	R3

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Shot-Hole (*Wilsonomyces carpophilus*) **Priority: Low**							
Rated as a low priority in all growing regions. Shot-Hole can affect all above ground parts of the tree, although the most noticeable symptoms are evident on the leaves. Infection causes necrotic spots to form on the leaf, which subsequently dry up and fall away leaving characteristic holes. Control options include maintaining airflow in the orchard, removal of diseased plant tissue and the use of protectant fungicides.							
Chlorothalonil (Bravo)	M5	Protectant	7	A	NSW, VIC, TAS, SA & WA	Registered in apricots for control of Brown Rot, Blossom Blight, Stone Fruit Rust, **Shot Hole** and Freckle. Apply at budswell, budburst, pink bud and full bloom. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	R3
						Registered in nectarines for control of **Shot Hole**, Brown Rot and Blossom Blight. Apply at budswell, pink bud, shuckfall and then repeat every 14 days if weather conditions favour disease. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	
					ALL	Registered in peaches for control of Brown Rot, Blossom Blight, **Shot Hole**, Stone Fruit Rust and Leaf Curl. Apply at budswell and continue at 7-14 day intervals. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	
						Registered in plums for control of Brown Rot, Blossom Blight, Stone Fruit Rust and **Shot Hole**. Apply at budswell, budburst, pink bud, shuckfall and capfall. Application later than 35 days prior to harvest may result in unacceptable fruit skin damage. Treatments per season not limited.	

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Copper (Cu) present as Copper Ammonium Acetate	M1	Protectant	1	A	ALL	Registered in apricots for control of **Shot Hole**, Freckle and Bacterial Gummosis. Apply at bud swell prior to earliest signs of leaf / bud movement. Apply at least one post-harvest treatment. Treatments per season not limited.	-
						Registered in nectarines and peaches for control of **Shot Hole**, Leaf Curl and Phytophthora Stem Canker. Apply when buds are swelling but before and within one week of bud opening. Treatments per season not limited.	
						Registered in plums for control of **Shot Hole** and Phytophthora Stem Canker. Apply when buds are swelling but before and within one week of bud opening. Treatments per season not limited.	
Copper (Cu) present as Copper Oxychloride	M1	Protectant	1	A	NSW, VIC, TAS, SA, WA, NT & ACT	Registered in apricots for control of **Shot Hole**. Apply at bud swell but before the earliest sign of leaf bud development. Apply a minimum of 1 post-harvest treatment. Treatments per season not limited.	-
					NSW, VIC, TAS, SA & WA	Registered in stone fruit for control of Blossom Blight, Freckle, Rust, Leaf Curl and **Shot Hole**. Apply at early budswell. Additional sprays in autumn when leaves begin to fall will improve control. Treatments per season not limited.	
					QLD	Registered in stone fruit for control of Bacterial Spot, Bacterial Canker, Leaf Curl and **Shot Hole**. Apply at early bud movement, 7-10 days later (pink stage in apricots) and on plums only, at blossoming. Treatments per season not limited.	
Copper (Cu) present as Cupric Hydroxide	M1	Protectant	1	A	ALL	Registered in apricots for control of **Shot Hole** and Freckle. Apply at bud swell but before the earliest sign of leaf bud development. Apply at least 1 post-harvest treatment. Treatments per season not limited.	-
						Registered in nectarines and peaches for control of **Shot Hole** and Leaf Curl. Apply when buds are swelling but before and within 1 week of bud opening. Treatments per season not limited.	
						Registered in plums for control of **Shot Hole**. Apply when buds are swelling but before and within 1 week of bud opening. Treatments per season not limited.	

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Copper (Cu) present as Cuprous Oxide	M1	Protectant	1	A	ALL	Registered in apricots for control of **Shot Hole** and Freckle. Apply at bud swell but before the earliest sign of leaf/bud movement. Apply at least 1 post-harvest treatment. Treatments per season not limited.	-
						Registered in nectarines and peaches for control of Leaf Curl and **Shot Hole**. Apply when buds are swelling but before and within 1 week of opening. Treatments per season not limited.	
						Registered in plums for control of **Shot Hole**. Apply at bud swell prior to early signs of leaf / bloom development. Apply within 1 week of bud opening. Treatments per season not limited.	
Copper (Cu) present as Tribasic Copper Sulphate	M1	Protectant	1	A	ALL	Registered in apricots for control of **Shot Hole** and Freckle. Apply at bud swell but before the earliest sign of leaf bud development. Apply at least 1 post-harvest treatment. Treatments per season not limited.	-
						Registered in peaches, nectarines and plums for control of **Shot Hole**. Apply when buds are swelling but before and within 1 week of bud opening. Treatments per season not limited.	
Dithianon (Delan) BASF	M9	Protectant / Curative	21	A	ALL	Registered in stone fruit for control of **Shot Hole** and Scab / Peach Blight. Apply according to local recommendations or at leaf fall and early to mid-blossoming. Treatments per season not limited.	R3
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Protectant / Curative	1	A	ALL	Registered in stone fruit for control of Blossom Blight, **Shot Hole** and Brown Rot. Apply as part of a Shot Hole program at intervals of 10-14 days starting at early pink bud. Repeat applications may be required later in the crop cycle if weather conditions favour disease development. Apply a maximum of 2 treatments per season.	-
Mancozeb	M3	Protectant	14	A	ALL	Registered in stone fruit (except Wilson plums) for control of Brown Rot, Freckle, Rust and **Shot Hole**. Apply at early bloom (1-10%), then repeat at mid to full bloom (50-100%), at petal fall and at shuck fall. Continue with a protective spray program at 2 week intervals. Treatments per season not limited.	R2
Metiram (Polyram) BASF	M3	Protectant	14	A	ALL	Registered in stone fruit for control of Rust and **Shot Hole**. Apply the first treatment at petal fall, followed by 3 further applications at 10-14 day intervals. In WA only, apply the first treatment at pink bud, then petal fall, followed by 3 further applications at 10-14 day intervals.	R2

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Thiram	M3	Protectant	7	A	ALL	Registered in stone fruit for control of Brown Rot, Freckle and **Shot Hole**. Apply at shuck fall, after early bud swell copper sprays and again 4-8 weeks later. (Apply 2 weeks after shuck fall for susceptible varieties). Treatments per season not limited.	-
Ziram	M3	Protectant	7	A	ALL	Registered in stone fruit (except apricots) for control of Blossom Blight, Brown Rot, **Shot Hole**, Freckle and Leaf Curl. Apply at mid full bloom, early petal fall and at shuck fall. Apply cover sprays at 14 day intervals after fruit commences to ripen. Also apply at 21 and 7 days before harvest. Treatments per season not limited.	R2
Azoxystrobin + Tebuconazole (Custodia) Adama	11+3	Protectant / Curative		P		Registered in almonds for control of **Shot Hole**. Azoxystrobin: Codex MRL 2 mg/kg. Tebuconazole: AU MRL *0.01 mg/kg. Codex MRLs 1mg/kg (plums, except prunes); 2 mg/kg (apricot, peach); 3 mg/kg (prunes, dried).	R3
Cyprodinil (Solaris) Adama	9	Protectant / Curative		P		Registered in almonds for control of **Shot Hole**. AU MRLs *0.01 mg/kg (stone fruit); *0.05 mg/kg (stone fruit, dried). Codex MRLs 2 mg/kg (stone fruit); 5 mg/kg (prunes, dried).	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative		P		Registered in bananas for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot. US registration for control of **Shot Hole** in stonefruit. Fluopyram - AU MRL 2 mg/kg. Codex MRL 0.5 mg/kg (plums), 1 mg/kg (peaches). Tebuconazole - AU MRL *0.01 mg/kg. Codex MRL 1 mg/kg (plums), 2 mg/kg (apricot, peaches), 3 mg/kg (prunes, dried).	R3
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant / Curative		P		Registered in almonds for control of Alternaria Leaf Spot, Black Spot, Brown Rot, Nut Scab, **Shot-Hole** and Stone Fruit Rust. US registration for control of **Shot Hole** in stone fruit. Fluxapyroxad: Codex MRL 1.5 mg/kg (plums, peaches), 5 mg/kg (prunes, dried) Pyraclostrobin: Codex MRL 0.8 mg/kg (plums), 0.3 mg/kg (peaches)	-
Mefentrifluconazole (Belanty) BASF	3	Protectant / Curative		P		Registered for control of Black Spot in apples and Powdery Mildew in grapes. US registration for control of *Alternaria*, *Monilinia*, *Tranzschelia* and ***Wilsonomyces*** in stone fruit. Being reviewed by the JMPR in 2020.	-

Disease / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Regulatory risk
Grey Mould (*Botrytis cinerea*) **Priority: Low**							
Rated as a low priority in all growing regions. Grey Mould rarely affects stone fruit.							
Fludioxonil (Scholar) Syngenta	12	Protectant / Post-Harvest Treatment	NR	A	ALL	Registered in stone fruit as a post-harvest treatment for Brown Rot, **Grey Mould** and Rhizopus Rot. Apply as a post-harvest dip for 30-60 seconds or as a drench for a minimum of 30 seconds.	R3
Florylpicoxamid (Adavelt) Corteva	21	Protectant / Curative		P		New Mode of Action fungicide being developed for registration in Australia, with activity on *Septoria*, Powdery Mildew, ***Botrytis***, Anthracnose, *Alternaria*, Scab, *Monilinia*, Rust and *Mycosphaerella* spp. Due for registration in 2023.	-
Fluopyram + Tebuconazole (Luna Experience) Bayer	7+3	Protectant / Curative		P		Registered in bananas for control of Yellow Sigatoka, Leaf Speckle and Cordana Leaf Spot. US registration for control of ***Botrytis*** in stonefruit. Fluopyram - AU MRL 2 mg/kg. Codex MRL 0.5 mg/kg (plums), 1 mg/kg (peaches). Tebuconazole - AU MRL *0.01 mg/kg. Codex MRL 1 mg/kg (plums), 2 mg/kg (apricot, peaches), 3 mg/kg (prunes, dried).	R3
Fluxapyroxad + Pyraclostrobin (Merivon) BASF	7+11	Protectant / Curative		P		Registered in almonds for control of Alternaria Leaf Spot, Black Spot, Brown Rot, Nut Scab, Shot-Hole and Stone Fruit Rust. US registration for control of **Grey Mould** in stone fruit. Fluxapyroxad: Codex MRL 1.5 mg/kg (plums, peaches), 5 mg/kg (prunes, dried) Pyraclostrobin: Codex MRL 0.8 mg/kg (plums), 0.3 mg/kg (peaches)	-

4.2 Insects, mites and other pests of summerfruit

4.2.1 Insect, mite and other pest priorities

Common name	Scientific name
High	
Queensland Fruit Fly	*Bactrocera tryoni*
Lesser Queensland Fruit Fly	*Bactrocera neohumeralis*
Mediterranean Fruit Fly	*Ceratitis capitata*
Two-Spotted Mite	*Tetranychus urticae*
Dried Fruit Beetle	*Carpophilus* spp.
Plague Thrips	*Thrips imaginis*
Western Flower Thrips	*Frankliniella occidentalis*
San Jose Scale	*Diaspidiotus perniciosus*
Rutherglen Bug	*Nysius vinitor*
Moderate	
Black Peach Aphid	*Brachycaudus persicae*
Green Peach Aphid	*Myzus persicae*
Light Brown Apple Moth	*Epiphyas postvittana*
Snails	*Gastropoda*
Cherry Aphid	*Myzus cerasi*
European Earwig	*Forficula auricularia*
Silver Peach Mite	*Aculus cornutus*
Bryobia Mite	*Bryobia rubrioculus*
European Red Mite	*Panonychus ulmi*

Common name	Scientific name
Low	
Fullers Rose Weevil	*Asynonychus cervinus*
Apple Weevil	*Otiorhynchus cribricollis*
Garden Weevil	*Phlyctinus callosus*
Fruit-Tree Borer	*Maroga melanostigma*
Oriental Fruit Moth	*Grapholita molesta*
Native Budworm	*Helicoverpa punctigera*
Cotton Bollworm	*Helicoverpa armigera*
Codling Moth	*Cydia pomonella*
Pear and Cherry Slug	*Caliroa cerasi*
Mealybug	*Pseudococcidae*
Oystershell Scale	*Diaspidiotus ostreaeformis*
Pear Scale	*Diaspidiotus pyri*
Frosted Scale	*Eulecanium pruinosum*
Apple Dimpling Bug	*Campylomma liebknechti*

Exotic pests and new incursions which could be potential threats are listed below:

Common Name	Scientific name
Fall Armyworm	*Spodoptera frugiperda*

The pests identified as high priority in summerfruit are Fruit Fly, including Queensland Fruit Fly, Lesser Queensland Fruit Fly and Mediterranean Fruit Fly, Two Spotted Mite, Dried Fruit Beetle, Plague Thrips, Western Flower Thrips, San Jose Scale, and Rutherglen Bug.

It is important to take an Integrated Pest Management (IPM) approach to pest control in summerfruit. The diversity of insects that will attack the crop means 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 management of Fruit Fly using trapping and an IPM systems approach is especially important to reduce the impact of other pests.

Bees also play an important role as pollinators of summerfruit. Extra care should be taken with insect control measures used at flowering time, to avoid impacting on pollinators. Always refer to the pesticide label for guidance about preserving bees. Flowering sprays should be applied when bees after bees have stopped foraging in the crop, in the late afternoon and into the evening.

The diverse range of invertebrate pests in summerfruit necessitates careful planning with resistance management. There are several pest strategies that apply to berries on the CropLife website[4], including Two-Spotted Mite, Western Flower Thrips, Green Peach Aphid and Fall Armyworm.

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

4.2.2 Available and potential products for priority insects, mites 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 2018-19 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
Queensland Fruit Fly (*Bactrocera tryoni*) **Mediterranean Fruit Fly** (*Ceratitis capitata*) **Lesser Queensland Fruit Fly** (*Bactrocera neohumeralis*) **Priority: High**								
Queensland Fruit Fly is rated as a high priority in VIC, NSW and QLD, and a low priority in WA. Mediterranean Fruit Fly is rated as a moderate priority in VIC and WA, and a low priority in NSW and QLD. Lesser Queensland Fruit Fly is rated as a moderate priority in VIC and NSW, and a low priority in QLD and WA. Queensland Fruit Fly lay eggs in ripening fruit, subsequently hatching maggots that cause feeding damage to the flesh. A range of control measures should be implemented in order to control the pest and avoid fruit damage.								
4-(P-Acetoxyphenyl) -2-Butanone + Maldison	1B	Contact	NR	A	ALL	Registered in fruit trees for use as a trap for **Queensland Fruit Fly**. Used to detect the presence of Fruit Fly in the orchard to assist with making decisions about control.	H Bee H	R3
4-(P-Acetoxyphenyl) -2-Butanone + Fipronil	2B	Contact	NR	A	ALL	Registered in fruit crops for population reduction and population monitoring of **Queensland Fruit Fly** and **Lesser Queensland Fruit Fly**. Single stations can be used for population monitoring. Control of fruit fly required placement of 16 stations per hectare and should be used in conjunction with regular insecticide cover sprays.	M Bee VH	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Acetamiprid + Novaluron (Cormoran) Adama	4A+15	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of Black Peach Aphid, Green Peach Aphid, Light Brown Apple Moth, Oriental Fruit Moth, San Jose Scale and suppression of **Mediterranean Fruit Fly** and **Queensland Fruit Fly**. Apply as part of a broader program involving other products for control of fruit fly, appropriate pest monitoring and farm hygiene. Apply when monitoring indicates fruit fly activity. Apply in rotation with insecticides from a different mode of action using a 7-10 day interval. Do not use consecutive applications and do not use more than 2 applications per season.	M Bee M	R2
Alpha-Cypermethrin PER14875	3A	Contact	H:7 NG	A	ALL	Permitted in stone fruit (except cherries) for control of **Fruit Flies**. Apply when control is required as a foliar spray. Apply a maximum of 6 applications per crop. Do not apply more than 2 consecutive applications before rotating with an insecticide with a different mode of action. Minimum retreatment interval of 7 days.	VH Bee H	-
Clothianidin (Samurai) Sumitomo	4A	Systemic / Ingestion	H:7 NG	A	ALL	Registered in stone fruit for control of **Queensland Fruit Fly** and **Mediterranean Fruit Fly**. Apply 3 consecutive foliar applications 7 days apart when monitoring indicates fruit fly activity. Do not exceed 3 applications per season.	M Bee VH	R2
Dimethoate PER13859	1B	Contact **Post-harvest only**	NR	A	ALL	Permitted in fruit fly host crops following the completion of harvest for control of **Fruit Fly**. Do not apply more than 2 applications per crop following harvest. Apply as a foliar spray to both fallen and retained fruit. Produce treated must not be harvested, collected or supplied for human or animal consumption.	H Bee H	R1
Etofenprox (Trebon) Sipcam	3A	Contact	H:3 NG	A	ALL	Registered in stone fruit for control of **Queensland Fruit Fly** and **Mediterranean Fruit Fly**. Apply first application as maturity approaches (fruit turning colour) and the target pest numbers are at critical thresholds. Continue to monitor pest pressure and if re-application is needed, a minimum of 7 days is required between treatments. Do not use more than 3 applications per season.	VH Bee H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Fipronil (Amulet) BASF	2B	Contact	NR	A	ALL	Registered in stone fruit for control of **Queensland Fruit Fly**. Commence application before fruit reach mature size and as soon as first fruit flies are present. Repeat applications at 7 day intervals, until all fruit is harvested. Treatments per season not limited.	M Bee VH	R3
Maldison (Fyfanon)	1B	Contact / Bait	3	A	ALL	Registered in fruit trees for control of all **Fruit Fly** species excluding Mediterranean Fruit Fly. Mix with a protein lure and apply to the foliage, starting 6 weeks before normal ripening of the tree and repeat at 4-10 day intervals while fruit remains on the tree. Avoid contact of the bait with the fruit. Treatments per season not limited.	H Bee H	R3
Pyrethrin (Pyganic) Sumitomo	3A	Contact	NR	A	ALL	Registered in stone fruit for control of **Fruit Fly**, Rutherglen Bug and Spiders. Use as a clean-up spray ton remove insects just prior to harvest. Apply a maximum of 3 sprays at 3 day intervals.	VH Bee H	-
Spinetoram (Delegate) Corteva PER12590	5	Ingestion	H:3 NG	A	ACT, NSW, QLD & NT	Permitted in stone fruit for suppression of **Queensland Fruit Fly** and **Lesser Queensland Fruit Fly**. Apply as a foliar spray after stone set, depending on the pest pressure as determined by orchard scouting and fruit fly trapping. Do not apply more than 4 applications per season, with a minimum of 14 days between consecutive applications.	M Bee VH	-
					WA	Permitted in stone fruit for suppression of **Mediterranean Fruit Fly**. Apply as a foliar spray after stone set, depending on the pest pressure as determined by orchard scouting and fruit fly trapping. Do not apply more than 4 applications per season, with a minimum of 14 days between consecutive applications.		
Spinosad (Naturalure) Corteva	5	Bait / Ingestion	NR	A	ALL	Registered in tree crops as a bait for **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
Tetraniliprole (Vayego) Bayer	28	Ingestion	H:3 NG	A	ALL	Registered in stone fruit for control of Apple Weevil, Fuller's Rose Weevil, Garden Weevil, Oriental Fruit Moth, **Mediterranean Fruit Fly** and suppression of Dried Fruit Beetle. Commence applications when monitoring indicates fruit fly activity and fruit are vulnerable to damage. Use a maximum of 3 applications, with 10 day intervals between treatments.	L-M Bee VH	-
Thiacloprid (Calypso) Bayer PER14562	4A	Systemic / Ingestion	H:14 NG	A	WA	Permitted in stone fruit (excluding peaches) for control of **Mediterranean Fruit Fly**. Apply as a foliar spray when monitoring indicates fruit fly activity. Apply a maximum of 3 applications per season, with a minimum 14 days between consecutive applications.	M Bee L	R2
			H:21 NG			Permitted in peaches for control of **Mediterranean Fruit Fly**. Apply as a foliar spray when monitoring indicates fruit fly activity. Apply a maximum of 3 applications per season, with a minimum 14 days between consecutive applications.		
Trichlorfon (Lepidex)	1B	Contact	2	A	QLD, NSW, VIC, WA & NT	Registered in stone fruit for control of **Queensland Fruit Fly**. Apply at start of stinging. Repeat at half concentration every 7-10 days.	H Bee H	R2
Trichlorfon (Lepidex) PER14683	1B	Contact	7	A	ALL (excl. VIC)	Permitted in stone fruit for control of **Fruit Flies**. Apply at start of stinging. Repeat at half concentration every 7-10 days.	H Bee H	R2
Acetamiprid + Pyriproxyfen (Trivor) Adama	4A+7C	Ingestion / IGR		P		Registered for suppression of **Queensland Fruit Fly** in avocado, citrus and mango. Acetamiprid: AU MRL 0.5 mg/kg. Codex MRLs 0.2 mg/kg (plums, except prunes), 0.7 mg/kg (nectarine, peach), 0.6 mg/kg (prunes, dried).	M Bee H	R2
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact and Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and Scirtothrips. US registration for control of Aphids and San Jose Scale in stone fruit. Possible activity against fruit fly. Codex MRLs 0.4 mg/kg (plums, including prunes), 1.5 mg/kg (peaches, including apricots and nectarines), 3 mg/kg (prunes, dried).	L Bee L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, **Fruit Fly** and Thrips.		-
Two Spotted Mite (*Tetranychus urticae*) **Priority: High**								
Rated as a high priority in VIC, and as a moderate priority in NSW, QLD and WA. Mites damage the tree by causing leaves to turn brown and fall, leading to reduced yield and fruit quality. Management options include reducing dust in the orchard, promotion or introduction of predatory mites and judicious use of miticides while maintaining beneficial populations.								
Acequinocyl (Kanemite) UPL	20B	Contact & Ingestion	H:14 NG	A	ALL	Registered in stone fruit for control of **Two Spotted Mite.** Apply when mites appear. Use one application per season only.	L Bee L	-
Bifenazate (Acramite) UPL	20	Contact & Ingestion	H:3 G:28	A	ALL	Registered in apricots, nectarines, peaches and plums for control of **Two Spotted Mite**, European Red Mite and Bryobia Mite. Apply as soon as mites appear. Do not use more than 1 application per season.	L Bee H	R3
Chlorfenapyr (Secure) BASF	13	Contact & Ingestion	H:7 NG	A	ALL	Registered in peaches for control of **Two Spotted Mite**. Apply before mite population reaches damaging levels. Do not use more than 1 application per season.	M Bee H	-
Clofentezine (Apollo) Adama	10A	IGR / Contact	21	A	ALL	Registered in stone fruit for control of **Two Spotted Mite,** European Red Mite and Bryobia Mite. Apply when the pest is evident but before the population reaches a level where economic damage is imminent. Do not use more than 1 application per season.	L Bee L	-
Etoxazole (Paramite) Sumitomo	10B	IGR / Contact	H:7 NG	A	ALL	Registered in stone fruit for control of **Two Spotted Mite**, European Red Mite and Bryobia Mite. Apply at the first sign of mite crawlers. Do not use more than 1 application per season.	L Bee VL	R3
Fenbutatin Oxide (Torque) BASF	12A	Contact	14	A	SA, WA	Registered in peaches and nectarines for control of **Two Spotted Mite**, European Red Mite and Bryobia Mite. Apply at first sign of mite activity, well before a dense infestation occurs. Do not use consecutive applications. Treatments per season not limited.	L Bee L	R2
Hexythiazox (Calibre) Nufarm	10A	IGR / Contact	3	A	ALL	Registered in stone fruit for control of **Two Spotted Mite** and European Red Mite. Apply when the pest is evident but before the population reaches a level where economic damage is imminent. Do not use more than 1 application per season.	L Bee L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Milbemectin (Milbeknock) Sipcam	6	Ingestion	H:14 NG	A	ALL	Registered in stone fruit for control of **Two Spotted Mite**. Apply soon after mite numbers have reached economic threshold. Retreatment interval not less than 7 days. Do not use consecutive applications and use no more than 2 applications per season.	M Bee VH	-
Paraffinic Oil	-	Contact	NR	A	NSW, ACT, VIC, SA, WA & TAS	Registered in apricots (summer or post-harvest) for control of **mites** and scale. Apply cover sprays as required. Treatments per season not limited.	L Bee L	-
						Registered in peaches and nectarines (dormant or delayed dormant) for control of aphids (eggs) and **mites** (eggs). Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, VIC, SA & WA	Registered in peaches and nectarines (summer or post-harvest) for control of **mites** and scale. Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, SA, WA & TAS	Registered in plums (dormant) for control of aphids (eggs), scale and **mites** (eggs). Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, VIC, SA, WA & TAS	Registered in plums (summer or post-harvest) for control of **mites** and scale. Do not apply over fresh market fruits after bloom start to form, as the oil will remove the bloom. Treatments per season not limited.		
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit trees for control of Aphids, Thrips, Mealybug, **Two Spotted Mite**, Spider Mite and Whitefly. Apply as a cover spray. Treatments per season not limited.	L Bee L	-
Propargite (Omite)	12C	Contact / Systemic	7	A	ALL	Registered in stone fruit for control of **Two Spotted Mite**. Apply as soon as mites appear. Treatments per season not limited.	M Bee L	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Tebufenpyrad (Pyranica) Sipcam	21A	Contact & Ingestion	H:14 NG	A	QLD, NSW, VIC, TAS, SA & WA	Registered in peaches for control of **Two Spotted Mite** and European Red Mite. Apply before mite infestation reaches 70% of leaves infested. Do not use more than 1 application per season.	M Bee H	-
Beauveria bassiana (Velifer) BASF	UN			P		Registered for suppression of **Two Spotted Mite** in protected vegetables and ornamentals and also has activity on Thrips, Aphids and Whitefly. No MRLs required for a biological product.	L Bee L	-
Cyflumetofen (Danisaraba) BASF	25A	Contact		P		BASF is seeking registration in Australia for the control of Spider Mites in various crops. Stone fruit not currently in scope.	L Bee L	-
Spiromesifen (Oberon) Bayer	23			P		Not currently registered in AU but under development with Bayer and Hort Innovation for multiple commodities. US registrations for Mites in various crops.	M Bee VL	-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Dried Fruit Beetle (*Carpophilus* spp.) **Priority: High**								
Rated as a high priority in VIC, and as a low priority in NSW, QLD and WA. Dried Fruit Beetle can cause heavy fruit losses by boring into the ripening fruit and causing feeding damage and spread of Brown Rot. Hygiene in the orchard and in the packing shed is a critical measure to interrupt the pest life cycle.								
Pheromone Lures and Ethanol Based Co-Attractants (Carpophilus Catcha Trapping System)	-	Attract & Kill	NR	A	ALL	Registered in stone fruit for monitoring and control of **Carpophilus Beetle**. Contains 2 feeding attractants and an aggregation pheromone lure, which are prepared and/or placed into a trap. To be used in conjunction with Pest Strips containing dichlorvos. For Monitoring: Prior to fruit ripening, place 2 traps per block where block is <10ha, or 4 traps per block where block is >10ha. Install at eye level in the orchard. Replace co-attractants every 2 weeks. Do not use aggregation pheromones. For population management: Prior to fruit ripening, place 3 traps per ha. Install traps external to the orchard along the perimeter and placed upwind. Replace co-attractants every 2 weeks. Use aggregation pheromone lure.		-
Bifenthrin (Talstar)	3A	Contact	1	A	ALL	Registered in apricots, nectarines, peaches and plums for control of **Carpophilus Beetles**. Apply as fruit approaches maturity and before monitoring indicates beetles have reached damaging levels. Minimum re-treatment interval 10 days. Do not use more than 2 applications per season..	VH Bee H	R3
Tetraniliprole (Vayego) Bayer	28	Ingestion	H:3 NG	A	All	Registered in stone fruit for control of Apple Weevil, Fuller's Rose Weevil, Garden Weevil, Oriental Fruit Moth, Mediterranean Fruit Fly and suppression of **Dried Fruit Beetle**. Commence application as fruit approaches maturity and before beetle populations reach damaging levels. Re-apply if necessary at an interval of 10-14 days. Do not exceed 2 applications per season.	L-M Bee VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Macadamia Lace Bug, Fruit Spotting Bug and Banana Spotting Bug, and suppression of Scirtothrips. US registration for control of Aphids and San Jose Scale in stone fruit and control of Colorado Potato Beetle in fruiting vegetables and tuberous and corm vegetables. Codex MRL 0.4 mg/kg (plums), 1.5 mg/kg (peaches), 3 mg/kg (prunes, dried).	L Bee L	-
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-
Plague Thrips (*Thrips imaginis*) **Western Flower Thrips** (*Frankliniella occidentalis*) **Priority: High**								
Plague Thrips and Western Flower Thrips are rated as a high priority in VIC, a moderate priority in NSW and QLD, and a low priority in WA. Thrips will cause damage from flowering onwards. The nymphs cause scarring and dimpling damage through feeding on the flowers and developing fruit. Late season damage can be seen as silvering on the fruit as it ripens. Silvering is most common on highly coloured varieties of nectarines and to a lesser extent in peaches.								
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in fruit trees for control of Ants, Aphids, Caterpillars, Earwigs, Whitefly, **Thrips** and Leafhopper. Apply as a foliar spray when pests are present. Re-apply as necessary. Treatments per season not limited.	VH Bee H	-
Methomyl (Lannate)	1A	Contact	1	A	ALL	Registered in stone fruit for control of **Thrips**, Green Peach Aphid, Budworm and Monolepta Beetle. Apply at petal fall. Treatments per season not limited.	H Bee H	R2
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit trees for control of Aphids, **Thrips**, Mealybug, Two Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Treatments per season not limited.	L Bee L	-
Spinetoram (Delegate) Corteva	5	Ingestion	H:3 NG	A	ALL	Registered in stone fruit for control of Pear and Cherry Slug, Light Brown Apple Moth, Oriental Fruit Moth and **Western Flower Thrips**. Make 3 consecutive applications at either 3-5 day intervals when temperatures are greater than 20°C or 6-12 day intervals when temperatures are less than 20°C. Do not use more than 3 consecutive applications. Do not use more than 4 applications per season.	M Bee VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinosad (Entrust Organic) Corteva	5	Ingestion	H:3 G:14	A	ALL	Registered in stone fruit (except peaches) for control of Cherry Slug, Light Brown Apple Moth, **Western Flower Thrips** and Oriental Fruit Moth. Make 3 consecutive applications at either 3-5 day intervals when temperatures are greater than 20°C or 6-12 day intervals when temperatures are less than 20°C. Do not use more than 3 consecutive applications. Do not use more than 4 applications per season.	L Bee H	-
			H:7 G:14			Registered in peaches for control of Cherry Slug, Light Brown Apple Moth, **Western Flower Thrips** and Oriental Fruit Moth. Make 3 consecutive applications at either 3-5 day intervals when temperatures are greater than 20°C or 6-12 day intervals when temperatures are less than 20°C. Do not use more than 3 consecutive applications. Do not use more than 4 applications per season.		
Spirotetramat (Movento) Bayer PER84804	23	Ingestion	21	A	ALL (excl. VIC)	Permitted in stone fruit for control of **Western Flower Thrips**. Apply at first sign of infestation. Do not apply more than 2 applications per crop, with a minimum 14 days between treatments.	M Bee L	-
Tau-Fluvalinate (Mavrik) Adama	3A	Contact	NR	A	QLD, NSW, VIC, SA & WA	Registered in nectarines, peaches and plums for control of **Plague Thrips**. Apply just prior to or at commencement of flowering when a significant population of thrips can be found. A second application may be required depending on pest pressure 10-14 days later. This second application must not be applied outside the blossom period.	VH Bee H	-
Abamectin + Chlorantraniliprole (Voliam Targo) Syngenta	6+28	Contact & Ingestion		P		Previously permitted in stone fruit (except cherries) for suppression of **Western Flower Thrips**. There is currently no registrant support for continuing this use.	M Bee H	-
Beauveria bassiana (Velifer) BASF	UN			P		Registered for suppression of **Western Flower Thrips** in protected vegetables and ornamentals and also has activity on Mites, Aphids and Whitefly. No MRLs required for a biological product.	L Bee L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Macadamia Lace Bug, Fruit Spotting Bug and Banana Spotting Bug, and suppression of Scirtothrips. US registration for control of Aphids and San Jose Scale in stone fruit and suppression of various **Thrips** species in other fruit and vegetable crops. Codex MRL 0.4 mg/kg (plums), 1.5 mg/kg (peaches), 3 mg/kg (prunes, dried).	L Bee L	-
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2023 for various pests including Thrips, Bugs, Mites and Caterpillars.		-
San Jose Scale (*Diaspidiotus perniciosus*) **Priority: High**								
Rated as a high priority in VIC, a moderate priority in QLD, and a low priority in NSW and WA. Management of San Jose Scale should focus on preventing infestations and managing populations before they build up. Strategies include the promotion or introduction of beneficials along with judicious use of insecticides.								
Acetamiprid + Novaluron (Cormoran) Adama	4A+15	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of Black Peach Aphid, Green Peach Aphid, Light Brown Apple Moth, Oriental Fruit Moth, **San Jose Scale** and suppression of Mediterranean Fruit Fly and Queensland Fruit Fly. Apply from petal fall, targeting crawlers when they become active in the canopy. Up to 2 applications can be used with a minimum retreatment interval of 14 days.	M Bee M	R2
Chlorpyrifos (Lorsban)	1B	Contact	14	A	QLD, WA, NSW & ACT	Registered in stone fruit for control of **San Jose Scale**. Dormant period: Apply as a foliar application as late as possible when pests are evident. Seasonal period: Apply to coincide with crawler activity in mid-late November and later if necessary. Treatments per season not limited.	H Bee H	R1
Diazinon	1B	Contact	14	A	ACT, NSW, WA, SA & VIC	Registered in stone fruit for control of **San Jose Scale**. Spray thoroughly during dormant period up to budswell. Apply with a winter oil. Treatments per season not limited.	H Bee H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Liquid Paraffin (Heavy Paraffinic Dormant Spray Oil)	-	Contact	1	A	VIC, SA, WA, NSW, ACT & QLD	Registered in stone fruit for control of **San Jose Scale**. Spray during dormant season on still sunny days. Do not spray after bud swell. Treatments per season not limited.	L Bee L	-
Paraffinic Oil	-	Contact	NR	A	NSW, ACT, VIC, SA, WA & QLD	Registered in apricots (dormant) for control of **San Jose Scale**. Apply cover sprays as required. Treatments per season not limited.	L Bee L	-
					NSW, ACT, VIC, SA, WA & TAS	Registered in apricots (summer or post-harvest) for control of Mites and **Scale**. Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, VIC, SA & WA	Registered in peaches and nectarines (dormant) for control of **San Jose Scale**. Apply cover sprays as required. Treatments per season not limited.		
						Registered in peaches and nectarines (summer or post-harvest) for control of Mites and **Scale**. Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, SA, WA & TAS	Registered in plums (dormant) for control of Aphids (eggs), **Scale** and Mites (eggs). Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, VIC, SA, WA & TAS	Registered in plums (summer or post-harvest) for control of Mites and **Scale**. Apply cover sprays as required. Do not apply to fresh market fruits after bloom starts to form, as the oil will remove the bloom. Treatments per season not limited.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spirotetramat (Movento) Bayer	23	Ingestion	21	A	ALL	Registered in stone fruit for control of Tuber Mealybug, Long Tailed Mealybug, Black Cherry Aphid, Black Peach Aphid and **San Jose Scale**. Monitor crops following petal fall. Commence applications at the onset of crawler emergence or when pest numbers reach an economic threshold. To ensure that there is sufficient foliage for product uptake do not apply prior to shuck fall. Apply further treatments when new generations emerge. Do not use more than 3 applications per crop, with no more than 2 applications made later than 21 days after shuck fall and with a minimum 14 days between applications.	M Bee L	-
Buprofezin (Applaud) Corteva	16	Ingestion		P		Registered for control of Scale in various tree crops including citrus, custard apple, mango, passionfruit and persimmon. Codex MRL 2 mg/kg (plums), 9 mg/kg (peach).	M Bee L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and suppression of Scirtothrips. US registration for control of Aphids and **San Jose Scale** in stone fruit. Codex MRLs 0.4 mg/kg (plums, including prunes), 1.5 mg/kg (peaches, including apricots and nectarines), 3 mg/kg (prunes, dried).	L Bee L	-
NUL3145 Nufarm	TBC			P		New insecticide from Nufarm with activity on Scale, Nematodes, Mealybug and Whitefly.		-
Rutherglen Bug (*Nysius vinitor*) **Priority: High**								
Rated as a high priority in VIC, a moderate priority in NSW and QLD, and a low priority in WA. Rutherglen Bug can attack orchards in large numbers in favourable seasons. They breed up on weeds in surrounding areas, so orchards should be kept weed free to reduce infestations. The ripening fruit is susceptible to damage caused by piercing and feeding on the flesh.								
Pyrethrin (Pyganic) Sumitomo	3A	Contact	NR	A	ALL	Registered in stone fruit for control of Fruit Fly, **Rutherglen Bug** and Spiders. Use as a clean-up spray to remove insects just prior to harvest. Apply a maximum of 3 sprays at 3 day intervals.	VH Bee H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Trichlorfon (Lepidex)	1B	Contact	2	A	NSW, VIC, TAS, SA & WA	Registered in stone fruit for control of **Rutherglen Bug**. Spray when pest outbreak occurs and repeat if reinvaded. Also spray nearby weeds. Treatments per season not limited.	H Bee H	R2
Flonicamid (Mainman) UPL	29	Ingestion		P		Registered for control of Mealybugs in pome fruit, Aphids in potatoes, Aphids and Mirids in cotton, and Aphids and Silverleaf Whitefly in cucurbits. US registration for control of Aphids and Plant Bugs in stone fruit. Codex MRL 0.1 mg/kg (plums), 0.7 mg/kg (peaches).	M Bee VL	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Macadamia Lace Bug, Fruit Spotting Bug and Banana Spotting Bug, and suppression of Scirtothrips. US registration for control of Aphids and San Jose Scale in stone fruit. Codex MRL 0.4 mg/kg (plums), 1.5 mg/kg (peaches), 3 mg/kg (prunes, dried).	L Bee L	-
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Black Peach Aphid (*Brachycaudus persicae*) **Green Peach Aphid** (*Myzus persicae*) **Priority: Moderate**								
Black Peach Aphid and Green Peach Aphid are rated as a moderate priority in VIC and NSW, and as a low priority in QLD and WA. Aphids are sap-sucking insects that are sporadic but can cause substantial damage to leaves by feeding. Honeydew can also lead to outbreaks of sooty mould on leaves and fruit. Integrated management involving preservation of beneficials and removing weed hosts in and around orchards should be used in conjunction with judicious use of insecticides.								
Acetamiprid + Novaluron (Cormoran) Adama	4A+15	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of **Black Peach Aphid**, **Green Peach Aphid**, Light Brown Apple Moth, Oriental Fruit Moth, San Jose Scale and suppression of Mediterranean Fruit Fly and Queensland Fruit Fly. Apply when monitoring indicates numbers are above economic threshold. Aphids that are within curled leaves may not be adequately controlled. Do not use more than 2 applications per season.	M Bee M	R2
Clothianidin (Samurai) Sumitomo	4A	Systemic / Ingestion	H:7 NG	A	ALL	Registered in peaches and nectarines for control of Oriental Fruit Moth and **Green Peach Aphid**. Apply when monitoring indicates that control is required. Do not use more than 3 applications per season.	M Bee VH	R2
Diazinon	1B	Contact	14	A	ACT, NSW, SA & WA	Registered in stone fruit for control of **Green Peach Aphid** and Black Cherry Aphid. Apply at budswell and retreat if pest numbers build up. Treatments per season not limited.	H Bee H	R3
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in fruit trees for control of Ants, **Aphids**, Caterpillars, Earwigs, Whitefly, Thrips and Leafhopper. Apply as a foliar spray when pests are present. Re-apply as necessary. Treatments per season not limited.	VH Bee H	R2
Imidacloprid (Confidor)	4A	Systemic / Ingestion	H:21 NG	A	ALL	Registered in stone fruit for control of **Green Peach Aphid** and **Black Peach Aphid**. Apply at first sign of aphid infestation. Use a maximum of 3 applications per season.	M Bee M	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Maldison (Fyfanon)	1B	Contact	3	A	NSW, ACT, VIC, TAS, SA & WA	Registered in stone fruit for control of **Black Peach Aphid**, **Green Peach Aphid**, European Red Mite and Oriental Fruit Moth. Apply at first sign of pest and repeat as necessary. Treatments per season not limited.	H Bee H	R3
Methomyl (Lannate)	1A	Contact	1	A	ALL	Registered in stone fruit for control of Thrips, **Green Peach Aphid**, Budworm and Monolepta Beetle. Apply when pest first appear and repeat depending on infestation. Do not apply early to peach varieties such as Watts. Treatments per season not limited.	H Bee H	R2
Paraffinic Oil	-	Contact	NR	A	NSW, ACT, VIC, SA, WA & TAS	Registered in peaches and nectarines (dormant or delayed dormant) for control of **Aphids** (eggs) and Mites (eggs). Apply cover sprays as required. Treatments per season not limited.	L Bee L	-
					NSW, ACT, SA, WA & TAS	Registered in plums (dormant) for control of **Aphids** (eggs), Scale and Mites (eggs). Apply cover sprays as required. Treatments per season not limited.		
Pirimicarb (Pirimor)	1A	Contact	2	A	ALL	Registered in stone fruit for control of **Green Peach Aphid**, **Black Peach Aphid** and Cherry Aphid. Apply at pink bud or when aphids appear. Use a maximum of 2 non-consecutive applications per season.	VL Bee VL	R3
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit trees for control of **Aphids**, Thrips, Mealybug, Two Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Treatments per season not limited.	L Bee L	-
Pymetrozine (Chess) Syngenta	9B	Contact & Ingestion	28	A	ALL	Registered in stone fruit for control of **Black Peach Aphid** and **Green Peach Aphid**. Commence application when local pest thresholds are reached and make subsequent applications as necessary. Minimum retreatment interval 14 days. Do not use consecutive applications and do not use more than 2 applications per season.	L Bee VL	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spirotetramat (Movento) Bayer	23	Ingestion	21	A	ALL	Registered in stone fruit for control of Tuber Mealybug, Long Tailed Mealybug, Black Cherry Aphid, **Black Peach Aphid** and San Jose Scale. Monitor crops following petal fall. Commence applications at the onset of crawler emergence or when pest numbers reach an economic threshold. To ensure that there is sufficient foliage for product uptake do not apply prior to shuck fall. Apply a second application 14-21 days after the first application if required. Do not use more than 3 applications per crop, with no more than 2 applications made later than 21 days after shuck fall and with a minimum 14 days between applications.	M Bee L	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of Apple Dimpling Bug, Cherry Aphid, **Green Peach Aphid** and **Black Peach Aphid**. Apply when the pest reaches threshold levels. Aphids that are protected within curled leaves may not be controlled. Repeat applications at a 14 day interval if required. Do not use consecutive applications and do not exceed 2 applications per season.	M Bee VH	-
Afidopyropen (Versys) BASF	9D	Ingestion		P		Registered for control of **Green Peach Aphid** in various vegetable crops. US registration for control of Aphids in stone fruit.	L Bee L	-
Diafenthiuron + Cyantraniliprole (Minecto Forte) Syngenta	12A+28	Ingestion & Contact		P		Registration progressing for control of various Lepidoptera, Aphids and Mites in fruiting vegetables and cucurbits. Cyantraniliprole: Codex MRL 0.5 mg/kg (plums), 1.5 mg/kg (peach), 0.8 mg/kg (prunes, dried).	M Bee VH	-
Flonicamid (Mainman) UPL	29	Ingestion		P		Registered for control of Mealybugs in pome fruit, **Aphids** in potatoes, **Aphids** and Mirids in cotton, and **Aphids** and Silverleaf Whitefly in cucurbits. US registration for control of **Aphids** and Plant Bugs in stone fruit. Codex MRL 0.1 mg/kg (plums), 0.7 mg/kg (peaches).	M Bee VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and suppression of Scirtothrips. US registration for control of **Aphids** and San Jose Scale in stone fruit. Codex MRLs 0.4 mg/kg (plums, including prunes), 1.5 mg/kg (peaches, including apricots and nectarines), 3 mg/kg (prunes, dried).	L Bee L	-
Light Brown Apple Moth (*Epiphyas postvittana*) **Priority: Moderate**								
Rated as a moderate priority in NSW and VIC, and as a low priority in QLD and WA. Larvae feed on leaves and the skin of the fruit, which may cause fruit to be unmarketable. Integrated management involving preservation of beneficials and removing weed hosts in and around orchards should be used in conjunction with judicious use of insecticides.								
Acetamiprid + Novaluron (Cormoran) Adama	4A+15	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of Black Peach Aphid, Green Peach Aphid, **Light Brown Apple Moth**, Oriental Fruit Moth, San Jose Scale and suppression of Mediterranean Fruit Fly and Queensland Fruit Fly. Monitor moth activity from late flowering by pheromone trapping. Apply after petal fall or 140 Degree Days after moths are detected in traps. If required, apply a second application after a 14 day interval. Do not use more than 2 applications per season.	M Bee M	R2
Bacillus thuringiensis subsp Kurstaki Strain HD-1	11	Biological & Ingestion	NR	A	ALL	Registered in fruit for control of Armyworm, Cotton Bollworm, Native Budworm, Cabbage Moth, Cabbage White Butterfly, Loopers, **Light Brown Apple Moth** and Vine Moth. Time spray to coincide with egg hatch. Treatments per season not limited.	VL Bee VL	-
Carbaryl (Bugmaster)	1A	Contact	35	A	ALL	Registered in apricots, nectarines, peaches and plums for control of Green Treehopper, **Light Brown Apple Moth**, Oriental Fruit Moth, Pear and Cherry Slug, Red Shouldered Leaf Beetle, Orange Fruit Borer, Heliothis (Budworms), Wingless Grasshopper, Fruit Tree Borer and European Earwig. Apply at first sign of pest activity and repeat at intervals of 2 weeks or as necessary. Treatments per season not limited.	H Bee H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Chlorantraniliprole (Altacor) FMC	28	Ingestion	H:14 NG	A	ALL	Registered in stone fruit for control of Oriental Fruit Moth and **Light Brown Apple Moth**. Apply a maximum of 2 treatments with a minimum interval of 14 days, commencing at 140 Degree Days after moths are detected in traps.	L Bee VL	-
Indoxacarb (Avatar) FMC	22A	Ingestion	H:7 NG	A	ALL	Registered in apricots, nectarines, peaches and plums for control of Heliothis, Oriental Fruit Moth, **Light Brown Apple Moth**, Apple Weevil, Fuller's Rose Weevil, Garden Weevil and Wingless Grasshopper. Apply a maximum of 3 treatments at 14 day intervals, commencing at 140 Degree Days after moths are detected in traps. Best results are achieved with consecutive applications.	M Bee H	R3
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in fruit trees for control of Ants, Aphids, **Caterpillars**, Earwigs, Whitefly, Thrips and Leafhopper. Apply as a foliar spray when pests are present. Re-apply as necessary. Treatments per season not limited.	VH Bee H	-
Spinetoram (Delegate) Corteva	5	Ingestion	H:3 NG	A	ALL	Registered in stone fruit for control of Pear and Cherry Slug, **Light Brown Apple Moth**, Oriental Fruit Moth and Western Flower Thrips. Target treatments against mature eggs and newly hatched larvae. Apply repeat applications at 14 day intervals as egg hatch continues or as new infestations occur. Do not use more than 4 applications per season.	M Bee VH	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinosad (Entrust Organic) Corteva	5	Ingestion	H:3 G:14	A	ALL	Registered in stone fruit (except peaches) for control of Cherry Slug, **Light Brown Apple Moth**, Western Flower Thrips and Oriental Fruit Moth. Target treatments against mature eggs and newly-hatched larvae when numbers exceed pest threshold. Apply repeat applications at 7-14 day intervals as new infestations occur. Do not use more than 4 applications per season.	L Bee H	-
			H:7 G:14			Registered in peaches for control of Cherry Slug, **Light Brown Apple Moth**, Western Flower Thrips and Oriental Fruit Moth. Target treatments against mature eggs and newly-hatched larvae when numbers exceed pest threshold. Apply repeat applications at 7-14 day intervals as new infestations occur. Do not use more than 4 applications per season.		
Tetraniliprole (Vayego) Bayer	28	Ingestion	H:3 NG	P-A	All	Registered in stone fruit for control of Apple Weevil, Fuller's Rose Weevil, Garden Weevil, Oriental Fruit Moth, Mediterranean Fruit Fly and suppression of Dried Fruit Beetle. Registered in pome fruit for control of **Light Brown Apple Moth**.	L-M Bee VH	-
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-
Snails (*Gastropoda*) **Priority: Moderate**								
Rated as a moderate priority in VIC, and a low priority in NSW, QLD and WA. Snails will feed on the fruit, reducing yield and quality. Baiting should be used in conjunction with removal of ground shelter (weeds, plant litter) for snails.								
Methiocarb (Mesurol) Bayer	1A	Contact & Ingestion	H:7 G:28	A	ALL	Registered in stone fruit for control of Slugs and **Snails**. Scatter baits evenly onto ground where snails or slugs occur. Keep away from domestic pets.	H Bee H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cherry Aphid (*Myzus cerasi*) **Priority: Moderate**								
Rated as a moderate priority in VIC, and a low priority in NSW, QLD and WA. Aphids are sap-sucking insects that are sporadic but can cause substantial damage to leaves by feeding. Honeydew can also lead to outbreaks of sooty mould on leaves and fruit. Integrated management involving preservation of beneficials and removing weed hosts in and around orchards should be used in conjunction with judicious use of insecticides.								
Diazinon	1B	Contact	14	A	ACT, NSW, SA & WA	Registered in stone fruit for control of Green Peach Aphid and **Black Cherry Aphid**. Apply as a cover spray at budswell. Retreat if reinfestation occurs. Treatments per season not limited.	H Bee H	R3
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in fruit trees for control of Ants, **Aphids**, Caterpillars, Earwigs, Whitefly, Thrips and Leafhopper. Apply as a foliar spray when pests are present. Re-apply as necessary. Treatments per season not limited.	VH Bee H	-
Paraffinic Oil	-	Contact	NR	A	NSW, ACT, VIC, SA, WA & TAS	Registered in peaches and nectarines (dormant or delayed dormant) for control of **Aphids** (eggs) and Mites (eggs). Apply cover sprays as required. Treatments per season not limited.	L Bee L	-
					NSW, ACT, SA, WA & TAS	Registered in plums (dormant) for control of **Aphids** (eggs), Scale and Mites (eggs). Apply cover sprays as required. Treatments per season not limited.		
Pirimicarb (Pirimor)	1A	Contact	2	A	ALL	Registered in stone fruit for control of Green Peach Aphid, Black Peach Aphid and **Cherry Aphid**. Apply at pink bud or when aphids appear. Use a maximum of 2 non-consecutive applications per season.	VL Bee VL	R3
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit trees for control of **Aphids**, Thrips, Mealybug, Two Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Treatments per season not limited.	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	21	A	ALL	Registered in stone fruit for control of Tuber Mealybug, Long Tailed Mealybug, **Black Cherry Aphid**, Black Peach Aphid and San Jose Scale. Monitor crops following petal fall. Commence applications at the onset of crawler emergence or when pest numbers reach an economic threshold. To ensure that there is sufficient foliage for product uptake do not apply prior to shuck fall. Apply a second application 14-21 days after the first application if required. Do not use more than 3 applications per crop, with no more than 2 applications made later than 21 days after shuck fall and with a minimum 14 days between applications.	M Bee L	-
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of Apple Dimpling Bug, **Cherry Aphid**, Green Peach Aphid and Black Peach Aphid. Apply when the pest reaches threshold levels. Aphids that are protected within curled leaves may not be controlled. Repeat applications at a 14 day interval if required. Do not use consecutive applications and do not exceed 2 applications per season.	M Bee VH	-
Afidopyropen (Versys) BASF	9D	Ingestion		P		Registered for control of **Aphids** in various vegetable crops. US registration for control of Aphids in stone fruit.	L Bee L	-
Flonicamid (Mainman) UPL	29	Ingestion		P		Registered for control of Mealybugs in pome fruit, **Aphids** in potatoes, **Aphids** and Mirids in cotton, and **Aphids** and Silverleaf Whitefly in cucurbits. US registration for control of **Aphids** and Plant Bugs in stone fruit. Codex MRL 0.1 mg/kg (plums), 0.7 mg/kg (peaches).	M Bee VL	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and suppression of Scirtothrips. US registration for control of **Aphids** and San Jose Scale in stone fruit. Codex MRLs 0.4 mg/kg (plums, including prunes), 1.5 mg/kg (peaches, including apricots and nectarines), 3 mg/kg (prunes, dried).	L Bee L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
European Earwig (*Forficula auricularia*) **Priority: Moderate**								
Rated as a moderate priority in VIC, and a low priority in NSW, QLD and WA. European Earwigs can damage plants and fruit if present in large numbers.								
Carbaryl (Bugmaster)	1A	Contact	35	A	ALL	Registered in apricots, nectarines, peaches and plums for control of Green Treehopper, Light Brown Apple Moth, Oriental Fruit Moth, Pear and Cherry Slug, Red Shouldered Leaf Beetle, Orange Fruit Borer, Heliothis (Budworms), Wingless Grasshopper, Fruit Tree Borer and **European Earwig**. Apply when pests are present and repeat as necessary. Treatments per season not limited.	H Bee H	R3
Chlorpyrifos (Lorsban)	1B	Contact	14	A	NSW, WA & ACT	Registered in stone fruit for control of **European Earwig.** Apply either as a foliar cover spray or spread as a prepared bait in spring. Treatments per season not limited.	H Bee H	R1
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in fruit trees for control of Ants, Aphids, Caterpillars, **Earwigs**, Whitefly, Thrips and Leafhopper. Apply as a foliar spray when pests are present. Re-apply as necessary. Treatments per season not limited.	VH Bee H	-
Silver Peach Mite (*Aculus cornutus*) **Bryobia Mite** (*Bryobia rubrioculus*) **European Red Mite** (*Panonychus ulmi*) **Priority: Moderate**								
Silver Peach Mite is rated as a high priority in VIC, and a low priority in NSW, QLD and WA. Bryobia Mite and European Red Mite are rated as a moderate priority in VIC, and a low priority in NSW, QLD and WA. Mites damage the tree by causing leaves to turn brown and fall, leading to reduced yield and fruit quality. Management options include reducing dust in the orchard, promotion or introduction of predatory mites and judicious use of miticides while maintaining beneficial populations.								
Bifenazate (Acramite) UPL	20	Contact & Ingestion	H:3 G:28	A	ALL	Registered in apricots, nectarines, peaches and plums for control of Two Spotted Mite, **European Red Mite** and **Bryobia Mite**. Apply as soon as mites appear. Do not use more than 1 application per season.	L Bee H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Clofentezine (Apollo) Adama	10A	IGR / Contact	21	A	ALL	Registered in stone fruit for control of Two Spotted Mite, **European Red Mite** and **Bryobia Mite**. Apply when the first summer eggs have been laid, usually about 8 weeks after the recommended green tipdormant oil spray. Do not use more than 1 application per season.	L Bee L	-
Etoxazole (Paramite) Sumitomo	10B	IGR / Contact	H:7 NG	A	ALL	Registered in stone fruit for control of Two Spotted Mite, **European Red Mite** and **Bryobia Mite**. Apply at the first sign of mite crawlers. Do not use more than 1 application per season.	L Bee VL	R3
Fenbutatin Oxide (Torque) BASF	12A	Contact	14	A	SA, WA	Registered in peaches and nectarines for control of Two Spotted Mite, **European Red Mite** and **Bryobia Mite**. Following an application of oil before bud burst, apply to predominantly motile stages in December. Re-apply as required but well before a dense infestation occurs. Do not use consecutive applications. Treatments per season not limited.	L Bee L	R2
Hexythiazox (Calibre) Nufarm	10A	IGR / Contact	3	A	ALL	Registered in stone fruit for control of Two Spotted Mite and **European Red Mite**. Following treatment with oil prior to bud-burst, apply to infestations of predominantly eggs and immature motiles in November. Do not use more than 1 application per season.	L Bee L	-
Liquid Paraffin (Heavy Paraffinic Dormant Spray Oil)	-	Contact	1	A	VIC, SA, TAS, NSW, ACT & QLD	Registered in stone fruit for control of **Bryobia Mites** and **European Red Mites**. Spray during dormant season on still sunny days. Do not spray after bud swell. Treatments per season not limited.	L Bee L	-
					WA	Registered in stone fruit for control of **Bryobia Mites**. Spray during dormant season on still sunny days. Do not spray after bud swell. Treatments per season not limited.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Paraffinic Oil	-	Contact	NR	A	NSW, ACT, VIC, SA, WA & TAS	Registered in apricots (summer or post-harvest) for control of **mites** and scale. Apply cover sprays as required. Treatments per season not limited.	L Bee L	-
						Registered in peaches and nectarines (dormant or delayed dormant) for control of aphids (eggs) and **mites** (eggs). Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, VIC, SA & WA	Registered in peaches and nectarines (summer or post-harvest) for control of **mites** and scale. Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, SA, WA & TAS	Registered in plums (dormant) for control of aphids (eggs), scale and **mites** (eggs). Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, VIC, SA, WA & TAS	Registered in plums (summer or post-harvest) for control of **mites** and scale. Do not apply over fresh market fruits after bloom start to form, as the oil will remove the bloom. Treatments per season not limited.		
Propargite (Omite)	12C	Contact / Systemic	7	A	QLD, WA	Registered in stone fruit for control of **European Red Mite**. Apply as soon as mites appear. Treatments per season not limited.	M Bee L	R3
Tebufenpyrad (Pyranica) Sipcam	21A	Contact & Ingestion	H:14 NG	A	QLD, NSW, VIC, TAS, SA & WA	Registered in peaches for control of Two Spotted Mite and **European Red Mite**. Apply before mite infestation reaches 70% of leaves infested. Do not use more than 1 application per season.	M Bee H	-
Acequinocyl (Kanemite) UPL	20B	Contact & Ingestion	H:14 NG	P-A	ALL	Registered in stone fruit for control of Two Spotted Mite**.** US registration for **European Red Mite** in citrus, pome fruit and cherries.	L Bee L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Beauveria bassiana (Velifer) BASF	UN			P		Registered for suppression of Two Spotted Mite in protected vegetables and ornamentals and also has activity on **Mites**, Thrips, Aphids and Whitefly. No MRLs required for a biological product.	L Bee L	-
Spiromesifen (Oberon) Bayer	23			P		Not currently registered in AU but under development with Bayer and Hort Innovation for multiple commodities. US registrations for Mites in various crops.	M Bee VL	-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-
Fullers Rose Weevil (*Asynonychus cervinus*) **Apple Weevil** (*Otiorhynchus cribricollis*) **Garden Weevil** (*Phlyctinus callosus*) **Priority: Low**								
Fullers Rose Weevil is rated as a moderate priority in VIC, and a low priority in NSW, QLD and WA. Apple Weevil and Garden Weevil are rated as a low priority in all regions. Weevils can damage the fruit by surface feeding and blemishes caused by weevil excreta.								
Alpha-Cypermethrin	3A	Contact	14	A	WA	Registered in stone fruit for control of **Apple Weevil** and **Garden Weevil**. Apply prepared solution onto the crotch, trunk and soil at the base of each tree at peak weevil emergence. This usually late October – late November for Garden Weevil, and late November to mid December for Apple Weevil. Continue monitoring as a second application may be required 3-4 weeks after first treatment. Treatments per season not limited.	VH Bee H	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Indoxacarb (Avatar) FMC	22A	Ingestion	H:7 NG	A	ALL	Registered in apricots, nectarines, peaches and plums for control of Heliothis, Oriental Fruit Moth, Light Brown Apple Moth, **Apple Weevil**, **Fuller's Rose Weevil**, **Garden Weevil** and Wingless Grasshopper. Garden Weevil usually emerges late October to late November and Apple Weevil and Fuller's Rose Weevil usually emerge late November to late December. For Garden Weevil and Apple Weevil, prevent damage by treating early in the stages of emergence. For Fuller's Rose Weevil, apply after peak weevil emergence when leaf damage is obvious. Apply a maximum of 2 applications per season. Do not retreat within 10 days. Do not use for more than 2 consecutive seasons.	M Bee H	R3
Tetraniliprole (Vayego) Bayer	28	Ingestion	H:3 NG	A	ALL	Registered in stone fruit for control of **Apple Weevil**, **Fuller's Rose Weevil**, **Garden Weevil**, Oriental Fruit Moth, Mediterranean Fruit Fly and suppression of Dried Fruit Beetle. Monitor the orchards in early spring and commence applications no earlier than post petal fall when weevils begin to emerge. Apply a second treatment 14 days later if required.	L-M Bee VH	-
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-
Fruit Tree Borer (*Maroga melanostigma*) **Priority: Low**								
Rated as a moderate priority in VIC, and a low priority in NSW, QLD and WA. Borers will attack trees that are unhealthy or have suffered wounds through pruning or weather damage. Larvae tunnel into branches which can lead to ringbarking and death of limbs.								
Carbaryl (Bugmaster)	1A	Contact	35	A	ALL	Registered in apricots, nectarines, peaches and plums for control of Green Treehopper, Light Brown Apple Moth, Oriental Fruit Moth, Pear and Cherry Slug, Red Shouldered Leaf Beetle, Orange Fruit Borer, Heliothis (Budworms), Wingless Grasshopper, **Fruit Tree Borer** and European Earwig. Apply to areas of trunks and limbs showing damage by borer. Ensure that protective webbing and surrounding bark is saturated. Apply at 21 day intervals during winter. Treatments per season not limited.	H Bee H	R3

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Tetraniliprole (Vayego) Bayer	28	Ingestion	H:3 NG	P-A	ALL	Registered in stone fruit for control of **Apple Weevil**, **Fuller's Rose Weevil**, **Garden Weevil**, Oriental Fruit Moth, Mediterranean Fruit Fly and suppression of Dried Fruit Beetle. Also expect activity on **Fruit Tree Borer**.	L-M Bee VH	-
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-
Oriental Fruit Moth (*Grapholita molesta*) **Native Budworm** (*Helicoverpa punctigera*) **Cotton Bollworm** (*Helicoverpa armigera*) **Codling Moth** (*Cydia pomonella*) **Pear and Cherry Slug** (*Caliroa cerasi*) **Priority: Low**								
Oriental Fruit Moth is rated as a low priority in VIC and WA, and a moderate priority in NSW and QLD. Cotton Bollworm and Native Budworm are rated as a low priority in all regions. Codling Moth and Cherry Slug are rated as a moderate priority in VIC, and a low priority in NSW, QLD and WA. Most caterpillars will cause minor leaf damage only, except for Oriental Fruit Moth which will commonly feed on the fruit. Oriental Fruit Moth mainly affects peaches and nectarines. Codling Moth will also feed on fruit but it is rarely seen in summer fruit.								
Acetamiprid + Novaluron (Cormoran) Adama	4A+15	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of Black Peach Aphid, Green Peach Aphid, **Light Brown Apple Moth**, **Oriental Fruit Moth**, San Jose Scale and suppression of Mediterranean Fruit Fly and Queensland Fruit Fly. Monitor for Light Brown Apple Moth from late flowering by pheromone trapping. Apply after petal fall or 140 Degree Days after moths are detected in traps. If required, apply a second treatment after a 14 day interval. Monitor Oriental Fruit Moth using pheromone traps and target treatments against eggs and newly hatched larvae before they become entrenched. If targeting the first generation, apply before 110 Degree Days after moths are detected in traps. Further applications should be made on 14 day spray intervals. Do not use more than 2 applications per season.	M Bee M	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Bacillus thuringiensis subsp Kurstaki Strain HD-1	11	Biological & Ingestion	NR	A	ALL	Registered in fruit for control of Armyworm, Cotton Bollworm, **Native Budworm**, Cabbage Moth, Cabbage White Butterfly, Loopers, Light Brown Apple Moth and Vine Moth. Time spray to coincide with egg hatch. Treatments per season not limited.	VL Bee VL	-
Carbaryl (Bugmaster)	1A	Contact	35	A	ALL	Registered in apricots, nectarines, peaches and plums for control of Green Treehopper, Light Brown Apple Moth, **Oriental Fruit Moth**, **Pear and Cherry Slug**, Red Shouldered Leaf Beetle, Orange Fruit Borer, ***Heliothis* (Budworms)**, Wingless Grasshopper, Fruit Tree Borer and European Earwig. Apply at first sign of pest activity and repeat at intervals of 2 weeks or as necessary. Treatments per season not limited.	H Bee H	R3
Chlorantraniliprole (Altacor) FMC	28	Ingestion	H:14 NG	A	ALL	Registered in stone fruit for control of **Oriental Fruit Moth** and Light Brown Apple Moth. Do not use more than 2 applications per season with a minimum 14 days between applications. When treating the first generation, apply the initial treatment before 110 Degree Days after moths are detected in traps. Target applications against eggs and newly hatched larvae before they become entrenched.	L Bee VL	-
Clothianidin (Samurai) Sumitomo	4A	Systemic / Ingestion	H:7 NG	A	ALL	Registered in peaches and nectarines for control of **Oriental Fruit Moth** and Green Peach Aphid. Apply when pest monitoring indicates that a generation egg hatch is taking place. Apply 2 consecutive treatments 14 days apart to a generation. Further treatments for this generation or the next should be from a different mode of action product. Do not exceed 3 applications per season.	M Bee VH	R2
Clothianidin (Samurai) Sumitomo PER13527	4A	Systemic / Ingestion	H:21 NG	A	ALL (excl. VIC)	Permitted in apricots for control of **Oriental Fruit Moth**. Apply once pest monitoring indicates that a generation egg hatch is taking place. Apply 2 consecutive applications 14 days apart to a generation. Further treatments for this generation or the next should be from a different mode of action group.	M Bee VH	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Cydia pomonella Granulosis Virus V22 (Grandex Biological Insecticide)	-	Biological & Ingestion	NR	A	ALL	Registered in stone fruit for control of Codling Moth and **Oriental Fruit Moth**. Apply as a cover spray when newly hatched larvae are present in the orchard. Apply at 7-14 day intervals while larvae are present. Treatments per season not limited.	VL Bee VL	-
Dodecadien-1-ol, Dodecanol, Tetradecanol, Dodecenyl Acetate (Isomate)	-	Insect Confusion Agent	NR	A	SA, VIC, NSW, QLD & TAS	Registered in peaches, nectarines, plums and apricots as a mating disruption agent for control of **Oriental Fruit Moth** and **Codling Moth**. Apply before the first moth emergence in spring. Loop dispensers over spurs and branches within 500 mm of the top of the tree. Us in conjunction with insecticides where moth populations are moderate to high.	VL Bee VL	-
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Contact	1	A	ALL	Registered in fruit trees for control of Ants, Aphids, **Caterpillars**, Earwigs, Whitefly, Thrips and Leafhopper. Apply as a foliar spray when pests are present. Re-apply as necessary. Treatments per season not limited.	VH Bee H	-
Indoxacarb (Avatar) FMC	22A	Ingestion	H:7 NG	A	ALL	Registered in apricots, nectarines, peaches and plums for control of ***Heliothis***, **Oriental Fruit Moth**, Light Brown Apple Moth, Apple Weevil, Fuller's Rose Weevil, Garden Weevil and Wingless Grasshopper. For Heliothis, target application against eggs and newly hatched larvae before they become entrenched. For Oriental Fruit Moth, apply the initial treatment before 110 Degree Days after moths are detected in traps. Apply a maximum of 3 treatments at 10 day intervals.	M Bee H	R3
Maldison (Fyfanon)	1B	Contact	3	A	NSW, ACT, VIC, TAS, SA & WA	Registered in stone fruit for control of Black Peach Aphid, Green Peach Aphid, European Red Mite and **Oriental Fruit Moth**. Apply at first sign of pest and repeat as necessary. Treatments per season not limited.	H Bee H	R3
Methomyl (Lannate)	1A	Contact	1	A	ALL	Registered in stone fruit for control of Thrips, Green Peach Aphid, **Budworm** and Monolepta Beetle. Apply when pest first appears on the crop and repeat when necessary. Do not apply early to peach varieties such as Watts. Treatments per season not limited.	H Bee H	R2

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Spinetoram (Delegate) Corteva	5	Ingestion	H:3 NG	A	ALL	Registered in stone fruit for control of **Pear and Cherry Slug**, Light Brown Apple Moth, **Oriental Fruit Moth** and Western Flower Thrips. Target treatments against mature eggs and newly hatched larvae. Apply repeat applications at 14 day intervals as egg hatch continues or as new infestations occur. Do not use more than 4 applications per season.	M Bee VH	-
Spinosad (Entrust Organic) Corteva	5	Ingestion	H:3 G:14	A	ALL	Registered in stone fruit (except peaches) for control of **Cherry Slug**, Light Brown Apple Moth, Western Flower Thrips and **Oriental Fruit Moth**. Target treatments against mature eggs and newly-hatched larvae when numbers exceed pest threshold. Apply repeat applications at 7-14 day intervals as new infestations occur. Do not use more than 4 applications per season.	L Bee H	-
			H:7 G:14			Registered in peaches for control of **Cherry Slug**, Light Brown Apple Moth, Western Flower Thrips and **Oriental Fruit Moth**. Target treatments against mature eggs and newly-hatched larvae when numbers exceed pest threshold. Apply repeat applications at 7-14 day intervals as new infestations occur. Do not use more than 4 applications per season.		
Tetraniliprole (Vayego) Bayer	28	Ingestion	H:3 NG	A	ALL	Registered in stone fruit for control of Apple Weevil, Fuller's Rose Weevil, Garden Weevil, **Oriental Fruit Moth**, Mediterranean Fruit Fly and suppression of Dried Fruit Beetle. Commence applications post petal fall, when predictive models from local monitoring agencies indicate egg hatch of a generational peak. Apply a maximum of 3 treatments, with 14-21 day intervals between applications.	L-M Bee VH	-
Thiacloprid (Calypso) Bayer	4A	Systemic / Ingestion	H:14 NG	A	ALL	Registered in stone fruit for control of **Oriental Fruit Moth**. Apply in a series of 3 treatments at 14 day intervals commencing at egg hatch of a generational peak as indicated by monitoring. Do not use more than 3 applications per season.	M Bee L	R2
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-
Mealybugs (*Pseudococcidae*) **Priority: Low**								
Mealybugs are rated as a low priority in VIC, QLD and WA, and a moderate priority in NSW. They can cause cosmetic damage to trees and will excrete honeydew which promotes sooty mould outbreaks. Preserving beneficials will assist with management.								
Potassium Salts of Fatty Acid (Natrasoap)	-	Contact	NR	A	ALL	Registered in fruit trees for control of Aphids, Thrips, **Mealybug**, Two Spotted Mite, Spider Mite and Whitefly. Apply as a cover spray. Treatments per season not limited.	L Bee L	-
Spirotetramat (Movento) Bayer	23	Ingestion	21	A	ALL	Registered in stone fruit for control of **Tuber Mealybug**, **Long Tailed Mealybug**, Black Cherry Aphid, Black Peach Aphid and San Jose Scale. Monitor crops following petal fall. Commence applications at the onset of crawler emergence or when pest numbers reach an economic threshold. To ensure that there is sufficient foliage for product uptake do not apply prior to shuck fall. Continue to monitor crops and apply a second application 14-28 days after the first application. Do not use more than 3 applications per crop, with no more than 2 applications made later than 21 days after shuck fall and with a minimum 14 days between applications.	M Bee L	-
Buprofezin (Applaud) Corteva	16	Ingestion		P		Registered for control of **Mealybugs** in various crops including citrus, custard apple, grape, passionfruit, pear and persimmon. Codex MRL 2 mg/kg (plums), 9 mg/kg (peach).	M Bee L	-
Flonicamid (Mainman) UPL	29	Ingestion		P		Registered for control of **Mealybugs** in pome fruit, Aphids in potatoes, Aphids and Mirids in cotton, and Aphids and Silverleaf Whitefly in cucurbits. US registration for control of Aphids and Plant Bugs in stone fruit. Codex MRL 0.1 mg/kg (plums), 0.7 mg/kg (peaches).	M Bee VL	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Macadamia Lace Bug, Fruit Spotting Bug and Banana Spotting Bug, and suppression of Scirtothrips. US registration for control of Aphids and San Jose Scale in stone fruit and control of **Mealybugs** in citrus, grapes and pineapple. Codex MRL 0.4 mg/kg (plums), 1.5 mg/kg (peaches), 3 mg/kg (prunes, dried).	L Bee L	-
NUL3145 Nufarm	TBC			P		New insecticide from Nufarm with activity on Scale, Nematodes, Mealybug and Whitefly.		-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-
Oystershell Scale (*Diaspidiotus ostreaeformis*) **Pear Scale** (*Diaspidiotus pyri*) **Frosted Scale** (*Eulecanium pruinosum*) **Priority: Low**								
Oystershell Scale and Frosted Scale are rated as a low priority in all regions. Pear Scale is rated as a low priority in NSW, QLD and WA, and a moderate priority in VIC. Management of Scale should focus on preventing infestations and managing populations before they build up. Strategies include the promotion or introduction of beneficials along with judicious use of insecticides.								
Liquid Paraffin (Heavy Paraffinic Dormant Spray Oil)	-	Contact	1	A	TAS	Registered in stone fruit for control of **Oystershell Scale** and Prune Scale. Spray during dormant season on still sunny days. Do not spray after bud swell. Treatments per season not limited.	L Bee L	-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Paraffinic Oil	-	Contact	NR	A	NSW, ACT, VIC, SA, WA & TAS	Registered in apricots (summer or post-harvest) for control of Mites and **Scale**. Apply cover sprays as required. Treatments per season not limited.	L Bee L	-
					NSW, ACT, VIC, SA & WA	Registered in peaches and nectarines (summer or post-harvest) for control of Mites and **Scale**. Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, SA, WA & TAS	Registered in plums (dormant) for control of Aphids (eggs), **Scale** and Mites (eggs). Apply cover sprays as required. Treatments per season not limited.		
					NSW, ACT, VIC, SA, WA & TAS	Registered in plums (summer or post-harvest) for control of Mites and **Scale**. Apply cover sprays as required. Do not apply to fresh market fruits after bloom starts to form, as the oil will remove the bloom. Treatments per season not limited.		
Buprofezin (Applaud) Corteva	16	Ingestion		P		Registered for control of Scale in various tree crops including citrus, custard apple, mango, passionfruit and persimmon. Codex MRL 2 mg/kg (plums), 9 mg/kg (peach).	M Bee L	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and suppression of Scirtothrips. US registration for control of **Aphids** and San Jose Scale in stone fruit. Codex MRLs 0.4 mg/kg (plums, including prunes), 1.5 mg/kg (peaches, including apricots and nectarines), 3 mg/kg (prunes, dried).	L Bee L	-
NUL3145 Nufarm	TBC			P		New insecticide from Nufarm with activity on Scale, Nematodes, Mealybug and Whitefly.		-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Apple Dimpling Bug *(Campylomma liebknechti)* **Priority: Low**								
Rated as a low priority in NSW, QLD and WA, and a moderate priority in VIC. Can causing feeding damage to developing or mature fruit, although control measures are rarely warranted.								
Sulfoxaflor (Transform) Corteva	4C	Contact & Ingestion	7	A	ALL	Registered in stone fruit for control of **Apple Dimpling Bug**, Cherry Aphid, Green Peach Aphid and Black Peach Aphid. Apply when the pest reaches threshold levels in the lead up to flowering. As Apple Dimpling Bugs are a highly mobile pest and can rapidly reinvade crops, further treatments may be necessary 14 days after application. Do not use consecutive applications and do not exceed 2 applications per season.	M Bee VH	-
Flonicamid (Mainman) UPL	29	Ingestion		P		Registered for control of Mealybugs in pome fruit, Aphids in potatoes, Aphids and Mirids in cotton, and Aphids and Silverleaf Whitefly in cucurbits. US registration for control of Aphids and Plant Bugs in stone fruit. Codex MRL 0.1 mg/kg (plums), 0.7 mg/kg (peaches).	M Bee VL	-
Flupyradifurone (Sivanto Prime) Bayer	4D	Contact & Ingestion		P		Registered in macadamias for control of Fruit Spotting Bugs, Lace Bug and suppression of Scirtothrips. US registration for control of **Aphids** and San Jose Scale in stone fruit. Codex MRLs 0.4 mg/kg (plums, including prunes), 1.5 mg/kg (peaches, including apricots and nectarines), 3 mg/kg (prunes, dried).	L Bee L	-
NUL3445 Nufarm	TBC			P		New insecticide from Nufarm with activity on Lepidoptera, Bugs, Beetles/Weevils, Fruit Fly and Thrips.		-
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
Fall Armyworm *(Spodoptera frugiperda)* **Priority: Unknown**								
Fall Armyworm has recently been detected in Australia for the first time. It has not been seen in stone fruit and the potential impact is currently unknown.								
Chlorantraniliprole (Altacor) FMC PER89259	28	Ingestion	H:14 NG	A	ALL (excl. VIC)	Permitted in stone fruit for control of **Fall Armyworm**. Treat when pests appear, targeting eggs at hatch or small larvae (prior to third instar stage) before the pest becomes entrenched. Do not use more than 2 applications per season with a minimum 14 days between applications.	L Bee VL	-
Indoxacarb (Avatar) FMC PER89278	22A	Ingestion	H:7 NG	A	ALL (excl. VIC)	Permitted in apricots, nectarines, peaches and plums for control of **Fall Armyworm**. Treat when pests appear, targeting eggs at hatch or small larvae (prior to third instar stage) before the pest becomes entrenched. Do not exceed a maximum of 3 applications per crop with a 10 day retreatment interval.	L-M Bee H	R3
Methomyl (Lannate) PER89293	1A	Contact	1	A	ALL	Permitted in stone fruit for control of **Fall Armyworm**. Apply as a foliar spray. Target sprays against eggs and newly hatched larvae (prior to third instar stage) before they become entrenched. Treatments per season not limited.	H Bee H	R2
Spinetoram (Delegate) Corteva PER89241	5	Ingestion	H:3 NG	A	ALL (excl. VIC)	Permitted in stone fruit for control of **Fall Armyworm**. Treat when pests appear, targeting eggs at hatch or small larvae (prior to third instar stage) before the pest becomes entrenched. Do not exceed 4 applications per season with a 14 day retreatment interval.	M Bee VH	-
Spinosad (Entrust Organic) Corteva PER89870	5	Ingestion	H:3 G:14	A	ALL (excl. VIC)	Permitted in stone fruit (except peaches) for control of **Fall Armyworm**. Treat when pests appear, targeting eggs at hatch or small larvae (prior to third instar stage) before the pest becomes entrenched. Do not exceed 4 applications per season with a 7-14 day retreatment interval.	L Bee H	-
			7			Permitted in peaches for control of **Fall Armyworm**. Treat when pests appear, targeting eggs at hatch or small larvae (prior to third instar stage) before the pest becomes entrenched. Do not exceed 4 applications per season with a 7-14 day retreatment interval.		

Pest / Active Ingredient (Trade Name)	Chemical group	Activity	WHP, days	Availability	States	Comments	Impact on beneficials	Regulatory risk
SYNFOI21 Syngenta	New			P		SYNFOI21 is not registered but the first global application is proposed for 2020/21 for various pests including Thrips, Bugs, Mites and Caterpillars.		-

4.3 Weeds in summerfruit

4.3.1 Weed priorities

Common Name	Scientific Name
High	
Couch Grass	*Cynodon dactylon*
Flaxleaf Fleabane	*Conyza bonariensis*
Johnson Grass	*Sorghum halepense*
Capeweed	*Arctotheca calendula*
Moderate	
Fat-Hen	*Chenopodium album*
Marshmallow	*Malva parviflora*
Paspalum	*Paspalum dilatatum*
Wireweed	*Polygonum aviculare*
Blackberry Nightshade	*Solanum nigrum*
Annual Ryegrass	*Lolium rigidum*

Couch Grass, Flaxleaf Fleabane, Johnson Grass and Capeweed were rated as a high priority. The following weeds were rated as a moderate priority: Fat-Hen, Marshmallow, Paspalum, Wireweed, Blackberry Nightshade and Annual Ryegrass. An integrated weed management program incorporating mulch and inter-row grass cover should reduce the need for reliance on herbicides in most orchards.

Specific resistance management strategies for high resistance risk (A and B) and moderate resistance risk (C, D, F, G, I, J, K, L, M, N, Q and Z) herbicide modes of action are available on the CropLife Australia webpage.

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

4.3.2 Available and potential products for weed control

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

Availability			
A	Available via either registration or permit approval		
P	Potential – a possible candidate to pursue for registration or permit		
P-A	Potential, already approved in the crop for another use		
Resistance risk		**Regulatory risk (refer to Appendix 6)**	
		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
Couch Grass *(Cynodon dactylon)* **Priority: High**							
Rated as a high priority in VIC and NSW, and a moderate priority in QLD and WA. Couch Grass is an aggressive and highly competitive perennial grass that grows year-round in most areas. Herbicide control is effectively provided it is targeted to young, actively growing weeds. Multiple applications are usually required.							
2,2-DPA	J**	Apricot / Peach / Established Trees / Residual Weed Control	Registered in apricots and peaches for control of annual and perennial grasses, including **Couch Grass**. Apply as a directed application. Apply to established trees only.	7	A	ALL	-
Fluazifop-P (Fusilade)	A***	Stone Fruit / Directed Spray	Registered in stone fruit for control of grass weeds, including **Couch Grass**. Apply as a directed spray.	NR	A	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Couch Grass**. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Registered in stone fruit for control of various grass and broadleaf weeds, including **Couch Grass**. Do not allow spray to contact any part of the tree, including the trunk. Do not use under trees that are less than 3 years old.	NR	A	ALL	R3
Haloxyfop (Verdict)	A***	Stone Fruit / Directed Spray or Spot Spray	Registered in stone fruit for control of grass weeds, including **Couch Grass**. Apply as a directed spray.	NR	A	ALL	-
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Couch Grass**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Terbacil	C**	Peaches / At Least 3 Years Old / Residual Weed Control	Registered in peaches for control of various grass and broadleaf weeds, including **Couch Grass**. Apply to weed-free, well prepared soil. Best results are achieved with incorporation by rainfall or irrigation within 3-4 days of treatment. Do not use under trees that are less than 3 years old.	NR	A	QLD, NSW, VIC, TAS & SA	R3
Flaxleaf Fleabane (*Conyza bonariensis*) **Priority: High**							
Rated as a high priority in all regions. Flaxleaf Fleabane seeds prolifically and can germinate year-round. It is difficult to control with herbicides and a continuous program is required to manage it in the orchard.							
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Flaxleaf Fleabane**. Apply as a directed spray.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Flaxleaf Fleabane**. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Amitrole (Guerrilla)	L** + Q**	Orchards / Directed Spray	Registered in orchards for control of annual weeds, including **Flaxleaf Fleabane**. Avoid contact with crop foliage.	H:NR G:1	A	ALL	R3
Johnson Grass (*Sorghum halepense*) **Priority: High**							
Rated as a high priority in VIC and NSW, and a low priority in QLD and WA. Johnson Grass is a large, summer growing perennial that is difficult to eradicate with herbicides.							
2,2-DPA	J**	Apricot / Peach / Established Trees / Residual Weed Control	Registered in apricot and peach for control of annual and perennial grasses, including **Johnson Grass**. Apply as a directed application. Apply to established trees only.	7	A	ALL	-
Clethodim (Select)	A***	Non-Bearing Fruit Trees	Registered in non-bearing fruit trees for control of annual and perennial grass weeds, including **Johnson Grass**. Apply after trees have recovered from transplant shock and are showing signs of active growth. Do not apply to bearing trees.	NR	A	ALL	-
Fluazifop-P (Fusilade)	A***	Stone Fruit / Directed Spray	Registered in stone fruit for control of grass weeds, including **Johnson Grass**. Apply as a directed spray.	NR	A	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Johnson Grass**. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Registered in stone fruit for control of various grass and broadleaf weeds, including **Johnson Grass**. Do not allow spray to contact any part of the tree, including the trunk. Do not use under trees that are less than 3 years old.	NR	A	ALL	R3
Haloxyfop (Verdict)	A***	Stone Fruit / Directed Spray or Spot Spray	Registered in stone fruit for control of grass weeds, including **Johnson Grass**. Apply as a directed spray.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Johnson Grass**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Terbacil	C**	Peaches / At Least 3 Years Old / Residual Weed Control	Registered in peaches for control of various grass and broadleaf weeds, including **Johnson Grass**. Apply to weed-free, well prepared soil. Best results are achieved with incorporation by rainfall or irrigation within 3-4 days of treatment. Do not use under trees that are less than 3 years old.	NR	A	QLD, NSW, VIC, TAS & SA	R3
Capeweed (*Arctotheca calendula*) **Priority: High**							
Rated as a high priority in VIC, a moderate priority in NSW, and a low priority in QLD and WA. Capeweed is a widespread and aggressive annual weed that germinates in autumn.							
Carfentrazone-Ethyl (Spotlight)	G**	Apricot / Peach / Plum / Directed Spray or Spot Spray	Registered in apricots, peaches and plums for control of various broadleaf weeds, including **Capeweed**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR	A	ALL	-
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Capeweed**. Apply as a directed spray.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Capeweed**. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Registered in stone fruit for control of various grass and broadleaf weeds, including **Capeweed**. Do not allow spray to contact any part of the tree, including the trunk. Do not use under trees that are less than 3 years old.	NR	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Isoxaben (Gallery) Corteva	O**	Non-Bearing Fruit Tree / Residual Weed Control	Registered in non-bearing fruit trees for control of broadleaf weeds, including **Capeweed**. Apply as a directed spray to weed-free, well prepared soil. Must be activated by at least 12.5mm of rainfall or sprinkler irrigation within 21 days of application.	NR	A	ALL	-
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Capeweed**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Capeweed**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Capeweed**. Do not allow spray to contact any part of the tree, including the trunk.	H:1 G:7	A	ALL	R3
Paraquat + Diquat (SpraySeed)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Capeweed**. Do not allow spray to contact any part of the tree, including the trunk.	G:1	A	ALL	R3
Terbacil	C**	Peaches / At Least 3 Years Old / Residual Weed Control	Registered in peaches for control of various grass and broadleaf weeds, including **Capeweed**. Apply to weed-free, well prepared soil. Best results are achieved with incorporation by rainfall or irrigation within 3-4 days of treatment. Do not use under trees that are less than 3 years old.	NR	A	QLD, NSW, VIC, TAS & SA	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fat Hen (*Chenopodium album*) **Priority: Moderate**							
Rated as a moderate priority in all regions. Fat Hen is a fast-growing woody annual weed, which can germinate throughout most of the year. Timely herbicide control id critical for managing this weed.							
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Fat Hen**. Apply as a directed spray.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Fat Hen**. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Registered in stone fruit for control of various grass and broadleaf weeds, including **Fat Hen**. Do not allow spray to contact any part of the tree, including the trunk. Do not use under trees that are less than 3 years old.	NR	A	ALL	R3
Isoxaben (Gallery) Corteva	O**	Non-Bearing Fruit Tree / Residual Weed Control	Registered in non-bearing fruit trees for control of broadleaf weeds, including **Fat Hen**. Apply as a directed spray to weed-free, well prepared soil. Must be activated by at least 12.5mm of rainfall or sprinkler irrigation within 21 days of application.	NR	A	ALL	-
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Fat Hen**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Oryzalin	D**	Stone Fruit / Non-Bearing Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Fat Hen**. Apply as a directed spray.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Registered in stone fruit 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	-
Pendimethalin (Stomp)	D**	Deciduous Fruits / Directed Spray / Residual Weed Control	Registered in deciduous fruits for control of various grass and broadleaf weeds, including **Fat Hen**. Do not allow spray to contact any part of the tree, including the trunk. Incorporate with at least 5mm of rainfall or spray irrigation as soon as possible but no later than 10 days after treatment.	NR	A	ALL	-
Terbacil	C**	Peaches / At Least 3 Years Old / Residual Weed Control	Registered in peaches for control of various grass and broadleaf weeds, including **Fat Hen**. Apply to weed-free, well prepared soil. Best results are achieved with incorporation by rainfall or irrigation within 3-4 days of treatment. Do not use under trees that are less than 3 years old.	NR	A	QLD, NSW, VIC, TAS & SA	R3
Marshmallow (*Malva parviflora*) **Priority: Moderate**							
Rated as a moderate priority in VIC, QLD and WA, and a high priority in NSW. Adapted to a wide variety of environments and highly competitive weed. Control with knockdown herbicides can be unreliable.							
Carfentrazone-Ethyl (Spotlight)	G**	Apricot / Peach / Plum / Directed Spray or Spot Spray	Registered in apricots, peaches and plums for control of various broadleaf weeds, including **Marshmallow**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR	A	ALL	-
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Marshmallow**. Apply as a directed spray.	H:98 G:28	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Isoxaben (Gallery) Corteva	O**	Non-Bearing Fruit Tree / Residual Weed Control	Registered in non-bearing fruit trees for control of broadleaf weeds, including **Marshmallow**. Apply as a directed spray to weed-free, well prepared soil. Must be activated by at least 12.5mm of rainfall or sprinkler irrigation within 21 days of application.	NR	A	ALL	-
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Registered in stone fruit 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)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Marshmallow**. Do not allow spray to contact any part of the tree, including the trunk.	H:1 G:7	A	ALL	R3
Paraquat + Diquat (SpraySeed)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Marshmallow**. Do not allow spray to contact any part of the tree, including the trunk.	G:1	A	ALL	R3
Paspalum (*Paspalum dilatatum*) **Priority: Moderate**							
Rated as a moderate priority in VIC and QLD, a high priority in NSW, and a low priority in WA. Paspalum is a widespread perennial grass weed that competes aggressively in orchards. Ongoing herbicide management is required.							
2,2-DPA	J**	Apricot / Peach / Established Trees / Residual Weed Control	Registered in apricot and peach for control of annual and perennial grasses, including **Paspalum**. Apply as a directed application. Apply to established trees only.	7	A	ALL	-
Fluazifop-P (Fusilade)	A***	Stone Fruit / Directed Spray	Registered in stone fruit for control of grass weeds, including **Paspalum**. Apply as a directed spray.	NR	A	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Paspalum**. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Registered in stone fruit for control of various grass and broadleaf weeds, including **Paspalum**. Do not allow spray to contact any part of the tree, including the trunk. Do not use under trees that are less than 3 years old.	NR	A	ALL	R3
Haloxyfop (Verdict)	A***	Stone Fruit / Directed Spray or Spot Spray	Registered in stone fruit for control of grass weeds, including **Paspalum**. Apply as a directed spray.	NR	A	ALL	-
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Paspalum**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Wireweed (*Polygonum aviculare*) **Priority: Moderate**							
Rated as a moderate priority in VIC, NSW and QLD, and a low priority in WA. Grows rapidly in the warmer months and is difficult to control with herbicides. Application timing is critical to ensure small weeds are targeted.							
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Wireweed**. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3
Isoxaben (Gallery) Corteva	O**	Non-Bearing Fruit Tree / Residual Weed Control	Registered in non-bearing fruit trees for control of broadleaf weeds, including **Wireweed**. Apply as a directed spray to weed-free, well prepared soil. Must be activated by at least 12.5mm of rainfall or sprinkler irrigation within 21 days of application.	NR	A	ALL	-
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Wireweed**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Oryzalin	D**	Stone Fruit / Non-Bearing Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Wireweed**. Apply as a directed spray.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Wireweed**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Wireweed**. Do not allow spray to contact any part of the tree, including the trunk.	H:1 G:7	A	ALL	R3
Paraquat + Diquat (SpraySeed)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Wireweed**. Do not allow spray to contact any part of the tree, including the trunk.	G:1	A	ALL	R3
Pendimethalin (Stomp)	D**	Deciduous Fruits / Directed Spray / Residual Weed Control	Registered in deciduous fruits for control of various grass and broadleaf weeds, including **Wireweed**. Do not allow spray to contact any part of the tree, including the trunk. Incorporate with at least 5mm of rainfall or spray irrigation as soon as possible but no later than 10 days after treatment.	NR	A	ALL	-
Blackberry Nightshade (*Solanum nigrum*) **Priority: Moderate**							
Rated as a high priority in VIC, and a low priority in NSW, QLD and WA. Prolific weed that is widely adapted and difficult to eradicate, mainly due to its long-term seed viability.							
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Blackberry Nightshade**. Apply as a directed spray.	H:98 G:28	A	ALL	-
Isoxaben (Gallery) Corteva	O**	Non-Bearing Fruit Tree / Residual Weed Control	Registered in non-bearing fruit trees for control of broadleaf weeds, including **Blackberry Nightshade**. Apply as a directed spray to weed-free, well prepared soil. Must be activated by at least 12.5mm of rainfall or sprinkler irrigation within 21 days of application.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Blackberry Nightshade**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Oryzalin	D**	Stone Fruit / Non-Bearing Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Blackberry Nightshade**. Apply as a directed spray.	NR	A	ALL	-
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Registered in stone fruit 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	-
Pendimethalin (Stomp)	D**	Deciduous Fruits / Directed Spray / Residual Weed Control	Registered in deciduous fruits for control of various grass and broadleaf weeds, including **Blackberry Nightshade**. Do not allow spray to contact any part of the tree, including the trunk. Incorporate with at least 5mm of rainfall or spray irrigation as soon as possible but no later than 10 days after treatment.	NR	A	ALL	-
Annual Ryegrass (*Lolium rigidum*) **Priority: Moderate**							
Rated as a moderate priority in VIC, NSW and QLD, and a low priority in WA. The most serious grass weed of southern Australia with distribution that is gradually extending north. Populations are prone to herbicide resistance so integrated weed management and rotation of herbicide modes of action are important aspects of a long-term control strategy.							
2,2-DPA	J**	Apricot / Peach / Established Trees / Residual Weed Control	Registered in apricot and peach for control of annual and perennial grasses, including **Annual Ryegrass**. Apply as a directed application. Apply to established trees only.	7	A	ALL	-
Clethodim (Select)	A***	Non-Bearing Fruit Trees	Registered in non-bearing fruit trees for control of annual and perennial grass weeds, including **Annual Ryegrass**. Apply after trees have recovered from transplant shock and are showing signs of active growth. Do not apply to bearing trees.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Fluazifop-P (Fusilade)	A***	Stone Fruit / Directed Spray	Registered in stone fruit for control of grass weeds, including **Annual Ryegrass**. Apply as a directed spray.	NR	A	ALL	-
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Apply as a directed spray.	H:98 G:28	A	ALL	-
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Registered in stone fruit for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Do not allow spray to contact any part of the tree, including the trunk. Do not use under trees that are less than 3 years old.	NR	A	ALL	R3
Haloxyfop (Verdict)	A***	Stone Fruit / Directed Spray or Spot Spray	Registered in stone fruit for control of grass weeds, including **Annual Ryegrass**. Apply as a directed spray.	NR	A	ALL	-
Napropamide (Devrinol) UPL	K**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Apply to weed-free soil of fine tilth. Apply as a directed spray avoiding contact with fruit or foliage. Incorporate with moisture or cultivation within 10 days of treatment.	NR NG	A	ALL	-
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds, including **Annual Ryegrass**. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Annual Ryegrass**. Do not allow spray to contact any part of the tree, including the trunk.	H:1 G:7	A	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Paraquat + Diquat (SpraySeed)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds, including **Annual Ryegrass**. Do not allow spray to contact any part of the tree, including the trunk.	G:1	A	ALL	R3
Pendimethalin (Stomp)	D**	Deciduous Fruits / Directed Spray / Residual Weed Control	Registered in deciduous fruits for control of various grass and broadleaf weeds, including **Annual Ryegrass**. Do not allow spray to contact any part of the tree, including the trunk. Incorporate with at least 5mm of rainfall or spray irrigation as soon as possible but no later than 10 days after treatment.	NR	A	ALL	-
Grass and Broadleaf Weeds **Priority: Low**							
The key to weed management in orchards is maintaining ground cover in the inter-row with grass and mulch.							
2,2-DPA	J**	Apricot / Peach / Established Trees / Residual Weed Control	Registered in apricots and peaches for control of annual and perennial grasses. Apply as a directed application. Apply to established trees only.	7	A	ALL	-
Carfentrazone-Ethyl (Spotlight)	G**	Apricot / Peach / Plum / Directed Spray or Spot Spray	Registered in apricots, peaches and plums for control of various broadleaf weeds. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR	A	ALL	-
Clethodim (Select)	A***	Non-Bearing Fruit Trees	Registered in non-bearing fruit trees for control of annual and perennial grass weeds. Apply after trees have recovered from transplant shock and are showing signs of active growth. Do not apply to bearing trees.	NR	A	ALL	-
Dichlobenil (Casoron) UPL	K**	Apricot / Peach / Plum / Residual Weed Control	Registered in apricots, peaches and plums for control of annual grass and broadleaf weeds. Apply granules to weed-free soil prior to weed emergence. Take care to avoid letting granules lodge against buds. Do not apply within 4 weeks of transplanting.	NR	A	ALL	-
Fluazifop-P (Fusilade)	A***	Stone Fruit / Directed Spray	Registered in stone fruit for control of grass weeds. Apply as a directed spray.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds. Apply as a directed spray.	H:98 G:28	A	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Registered in stone fruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	H:21 G:56	A	ALL	R3
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Registered in stone fruit for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk. Do not use under trees that are less than 3 years old.	NR	A	ALL	R3
Haloxyfop (Verdict)	A***	Stone Fruit / Directed Spray or Spot Spray	Registered in stone fruit for control of grass weeds. Apply as a directed spray.	NR	A	ALL	-
Isoxaben (Gallery) Corteva	O**	Non-Bearing and Bearing Fruit Tree / Residual Weed Control	Registered in fruit trees for control of broadleaf weeds. Apply as a directed spray to weed-free, well prepared soil. Must be activated by at least 12.5mm of rainfall or sprinkler irrigation within 21 days of application.	NR	A	ALL	-
Napropamide (Devrinol) UPL	K**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds. Apply to weed-free soil of fine tilth. Apply as a directed spray avoiding contact with fruit or foliage. Incorporate with moisture or cultivation within 10 days of treatment.	NR NG	A	ALL	-
Norflurazon (Zoliar) AgNova	F**	Stone Fruit / Residual Weed Control	Registered in stone fruit for control of various grass and broadleaf weeds. Apply to bare soil prior to weed emergence. Avoid contact with foliage or fruit. Rainfall or irrigation within 2-3 weeks of application is necessary for activation.	NR	A	ALL	-
Oryzalin	D**	Stone Fruit / Non-Bearing Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds. Apply as a directed spray.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use / Weed	WHP (days)	Availability	States	Regulatory risk
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Registered in stone fruit for control of various grass and broadleaf weeds. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	A	ALL	-
Paraquat (Gramoxone)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	H:1 G:7	A	ALL	R3
Paraquat + Amitrole (Guerrilla)	L** + Q**	Orchards / Directed Spray	Registered in orchards for control of annual weeds. Avoid contact with crop foliage.	H:NR G:1	A	ALL	R3
Paraquat + Diquat (SpraySeed)	L**	Orchards / Directed Spray or Spot Spray	Registered in orchards for control of various annual grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk.	G:1	A	ALL	R3
Pendimethalin (Stomp)	D**	Deciduous Fruits / Directed Spray / Residual Weed Control	Registered in deciduous fruits for control of various grass and broadleaf weeds. Do not allow spray to contact any part of the tree, including the trunk. Incorporate with at least 5mm of rainfall or spray irrigation as soon as possible but no later than 10 days after treatment.	NR	A	ALL	-
Terbacil	C**	Peaches / At Least 3 Years Old / Residual Weed Control	Registered in peaches for control of various grass and broadleaf weeds. Apply to weed-free, well prepared soil. Best results are achieved with incorporation by rainfall or irrigation within 3-4 days of treatment. Do not use under trees that are less than 3 years old.	NR	A	QLD, NSW, VIC, TAS & SA	R3

4.4 Plant Growth Regulators in Summerfruit

4.4.1 Plant Growth Regulator Priorities

Priority
High
Increase fruit firmness and size
Improve fruit quality and storage potential
Improve fruit set
Promote crop evenness
Restriction of vegetative growth
Moderate
Advance and concentration of maturity
Break dormancy

Plant Growth Regulators (PGRs) play an important role in managing summerfruit. The high priority issues have been identified as increasing fruit firmness and size, improving fruit quality and storage potential, improving fruit set, promoting crop evenness and restriction of vegetative growth. Moderate priorities are restriction of advance and concentration of maturity and breaking dormancy.

There are several plant growth regulators available for use in summerfruit. They should always be used with caution, paying particular attention to the condition of the trees, as well as using the correct timing and application rates to achieve the desired effect. If managed correctly, plant growth regulators can assist in managing vegetative growth, improving harvest efficiencies and improving fruit quality and shelf life.

4.4.2 Available and Potential Plant Growth Regulators

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

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

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use	WHP (days)	Availability	States	Regulatory risk
Increase fruit firmness and size **Priority: High**							
Rated as a high priority in VIC and NSW, and a moderate priority in QLD and WA. Increased fruit firmness will improve shelf life or can lead to increased yield though delaying harvest.							
Aminoethoxyvinylglycine (Retain) Sumitomo	Plant Growth Regulator	Stone Fruit	Registered in stone fruit for **increasing fruit firmness and size** and increasing fruit quality and storage potential. Apply as a foliar treatment 7-14 days before harvest.	H:7 G:14	A	ALL	-
Gibberellic Acid	Plant Growth Regulator	Apricots / Nectarines / Peaches	Registered in apricots, nectarines and peaches for reduction of flowering and fruiting (thinning) in the next cropping season. Apply as a single treatment at flower bud initiation stage, generally from early December to late January. If fruit are present, **fruit firmness may be increased**.	NR	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use	WHP (days)	Availability	States	Regulatory risk
Improve fruit quality and storage potential **Priority: High**							
Rated as a high priority in VIC and NSW, and a moderate priority in QLD and WA. PGRs used in crop will optimise fruit quality at harvest and post-harvest treatments will further improve shelf life and fruit storage.							
1-Methylcyclopropene (Smartfresh)	Plant Growth Regulator	Apricots / Nectarines / Plums	Registered in apricots, nectarines and plums as a post-harvest treatment for **improved quality after shipping, storage and handling**. Apply as soon after harvest as possible using a Smartfresh delivery system in an enclosed (gas-tight) area.	NR	A	ALL	-
Aminoethoxyvinylglycine (Retain) Sumitomo	Plant Growth Regulator	Stone Fruit	Registered in stone fruit for increasing fruit firmness and size and **increasing fruit quality and storage potential**. Apply as a foliar treatment 7-14 days before harvest.	H:7 G:14	A	ALL	-
Gibberellic Acid	Plant Growth Regulator	Apricots / Nectarines / Peaches	Registered in apricots, nectarines and peaches for reduction of flowering and fruiting (thinning) in the next cropping season. Apply as a single treatment at flower bud initiation stage, generally from early December to late January. If fruit are present, fruit firmness may be increased.	NR	A	ALL	-
Improve fruit set **Priority: High**							
Rated as a high priority in VIC and NSW, and a moderate priority in QLD and WA. Strategic use of PGRs can lead to improved fruit set and should always be used in conjunction with the maintenance of good tree health through management of nutrition, irrigation and pest and disease control.							
Aminoethoxyvinylglycine (Retain) Sumitomo	Plant Growth Regulator	Stone Fruit	Registered in stone fruit for increasing fruit firmness and size and increasing fruit quality and storage potential. Enhanced flower life may also **improve fruit set** and yield. Apply as a foliar treatment 7-14 days before harvest.	H:7 G:14	A	ALL	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use	WHP (days)	Availability	States	Regulatory risk
Promote crop evenness **Priority: High**							
Rated as a high priority in VIC and NSW, a moderate priority in WA, and a low priority in QLD. The use of PGRs can be an effective tool to reduce the impact of biennial bearing and to promote more even harvest within seasons.							
Aminoethoxyvinylglycine (Retain) Sumitomo	Plant Growth Regulator	Stone Fruit	Registered in stone fruit for increasing fruit firmness and size and increasing fruit quality and storage potential. Can delay maturity by about 3 days which will either shift the entire harvest period or will alter the amount of fruit harvested at each pick.	H:7 G:14	A	ALL	-
Gibberellic Acid	Plant Growth Regulator	Apricots / Nectarines / Peaches	Registered in apricots, nectarines and peaches for reduction of flowering and fruiting (thinning) in the next cropping season. Apply as a single treatment at flower bud initiation stage, generally from early December to late January.	NR	A	ALL	-
Restriction of vegetative growth **Priority: High**							
Rated as a high priority in VIC and WA, and a moderate priority in NSW and QLD. The restriction of vegetative growth is desirable in some situations where it can reduce the need for mechanical pruning and reduces rank growth that is not required for the production of yield in a given season.							
Paclobutrazol	Plant Growth Regulator	Apricot / Nectarine / Peach / Plum	Registered in apricot, nectarine, peach and plum to **reduce vegetative growth**.	NR	A	ALL	-
Advance and concentration of maturity **Priority: Moderate**							
Rated as a moderate priority in VIC, NSW and WA, and a low priority in QLD. Advancing and concentrating maturity can be an effective method to improve harvest efficiencies and gain possible market advantages through earlier harvest.							
Ammonium Thiosulphate	Plant Growth Regulator	Peaches / Plums	Registered in peaches and plums for desiccation of blossoms and reduction of fruit set.	NR	A	WA, SA, VIC & NSW	-

Active ingredient (Trade Name)	Chemical Group	Crop/ Situation	Comment / Use	WHP (days)	Availability	States	Regulatory risk
Ethephon	Plant Growth Regulator	Peaches	Registered in peaches for **advancement and concentration of maturity**.	42	A	VIC	-
Break dormancy **Priority: Moderate**							
Rated as a moderate priority in VIC, QLD and WA, and a low priority in NSW. Breaking dormancy is an effective strategy to advance maturity and bring harvest in earlier.							
Cyanamide (Dormex) Nufarm	Plant Growth Regulator	Plums	Registered in plums for **regulation of bud dormancy**.	NR	A	ALL	-

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 MRLs	www.legislation.gov.au/Details/F2020C00050
APVMA Permit search	https://productsearch.apvma.gov.au/permits
APVMA Product search	https://productsearch.apvma.gov.au/products
Codex MRL database	http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/pesticides/en/
Cotton Pest Management Guide 2020-21	https://www.cottoninfo.com.au/publications/cotton-pest-management-guide
CropLife Australia	https://www.croplife.org.au/
Growcom – Infopest Database	www.infopest.com.au
Hort Innovation	www.horticulture.com.au

5.2 Abbreviations and Definitions:

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

5.3 Acknowledgements:

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 summerfruit
Appendix 2. Products available for control of insects, mites and other pests in summerfruit
Appendix 3. Products available for weed control in summerfruit
Appendix 4. Plant Growth Regulators available in summerfruit
Appendix 5. Current permits for use in summerfruit
Appendix 6. Summerfruit (Stone Fruits) Maximum Residue Limits (MRLs)
Appendix 7. Summerfruit Agrichemical Regulatory Risk Assessment

Appendix 1. Products available for disease control in summerfruit

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Agrobacterium radiobacter var. *radiobacter* (NoGall) BASF	-	Stone Fruit	Crown Gall	ALL	NR	-
BLAD (Problad Plus)	BM 01	Stonefruit	Suppression Of: Brown Rot / Blossom Blight (*Monilinia* spp.)	ALL	NR	-
Bromo Chloro Dimethyl Hydantoin (BCDMH)	-	Sanitiser / Post-Harvest Treatment	External Rot Causing Organisms	ALL	NR	-
Captan	M4	Stone Fruit / Except Apricots	Blossom Blight (*Sclerotinia laxa*) Brown Rot (*Sclerotinia fructicola*)	ALL	NR	-
Chlorine		Sanitiser / Post-Harvest Treatment	Bacteria and Fungi	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Chlorothalonil (Bravo)	M5	Apricots	Brown Rot - Fruit (*Monilinia fructicola*) Blossom Blight (*Monilinia laxa*) Stone Fruit Rust (*Tranzchelia discolor*) Shot-Hole (*Stigmina carpophila*) Freckle (*Venturia carpophila*)	NSW, VIC, TAS, SA & WA	7	R3
		Nectarines	Shot-Hole (*Stigmina carpophila*) Brown Rot - Fruit (*Monilinia fructicola*) Blossom Blight (*Monilinia laxa*)			
		Peaches	Brown Rot - Fruit (*Monilinia fructicola*) Blossom Blight (*Monilinia laxa*) Shot-Hole (*Stigmina carpophila*) Stone Fruit Rust (*Tranzchelia discolor*) Leaf Curl (*Taphrina deformans*)	ALL		
		Plums	Brown Rot - Fruit (*Monilinia fructicola*) Blossom Blight (*Monilinia laxa*) Stone Fruit Rust (*Tranzchelia discolor*) Shot-Hole (*Stigmina carpophila*)			
Copper (Cu) present as Copper Ammonium Acetate	M1	Apricots	Shot-Hole (*Wilsonomyces carpophilus*) Freckle (*Venturia carpophila*) Bacterial Gummosis (*Pseudomonas syringae*)	ALL	1	-
		Nectarines / Peaches	Shot-Hole (*Wilsonomyces carpophilus*) Leaf Curl (*Taphrina deformans*) Phytophthora Stem Canker			
		Plums	Shot-Hole (*Wilsonomyces carpophilus*) Phytophthora Stem Canker			

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Copper (Cu) present as Copper Octanoate	M1	Nectarine / Peach	Leaf Curl	ALL	1	-
Copper (Cu) present as Copper Oxychloride	M1	Apricots	Freckle Shot Hole	ALL		
			Bacterial Gummosis	QLD, VIC, TAS, SA & WA		
		Peaches / Nectarines / Plums	Shot Hole	ALL		
		Peaches / Nectarines	Leaf Curl			
		Stone Fruit	Blossom Blight Freckle Rust Leaf Curl Shot Hole	NSW, VIC, TAS, SA & WA		
			Bacterial Spot Bacterial Canker Leaf Curl Shot Hole	QLD		
Copper (Cu) present as Cupric Hydroxide	M1	Apricots	Shothole (*Stigmina carpophila*) Freckle (*Venturia carpophila*)	ALL	1	-
			Bacterial Gummosis (*Pseudomonas syringae*)	VIC, TAS, SA, WA & NSW		
		Nectarines / Peaches	Shothole Leaf Curl (*Taphrina deformans*)	ALL		
		Plums	Shothole			

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Copper (Cu) present as Cuprous Oxide	M1	Nectarines / Peaches / Plums	Phytophthora Stem Canker	ALL	1	-
		Apricots	Shothole Freckle	ALL		
			Bacterial Gummosis	WA, SA, TAS, VIC & NSW		
		Nectarines / Peaches	Leaf Curl Shothole	ALL		
		Plums	Shothole			
Copper (Cu) present as Tribasic Copper Sulphate	M1	Nectarines / Peaches	Leaf Curl (*Taphrina deformans*)	ALL	1	-
		Apricots	Shothole (*Stigmina carpophila*) Freckle (*Venturia carpophila*) Bacterial Gummosis (*Pseudomonas syringae*)			
		Nectarines / Peaches / Plums	Phytophthora Stem Canker			
		Peaches / Nectarines / Plums	Shothole (*Stigmina carpophila*)			
Cyprodinil (Chorus) Syngenta	9	Apricots / Nectarines / Peaches / Plums	Blossom Blight (*Monilinia laxa*) Brown Rot (*Monilinia fructicola*)	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Dithianon (Delan) BASF	M9	Canning Peaches	Brown Rot	NSW, TAS, VIC, SA & QLD	1	R3
		Apricots / Nectarines / Peaches / Plums			21	
		Apricots / Nectarines / Peaches	Freckle	ALL		
		Nectarines / Peaches / Plums	Leaf Curl Rust			
		Stone Fruit	Shothole Scab / Peach Blight			
Dodine (Syllit) Campbell	U12	Nectarines / Peaches	Peach Leaf Curl (*Taphrina deformans*) Blossom Blight (*Monilinia* spp.)	ALL	H:NR NG	-
Fludioxonil (Scholar) Syngenta	12	Stone Fruit	Brown Rot (*Monilinia* spp.) Grey Mould (*Botrytis cinerea*) Rhizopus Rot (*Rhizopus* spp.)	ALL	NR	R3
Fluopyram + Trifloxystrobin (Luna Sensation) Bayer	7+11	Stone Fruit	Blossom Blight Shot Hole Brown Rot	ALL	1	-
Fosetyl-Aluminium (Aliette) Bayer	33	Peaches	Collar Rot (*Phytophthora cactorum*)	NSW, VIC, TAS, SA & WA	NR	-
Fosetyl-Aluminium (Aliette) Bayer PER85273	33	Apricot / Peach / Nectarine / Plum	Phytophthora Trunk/Collar Rot (*Phytophthora cactorum*, *Phytophthora cinnamomi* and *Phytophthora cambivora*)	ALL	NR	-
Iodine	M	Stone Fruit / Post Harvest Dip	Bacteria & Fungi	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Iodocarb + Cyproconazole	28+3	Apricot / Peach / Plum / Pruning Wound Dressing	Silverleaf Fungus (Chondrostereum purpureum)	ACT, NSW, NT, SA, QLD, TAS & VIC	NR	R3
Iprodione	2	Stone Fruit	Blossom Blight (Monilinia fructicola, *Monilinia laxa*) Brown Rot (*Monilinia fructicola*, *Monilinia laxa*)	QLD, NSW, VIC, TAS, SA & WA	NR	R2
		Apricot / Nectarine / Peach / Plum / Post-Harvest Dip	Brown Rot (*Monilinia fructicola*, *Monilinia laxa*) Suppression of: Transit Rot (*Rhizopus* spp.)	QLD, NSW, VIC, TAS, SA & WA		
Mancozeb	M3	Stone Fruit / Except Wilson Plums	Brown Rot Freckle Rust Shot Hole	ALL	14	R2
Mandestrobin (Intuity) Sumitomo	11	Stone Fruit	Blossom Blight (*Monilinia laxa*) Brown Rot (*Monilinia fructicola*)	ALL	H:7 G:7	-
Metalaxyl-M (Ridomil Gold 25G) Syngenta	4	Peaches / Five Years or Older	Phytophthora Trunk Rot (*Phytophthora cactorum)*	VIC, SA	42	-
			Phytophthora Trunk Rot (*Phytophthora cinnamomi*)	QLD		
Metiram (Polyram) BASF	M3	Stone Fruit	Rust Shothole	ALL	14	R2
Penthiopyrad (Fontelis) Corteva	7	Stone Fruit	Brown Rot / Blossom Blight (*Monilinia* spp.) Scab / Freckle (*Cladosporium carpophilum*, *Venturia carpophila*)	ALL	NR	-
Peroxyacetic Acid	M	Sanitiser / Post-Harvest Treatment	Bacteria	ALL	NR	-

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Potassium Silicate + Potassium Bicarbonate (EcoCarb Plus)	M2	Nectarines	Brown Rot (*Monilinia fructicola*, *M. laxa*)	ALL	NR	-
Procymidone (Sumisclex)	2	Stone Fruit	Blossom Blight (*Monilinia laxa*)	VIC, NSW, SA, TAS & QLD	9	R2
Propiconazole (Tilt)	3	Apricots	Prune Rust (*Tranzschelia discolor*)	SA	1	R3
		Plums / Prune Production Only		NSW, SA, VIC & WA		
		Stone Fruit	Brown Rot / Blossom Blight (Blossom Phase) (*Monilinia laxa*)	VIC, WA & TAS		
			Brown Rot (Blossom Phase) (*Monilinia fructicola*)	NSW, SA, QLD, TAS & WA		
			Brown Rot (Fruit Phase) (*Monilinia fructicola*)	QLD, NSW, TAS, VIC, SA & WA		
Sulphur	M2	Stone Fruit / Except Apricots	Rust	NSW, VIC, SA, WA & TAS	NR	-
			Brown Rot	NSW, VIC, SA & TAS		
Thiram	M3	Stone Fruit	Brown Rot (Fruit) (*Monilinia fructicola*) Freckle (Apricot) (*Venturia carpophila*) Shot-Hole (*Stigmina carpophila*)	ALL	7	R2
Triadimenol	3	Non-Bearing Fruit Trees	Myrtle Rust	ALL	NG	R3

Active Ingredient (Trade Name)	Chemical group	Situation	Diseases / Comments	States	WHP Days	Regulatory risk
Triforine	3	Apricot / Nectarine / Peach / Plum	Blossom Blight (*Monilinia* spp.) Brown Rot (*Monilinia* spp.)	QLD, NSW, ACT, VIC, TAS, SA & WA	NR	R3
		Apricot / Nectarine / Peach / Plum / Post-Harvest Dip	Brown Rot (*Monilinia fructicola*, *Monilinia laxa*)			
Zineb	M3	Nectarine / Peach / Plum	Rust	ALL	14	R2
Ziram	M3	Stone Fruit / Except Apricots	Blossom Blight Brown Rot Shot Hole Freckle Leaf Curl	ALL	7	R2

Appendix 2. Products available for control of insects, mites and other pests in summerfruit

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
3-Methyl-1-Butanol | 2-Methyl-1-Butanol | Ethyl Acetate | Acetaldehyde | Sec Butanol | Ethanol | Carpophilus Aggregation Pheromones (Carpophilus Catcha Trapping System)		Peaches / Nectarines / Plums / Apricots / Pheromone Traps	Carpophilus Beetles	ALL	NR	-
4-(P-Acetoxyphenyl) -2-Butanone + Maldison	1B	Fruit Trees / Fruit Fly Trap	Queensland Fruit Fly (*Bactrocera tryoni*)	ALL	NR	R3
4-(P-Acetoxyphenyl) -2-Butanone + Fipronil	2B	Fruit Trees / Fruit Fly Trap	Queensland Fruit Fly (*Bactrocera tryoni*) Lesser Queensland Fruit Fly (*Bactrocera neohumeralis*)	ALL	NR	R3
Acetamiprid + Novaluron (Cormoran) Adama	4A+15	Stone Fruit	Black Peach Aphid (*Brachycaudus persicae*) Green Peach Aphid (*Myzus persicae*) Light Brown Apple Moth (*Epiphyas postvittana*) Oriental Fruit Moth (*Grapholita molesta*) San Jose Scale (*Quadraspidiotus perniciosus*) Suppression Of: Mediterranean Fruit Fly (*Ceratitis capitata*) Queensland Fruit Fly (*Bactrocera tryoni*)	ALL	7	R2
Acequinocyl (Kanemite) UPL	20B	Stone Fruit	Two Spotted Mite (*Tetranychus urticae*)	ALL	H:14 NG	-
Alpha-Cypermethrin	3A	Stone Fruit	Apple Weevil (*Otiorhynchus cribricollis*) Garden Weevil (*Phlyctinus callosus*)	WA	14	-
Alpha-Cypermethrin PER14875	3A	Stone Fruit (except Cherries)	Fruit Flies	ALL	H:7 NG	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Bacillus thuringiensis subsp Kurstaki Strain HD-1	11	Fruit	Armyworm (*Spodoptera* spp.) Cotton Bollworm (*Helicoverpa armigera*) Native Budworm (*Helicoverpa punctigera*) Cabbage Moth (*Plutella xylostella*) Cabbage White Butterfly (*Pieris rapae*) Loopers Light Brown Apple Moth (*Epiphyas postvittana*) Vine Moth (*Agarista agricola*)	ALL	NR	-
Bifenazate (Acramite) UPL	20	Apricots / Nectarines / Peaches / Plums	Two Spotted Mite (*Tetranychus urticae*) European Red Mite (*Panonychus ulmi*) Bryobia Mite (*Bryobia rubriculus*)	ALL	H:3 G:28	-
Bifenthrin (Talstar)	3A	Apricots / Nectarines / Peaches / Plums	Carpophilus Beetles (*Carpophilus* spp.)	ALL	1	R3
Carbaryl (Bugmaster)	1A	Apricot / Nectarine / Peach / Plum	Green Treehopper Light Brown Apple Moth Oriental fruit Moth Pear and Cherry Slug Red Shouldered Leaf Beetle Orange Fruit Borer Heliothis (budworms) Wingless Grasshopper Fruit-Tree Borer European Earwig	ALL	35	R3
Chlorantraniliprole (Altacor) FMC	28	Stone Fruit	Oriental Fruit Moth (*Grapholita molesta*) Light Brown Apple Moth (*Epiphyas postvittana*)	ALL	H:14 NG	-
Chlorantraniliprole (Altacor) FMC PER89259	28	Stone Fruit	Fall Armyworm (*Spodoptera frugiperda*)	ALL (excl. VIC)	H:14 NG	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Chlorfenapyr (Secure) BASF	13	Peach	Two Spotted Mite	ALL	H:7 NG	-
Chlorpyrifos (Lorsban)	1B	Stone Fruit	European Earwig	NSW, WA & ACT	14	R1
			San Jose Scale	QLD, WA, NSW & ACT		
Clofentezine (Apollo) Adama	10A	Stone Fruit	Two Spotted Mite (*Tetranychus urticae*) European Red Mite (*Panonychus ulmi*) Bryobia Mite (*Bryobis rubrioculus*)	ALL	21	-
Clothianidin (Samurai) Sumitomo	4A	Stone Fruit	Queensland Fruit Fly Mediterranean Fruit Fly	ALL	H:7 NG	R2
		Peaches / Nectarines	Oriental Fruit Moth Green Peach Aphid			
Clothianidin (Samurai) Sumitomo PER13527	4A	Apricot	Oriental Fruit Moth (*Grapholita molesta*)	ALL (excl. VIC)	H:21 NG	R2
Cydia pomonella Granulosis Virus V22 (Grandex Biological Insecticide)		Stone Fruit	Codling Moth (*Cydia pomonella*) Oriental Fruit Moth (*Grapholita molesta*)	ALL	NR	-
Diazinon	1B	Stone Fruit / Dormant	San Jose Scale	ACT, NSW, WA, SA & VIC	14	R3
		Stone Fruit	San Jose Scale			
			Green Peach Aphid Black Cherry Aphid	ACT, NSW, SA & WA		
Dimethoate PER13859	1B	Fruit Fly Host Crops / Non-Bearing Only	Fruit Fly	ALL	NR	R1

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Dodecadien-1-ol, Dodecanol, Tetradecanol, Dodecenyl Acetate (Isomate)	-	Peaches / Nectarines / Plums / Apricots / Insect Confusion Agent	Oriental Fruit Moth (*Cydia molesta*) Codling Moth (*Cydia pomonella*)	SA, VIC, NSW, QLD & TAS	NR	-
Ethyl Formate	-	Apricots / Post-Harvest Fumigant	New Zealand Flower Thrips (*Thrips obscuratus*)	ALL	NR	-
Etofenprox (Trebon) Sipcam	3A	Stone Fruit	Queensland Fruit Fly Mediterranean Fruit Fly	ALL	H:3 NG	-
Etoxazole (Paramite) Sumitomo	10B	Stone Fruit	Two-Spotted Mite (*Tetranychus urticae*) European Red Mite (*Panonychus ulmi*) Bryobia Mite (*Bryobia rubrioculus*)	ALL	H:7 NG	R3
Fenbutatin Oxide (Torque) BASF	12A	Peaches / Nectarines	Two Spotted Mite (*Tetranychus urticae*) European Red Mite (*Panonychus ulmi*) Bryobia Mite (*Bryobia rubrioculus*)	SA, WA	14	R2
Fipronil (Amulet) BASF	2B	Stone Fruit	Queensland Fruit Fly (*Bactrocera tryoni*)	ALL	NR	R3
Fipronil PER86492	2B	Orchards / Bait	European Wasp (*Vespula germanica*) Common Wasp (*Vespula vulgaris*)	ALL	NR	R3
Garlic + Chilli + Pyrethrins + Piperonyl Butoxide	3A	Fruit Tree	Suitable for organic growers. Broad spectrum activity including ants, aphids, caterpillars, earwigs, whitefly, thrips and leafhopper.	ALL	1	-
Hexythiazox (Calibre) Nufarm	10A	Stone Fruit	Two Spotted Mite European Red Mite	ALL	3	-
Imidacloprid (Confidor)	4A	Stone Fruit	Green Peach Aphid Black Peach Aphid	ALL	H:21 NG	R2

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Indoxacarb (Avatar) FMC	22A	Apricot / Nectarine / Peach / Plum	Heliothis (*Helicoverpa* spp.) Oriental Fruit Moth (*Grapholita molesta*) Light Brown Apple Moth (*Epiphyas postvittana*) Apple Weevil (*Otiorhynchus cribricollis*) Fuller's Rose Weevil (*Asynonychus cervinus*) Garden Weevil (*Phlyctinus callosus*) Wingless Grasshopper (*Phaulacridium vittatum*)	ALL	H:7 NG	R3
Indoxacarb (Avatar) FMC PER89278	22A	Apricot / Nectarine / Peach / Plum	Fall Armyworm (*Spodoptera frugiperda*)	ALL (excl. VIC)	H:7 NG	R3
Liquid Paraffin (Heavy Paraffinic Dormant Spray Oil)	-	Stone Fruit	San Jose Scale	VIC, SA, WA, NSW, ACT & QLD	1	-
			Bryobia Mites European Red Mites	VIC, SA, TAS, NSW, ACT & QLD		
			Bryobia Mites	WA		
			Oystershell Scale Prune Scale	TAS		
Maldison (Fyfanon)	1B	Stone Fruit	Black Peach Aphid Green Peach Aphid European Red Mite Oriental Fruit Moth	NSW, ACT, VIC, TAS, SA & WA	3	R3
Maldison (Fyfanon)	1B	Fruit Tree / Fruit Fly Bait Spray	Fruit Flies	ALL	3	R3
Methiocarb (Mesurol) Bayer	1A	Stone Fruit	Slugs Snails	ALL	H:7 G:28	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Methomyl (Lannate)	1A	Stone Fruit	Thrips Green Peach Aphid (*Myzus persicae*) Budworm (*Helicoverpa* spp.) Monolepta Beetle	ALL	1	R2
Methomyl (Lannate) PER89293	1A	Stone Fruit	Fall Armyworm (*Spodoptera frugiperda*)	ALL	1	R2
Milbemectin (Milbeknock)	6	Stone Fruit	Two Spotted Mite (*Tetranychus urticae*)	ALL	H:14 NG	-
Paraffinic Oil	-	Apricots / Dormant	San Jose Scale	NSW, ACT, VIC, SA, WA & QLD	NR	-
		Apricots / Summer or Post-Harvest	Mites Scale	NSW, ACT, VIC, SA, WA & TAS		
		Peaches / Nectarines / Dormant or Delayed Dormant	Aphids (Eggs) Mites (Eggs)	NSW, ACT, VIC, SA, WA & TAS		
		Peaches / Nectarines / Dormant	San Jose Scale	NSW, ACT, VIC, SA & WA		
		Peaches / Nectarines / Summer or Post-Harvest	Mites Scale			
		Plums / Dormant	Aphids (Eggs) Scale Mites (Eggs)	NSW, ACT, SA, WA & TAS		
		Plums / Summer or Post-Harvest	Mites Scale	NSW, ACT, VIC, SA, WA & TAS		

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Pirimicarb (Pirimor)	1A	Stone Fruit	Green Peach Aphid Black Peach Aphid Cherry Aphid		2	R3
Potassium Salts of Fatty Acid (Natrasoap)	-	Fruit Trees	Aphids Thrips Mealybug Two-Spotted Mite Spider Mite Whitefly	ALL	NR	-
Propargite (Omite)	12C	Stone Fruit	Two Spotted Mite	ALL	7	R3
			European Red Mite	QLD, WA		
Pymetrozine (Chess) Syngenta	9B	Stone Fruit	Black Peach Aphid (*Brachycaudus persicae*) Green Peach Aphid (*Myzus persicae*)	ALL	28	R3
Pyrethrin (Pyganic) Sumitomo	3A	Stone Fruit	Fruit Fly Rutherglen Bug Spiders	ALL	NR	-
Pyriproxyfen (Distance Ant Bait) Sumitomo	7C	Tropical Fruit Plantation / Ant Bait	Invasive and Nuisance Ants	ALL	NR	-
Spinetoram (Delegate) Corteva	5	Stone Fruit	Pear and Cherry Slug Light Brown Apple Moth Oriental Fruit Moth Western Flower Thrips	ALL	H:3 NG	-
Spinetoram (Delegate) Corteva PER89241	5	Stone Fruit	Fall Armyworm (*Spodoptera frugiperda*)	ALL (excl. VIC)	H:3 NG	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Spinetoram (Delegate) Corteva PER12590	5	Stone Fruit	Suppression Of: Queensland Fruit Fly (*Bactrocera tryoni*) Lesser Queensland Fruit Fly (*Bactrocera neohumeralis*)	ACT, NSW, QLD & NT	3	-
			Mediterranean Fruit Fly (*Ceritatis capitata*)	WA		
			Where an incursion occurs for a fruit fly species not recorded as endemic within a state/territory	ALL (excl. VIC)		
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	-
Spinosad (Entrust Organic) Corteva	5	Stone Fruit / Except Peaches	Cherry Slug Light Brown Apple Moth Western Flower Thrips Oriental Fruit Moth	ALL	H:3 G:14	-
		Peaches			H:7 G:14	
Spinosad (Entrust Organic) Corteva PER89870	5	Stone Fruit / Except Peaches	Fall Armyworm (*Spodoptera frugiperda*)	ALL (excl. VIC)	H:3 G:14	-
		Peaches			H:7 G:14	
Spirotetramat (Movento) Bayer	23	Stone Fruit	Tuber Mealybug (*Pseudococcus virburni*) Long Tailed Mealybug (*Pseudococcus longispinus*) Black Cherry Aphid (*Myzus cerasi*) Black Peach Aphid (*Brachycaudus persicae*) Sane Jose Scale (*Quadraspidiotus perniciosus*)	ALL	21	-
Spirotetramat (Movento) Bayer PER84804	23	Stone Fruit	Western Flower Thrips (*Frankliniella occidentalis*)	ALL (excl. VIC)	21	-

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Sulfoxaflor (Transform) Corteva	4C	Stone Fruit	Apple Dimpling Bug Cherry Aphid Green Peach Aphid Black Peach Aphid	ALL	7	-
Tau-Fluvalinate (Mavrik)	3A	Nectarines / Peaches / Plums	Plague Thrips (*Thrips imaginis*)	QLD, NSW, VIC, SA & WA	NR	-
Tebufenpyrad (Pyranica) Sipcam	21A	Peaches	Two Spotted Mite (*Tetranychus urticae*) European Red Mite (*Panonychus ulmi*)	QLD, NSW, VIC, TAS, SA & WA	H:14 NG	-
Tetraniliprole (Vayego) Bayer	28	Stone Fruit	Apple Weevil (*Otiorhynchus cribricollis*) Fuller's Rose Weevil (*Asynonychus cervinus*) Garden Weevil (*Phlyctinus callosus*) Oriental Fruit Moth (*Grapholita molesta*) Mediterranean Fruit Fly (*Ceratitis capitata*) Suppression of: Dried Fruit Beetle (*Carpophilus* spp.)	ALL	H:3 NG	-
Thiacloprid (Calypso) Bayer	4A	Stone Fruit	Oriental Fruit Moth	ALL	H:14 NG	R2
Thiacloprid (Calypso) Bayer PER14562	4A	Stone Fruit / Excluding Peaches	Mediterranean Fruit Fly (*Ceratitis capitata*)	WA	H:14 NG	R2
		Peaches			H:21 NG	
Trichlorfon (Lepidex)	1B	Stone Fruit	Queensland Fruit Fly	QLD, NSW, VIC, WA & NT	2	R2
			Rutherglen Bug	NSW, VIC, TAS, SA & WA		

Active Ingredient (Trade Name)	Chemical group	Situation	Pests / Comments	States	WHP Days	Regulatory risk
Trichlorfon (Lepidex) PER14683	1B	Stone Fruit	Fruit Flies	ALL (excl. VIC)	7	R2

Appendix 3. Products available for weed control in summerfruit

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
2,2-DPA	J**	Apricot / Peach / Established Trees / Residual Weed Control	Annual and Perennial Grasses	7	ALL	-
Carfentrazone-Ethyl (Spotlight)	G**	Apricot / Peach / Plum / Directed Spray or Spot Spray	Paterson's Curse (*Echium plantagineum*), Sub. Clover (*Trifolium subterraneum*), Australian Crassula (*Crassula* spp.) Chickweed (*Stellaria media*), Small Flowered Mallow (*Malva parviflora*) If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR	ALL	-
Clethodim (Select)	A***	Non-Bearing Fruit Tree	Annual Ryegrass (*Lolium rigidum*), Annual Phalaris (*Phalaris minor*), Barley Grass (*Hordeum leporinum*), Barnyard Grass (*Echinochloa* spp.), Blown Grass (*Agrostis avenacea*), Brome Grass (*Bromus diandrus*), Crowsfoot Grass (*Eleusine indica*), Feathertop Rhodes Grass (*Chloris virgata*), Liverseed Grass (*Urochloa panicoides*), Paradoxa Grass (*Phalaris paradoxa*), Red Sprangletop Grass (*Leptochloa filiformis*), Seedling Johnson Grass (*Sorghum halepense*), Summer Grass (*Digitaria* spp.), Volunteer Sorghum (*Sorghum* spp.), Volunteer Wheat (*Triticum aestivum*), Volunteer Oats (*Avena sativa*), Volunteer Barley (*Hordeum vulgare*), Winter Grass (*Poa annua*) Suppression of: Silver Grass (*Vulpia bromoides*) (not QLD, WA)	NR	ALL	R3
Dichlobenil (Casoron) UPL	K**	Apricot / Peach / Plum / Residual Weed Control	Annual Grasses and Broadleaf Weeds	NR	ALL	-

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Fluazifop-P (Fusilade)	A***	Stone Fruit / Directed Spray or Shielded Spray	Annual Ryegrass, Barley Grass, Barnyard Grass, Brome Grasses, Crowsfoot Grass, Johnson Grass, Liverseed Grass, Prairie Grass, Summer Grass (Crabgrass), Wild Oats, Innocent Weed, Stinkgrass, Pigeon Grass and Foxtail (*Setaria* spp.) seedlings. Established plants of: Bent Grass, Couch Grass, English Couch (Rope Twitch), Water Couch, Johnson Grass, Kikuyu Grass, Paspalum	NR	ALL	-
Flumioxazin (Chateau) Sumitomo	G**	Stone Fruit / Directed Spray / Residual Weed Control	Annual Ryegrass (*Lolium rigidum*), Barnyard Grass (*Echinochloa colona*), Blackberry Nightshade (Solanum nigrum), Bluetop (*Ageratum houstonianum*), Capeweed (*Crassula colorata*), Creeping Speedwell (*Veronica persica*), Crowsfoot (*Eleusine indica*), Dwarf Nettle or Stinging Nettle (*Urtica urens*), Fat Hen (*Chenopodium album*), Feathertop Rhodes Grass (*Chloris virgata*), Fleabane (*Conyza bonariensis*), Green Summer Grass (*Brachiaria subquadripara*), Hog Weed (*Polygonum aviculare*), Marshmallow (*Malva parviflora*), Milk Thistle (*Sonchus oleraceus*), Pigweed (*Portulaca oleracea*), Small Flowered Mallow (*Modiola caroliniana*), Squirreltail Fescue (*Vulpia bromoides*), Summer Grass (*Digitaria ciliaris*), Toadrush (*Juncus bufonius*), Wild Mustard (*Sinapis arvensis*), Wild Radish (*Raphanus raphanistrum*), Wild Rose (*Cleome aculeate*), Wild Turnip (*Brassica tournefortii*)	H:98 G:28	ALL	-
Glufosinate (Basta)	N**	Stone Fruit / Directed or Shielded Spray	Do not allow spray to contact any part of the tree, including the trunk. Grass and broadleaf weeds.	H:21 G:56	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Glyphosate (Roundup)	M**	Stone Fruit / Over 3 Years Old / Directed Spray, Shielded Spray or Wick Wiper	Do not allow spray to contact any part of the tree, including the trunk. Grass and broadleaf weeds.	NR	ALL	R3
Haloxyfop (Verdict)	A***	Stone Fruit / Directed Spray	Couch, Rhodes Grass, Slender Rats Tail Grass, Buffel Grass, Green Panic, Johnson Grass, Kikuyu, Paspalum spp., Setaria spp., Annual Ryegrass, Barley Grass, Barnyard Grass, Brome Grass, Crowsfoot Grass, Lesser Canary Grass, Liverseed Grass, Mossman River Grass, Paradoxa Grass, Summer Grass, Volunteer Cereals, Wild Oats	NR	ALL	-
Isoxaben (Gallery) Corteva	O**	Bearing and Non-Bearing Fruit Tree / Residual Weed Control	Broadleaf Weeds.	NR	ALL	-
Napropamide (Devrinol)	K**	Stone Fruit / Residual Weed Control	Annual Ryegrass, Barnyard Grass, Crowsfoot Grass, Innocent Weed, Liverseed Grass, Pigweed, Potato Weed, Redshank, Sowthistle, Stinkgrass, Summer Grass, Winter Grass	NR NG	ALL	-

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Norflurazon (Zoliar) AgNova	F**	Stone Fruit	Annual Ryegrass, Barley Grass, Blackberry Nightshade, Brachiaria (Green Summer Grass), Caltrop, Capeweed, Chickweed, Common Sowthistle, Dandelion, Curled Dock, False Caper, Fat Hen, Indian Hedge Mustard, Innocent Weed, Medic, Hedge Mustards, Paspalum, Plantain Seedlings, Pigweed, Prairie Grass, Prickly Lettuce, Great Brome, Salvation Jane, Scarlet Pimpernel, Shepherd's Purse, Silver Grass, Skeleton Weed, Sorrel, Soursob, Stinkgrass, Stinking Roger, Subterranean Clover, Summer Grass (Crabgrass), Spiny Emex, Variegated Thistle, Wild Oats, Wild Radish, Wild Turnip, Winter Grass, Wireweed, Witch Grass, Yellow Weed, Yorkshire Fog Grass, Couch Grass, Johnson Grass, Barnyard Grass, Clammy Goosefoot, Cobbler's Pegs, Green Pigeon Grass, Redroot Amaranth	NR	ALL	-
Oryzalin	D**	Stone Fruit / Residual Weed Control	Barnyard Grass, Guinea Grass, Love Grass, Paradoxa Grass, Pigeon Grass, Spiny Burr Grass, Summer Grass, Deadnettle, Fathen Fumitory, Pigweed, Sowthistle, Wireweed, Blackberry Nightshade, Caltrop, Paddymelon, Silverleaf Nightshade.	NR	ALL	-
Oxyfluorfen (Goal)	G**	Stone Fruit / Directed Spray	Grass and broadleaf weeds. If weeds are already present, use as a spike in a mixture with glyphosate or paraquat.	NR NG	ALL	-
Paraquat (Gramoxone)	L**	Orchards / Directed Spray or Spot Spray	Annual Grass and broadleaf weeds	H:1 G:7	ALL	R3

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use / Weed	WHP (days)	States	Regulatory risk
Paraquat + Amitrole (Guerrilla)	L** + Q**	Orchards / Directed Spray	Annual Weeds Capeweed or *Erodium* spp.	H:NR G:1	QLD, VIC, SA, WA, TAS and NT	R3
			Annual Weeds Fat Hen Pigweed		NSW	
			Flaxleaf Fleabane		ALL	
Paraquat + Diquat (SpraySeed)	L**	Orchards / Directed Spray	Grass and Broadleaf Weeds	G:1	ALL	R3
Pendimethalin (Stomp)	D**	Deciduous Fruits / Directed Spray / Residual Weed Control	Do not allow spray to contact any part of the tree, including the trunk. Grass and broadleaf weeds.	NR	ALL	-
Terbacil	C**	Peaches / At Least 3 Years Old	Amaranthus, Barley Grass, Barnyard Grass, Bathurst Burr, Brome Grasses, Capeweed, Fat Hen, Innocent Weed, Milk Thistle, Paterson's Curse, Pigweed, Shepherd's Purse, Spiny Emex, Whorled Pigeon Grass, Wild Lettuce, Wild Oats, Wild radish, Wild Turnip, Couch Grass, Kikuyu, Johnson Grass, Nutgrass	NR	QLD, NSW, VIC, TAS & SA	R3

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

Appendix 4. Plant Growth Regulators available in summerfruit

Active ingredient (Trade Name)	Chemical Group	Situation	Comment / Use	WHP (days)	States	Regulatory risk
1-Methylcyclopropene (Smartfresh)	Plant Growth Regulator	Apricots / Nectarines / Plums	Post-Harvest Treatment for improved quality after shipping, storage and handling	NR	ALL	-
Aminoethoxyvinylglycine (Retain)	Plant Growth Regulator	Stone Fruit	Increase fruit firmness, size, and increase fruit quality and storage potential.	H:7 G:14	ALL	-
Ammonium Thiosulphate	Plant Growth Regulator	Peaches / Plums	Desiccation of blossoms and reduction of fruit set	NR	WA, SA, VIC & NSW	-
Cyanamide (Dormex)	Plant Growth Regulator	Plums	Regulation of bud dormancy	NR	ALL	-
Ethephon	Plant Growth Regulator	Peaches	Advancement and concentration of maturity	42	VIC	-
Gibberellic Acid	Plant Growth Regulator	Plums / Prunes	Delay maturity and increase sugar content	NR	ALL	-
		Apricots / Nectarines / Peaches	Reduction of flowering and fruiting (thinning) in the next cropping season			
Paclobutrazol	Plant Growth Regulator	Apricot / Nectarine / Peach / Plum	Reduce vegetative growth	NR	ALL	-

Appendix 5. Current permits for use in summerfruit

Permit ID	Description	Date Issued	Expiry Date	Permit holder
PER89870	Spinosad (Entrust Organic) / Various / Fall Armyworm. Emergency Use Permit	21-Jul-20	31-Jul-23	Hort Innovation
PER89293	Methomyl (Lannate) / Various Crops as Per Label / Fall Armyworm. Emergency Use Permit	10-Apr-20	30-Apr-23	Hort Innovation
PER89278	Indoxacarb (Avatar) / Various Crops / Fall Armyworm. Emergency Use Permit	13-Mar-20	31-Mar-23	Hort Innovation
PER89259	Chlorantraniliprole (Altacor) / Various Crops / Fall Armyworm. Emergency Use Permit	06-Mar-20	31-Mar-23	Hort Innovation
PER89241	Spinetoram (Delegate) / Various Crops / Fall Armyworm. Emergency Use Permit	06-Mar-20	31-Mar-23	Hort Innovation
PER86492 Version 3	Fipronil / Orchards, Vineyards and Berry Farms / European Wasp	14-Sep-18	30-Sep-23	NSW Dept of Primary Industries
PER85273	Fosetyl Present as The Aluminium Salt / Apricot, Peach, Nectarine and Plum / Phytophthora Trunk / Collar Rot	23-Apr-18	30-Apr-23	Summerfruit Australia c/- Hort Innovation
PER84804	Spirotetramat (Movento) / Stone Fruit / Western Flower Thrips Permit renewal submitted and permit extension pending with the APVMA	21-Jul-17	31-Jan-21	Summerfruit Australia
PER14683 Version 2	Trichlorfon / Stone Fruit & Guava / Mediterranean Fruit Fly	24-Feb-15	31-May-22	Summerfruit Australia c/- Hort Innovation
PER13859 Version 2	Dimethoate / Orchard Cleanup Fruit Fly Host Crops / Fruit Fly	09-Feb-15	31-Jul-24	Hort Innovation
PER14875 Version 3	Alpha-Cypermethrin / Stone Fruit / Fruit Fly	05-Sep-14	31-Oct-21	Summerfruit Australia
PER14562 Version 2	Thiacloprid (Calypso) / Pome Fruit and Stone Fruit / Mediterranean Fruit Fly (WA only)	13-Dec-13	30-Sep-23	Hort Innovation
PER13527 Version 2	Clothianidin (Samurai) / Apricots / Oriental Fruit Moth	28-Jun-13	30-Jun-23	Summerfruit Australia
PER12590 Version 4	Spinetoram (Delegate) / Pome fruit & Stonefruit / Fruit Fly (Suppression Only)	06-Oct-11	31-May-24	Hort Innovation

Appendix 6. Summerfruit (Stone Fruits) Maximum Residue Limits (MRLs)

CODEX commodity groupings of Stone Fruit and subgroups:

	Fruits
FS 0012	Stone Fruit
FS 0014	Plums (including prunes)
FS 2001	Peaches (including Nectarine and Apricots)
FS 0240	Apricot
FS 0245	Nectarine
FS 0247	Peach
DF 0167	Dried fruits
DF 0014	Prunes, dried
DF 0247	Peach, dried

Note: Major export markets for summerfruit include China, South East Asia and the Middle East. Available information indicates that in the absence of specific limits in legislation, that some countries defer to Codex, followed by EU MRL standards, or apply a 0.01ppm default value. Food exported to New Zealand from Australia may be legally sold if it complies with Australian requirements. MRLs and legislation are subject to change; the values presented should not be relied on.

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
2,2-DPA			1	-
2,4-D	FS 0012	Stone Fruit	-	*0.05
Abamectin	FS 0012	Stone Fruit	T0.03	-
	FS 0014	Plums (including prunes)	-	0.005
	FS 2001	Peaches (including apricots and nectarine)	-	0.03
Acetamiprid	FS 0012	Stone Fruit	0.5	-
	FS 0014	Plums (except prunes)	-	0.2
	FS 0245	Nectarine	-	0.7
	FS 0247	Peach	-	0.7
	DF 0014	Prunes, dried	-	0.6
Acibenzolar-S-methyl	FS 2001	Peaches (including apricots and nectarine)	-	0.2
Aldrin and Dieldrin		Fruits	E0.05	-
Aminoethoxyvinylglycine	FS 0012	Stone Fruit	0.2	-
Amitraz	FS 0247	Peach	-	0.5
Amitrole	FS 0012	Stone Fruit	*0.02	*0.05
Azinphos-methyl	FS 0012	Stone Fruit	2	-
Azoxystrobin	FS 0012	Stone Fruit	-	2
Bifenazate	FS 0012	Stone Fruit	-	2
	FS 0014	Plums (including prunes)	0.5	-
	FS 0240	Apricot	0.5	-
	FS 0245	Nectarine	0.5	-
	FS 0247	Peach	2	-
Bifenthrin	FS 0012	Stone Fruit	1	-
Bitertanol	FS 0014	Plums (including prunes)	-	2
	FS 0240	Apricot	-	1
	FS 0247	Peach	-	1

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Boscalid	FS 0012	Stone Fruit	-	3
	DF 0014	Prunes, dried	-	10
Bromide Ion		Fruits	-	20
	FS 4072	Prunes (see plums)	-	20
	DF 0167	Dried fruits	-	30
	DF 0247	Peach, dried	-	50
Bromopropylate	FS 0014	Plums (including prunes)	-	2
Buprofezin	FS 0014	Plums (including prunes)	-	2
	FS 0247	Peach	-	9
Butafenacil	FS 0012	Stone Fruit	T*0.02	-
Captan	FS 0012	Stone Fruit	15	-
	FS 0014	Plums (including prunes)	-	10
	FS 0247	Peach	-	20
Carbaryl	FS 0012	Stone Fruit	0.5	-
Carbendazim	FS 0014	Plums (including prunes)	-	0.5
	FS 0240	Apricot	-	2
	FS 0247	Peach	-	2
Carfentrazone-ethyl	FS 0012	Stone Fruit	*0.05	-
Chlorantraniliprole	FS 0012	Stone Fruit	1	1
	DF 0167	Dried fruits	2	-
Chlordane	FS 0012	Stone Fruit	E0.02	-
Chlorfenapyr	FS 0247	Peach	1	-
Chlorothalonil	FS 0014	Plums (including prunes)	10	-
	FS 0240	Apricot	7	-
	FS 0245	Nectarine	7	-
	FS 0247	Peach	30	-
	FS 2001	Peaches (including apricots and nectarine)	-	1.5
Chlorpyrifos	FS 0012	Stone Fruit	T1	-
	FS 0014	Plums (including prunes)	-	0.5
	FS 0247	Peach	-	0.5
	DF 0167	Dried fruits	T2	-
Chlorpyrifos-methyl	FS 0012	Stone Fruit	-	0.5
Clofentezine	FS 0012	Stone Fruit	0.1	0.5
Clothianidin	FS 0012	Stone Fruit	3	0.2
	DF 0014	Prunes, dried	-	0.2
Cyanamide	FS 0014	Plums (including prunes)	*0.02	-
Cyantraniliprole	FS 0014	Plums (including prunes)	-	0.5
	FS 0247	Peach	-	1.5
	DF 0014	Prunes, dried	-	0.8
Cycloxydim	FS 0012	Stone Fruit	-	*0.09
Cyhalothrin	FS 0014	Plums (except prunes)	-	0.2
	FS 0240	Apricot	-	0.5
	FS 0247	Peach	-	0.5

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Cypermethrin	FS 0012	Stone Fruit	1	2
Cyprodinil	FS 0012	Stone Fruit	*0.01	2
		Stone Fruit (Dried)	*0.05	-
	DF 0014	Prunes, dried	-	5
DDT		Fruits	E1	-
Deltamethrin	FS 0014	Plums (including prunes)	-	0.05
	FS 0247	Peach	-	0.05
Diazinon		Fruits (except peach)	0.5	-
	FS 0247	Peach	0.7	0.2
	FS 0014	Plums (including prunes)	-	1
	DF 0014	Prunes, dried	-	2
Dichlobenil	FS 0012	Stone Fruit	0.1	-
Dichloran	FS 0247	Peach	-	Po7
Dicofol		Fruits	5	-
Difenoconazole	FS 0014	Plums (including prunes)	-	0.2
	FS 0247	Peach	-	0.5
Diflubenzuron	FS 0014	Plums (including prunes)	-	0.5
	FS 0247	Peach	-	0.5
Dimethoate see also Omethoate	FS 0012	Stone Fruit	T*0.02	-
Dinocap	FS 0247	Peach	-	0.1
Dinotefuran	FS 0247	Peach	-	0.8
Diquat		Fruits	*0.05	-
	FS 0012	Stone Fruit	-	*0.02
Dithianon		Fruits	2	-
	FS 0012	Stone Fruit	-	2
Dithiocarbamates (mancozeb, metham, metiram, thiram, zineb and ziram)	FS 0012	Stone Fruit	3	7
Dodine	FS 0012	Stone Fruit	*0.05	-
	FS 0247	Peach	-	5
Emamectin benzoate	FS 0247	Peach	-	0.03
Ethephon	FS 0245	Nectarine	0.01	-
	FS 0247	Peach	0.5	-
Ethion	FS 0012	Stone Fruit	1	-
Ethyl Formate	DF 0167	Dried fruits	1	-
Etofenprox	FS 0012	Stone Fruit	5	-
	FS 0247	Peach	-	0.6
Etoxazole	FS 0012	Stone Fruit	0.3	-
Fenarimol	FS 0247	Peach	-	0.5
Fenbuconazole	FS 0245	Nectarine	0.5	-
	FS 0014	Plums (including prunes)	-	0.3
	FS 0240	Apricot	-	0.5
	FS 0247	Peach	-	0.5

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Fenbutatin oxide	FS 0245	Nectarine	3	-
	FS 0247	Peach	3	7
	FS 0014	Plums (including prunes)	-	3
	DF 0014	Prunes, dried	-	10
Fenhexamid	FS 0014	Plums (including prunes)	-	1
	FS 0240	Apricot	-	10
	FS 0247	Peach	-	10
Fenpropathrin	FS 0014	Plums (including prunes)	-	1
	DF 0014	Prunes, dried	-	3
Fenpyrazamine	FS 0014	Plums (including prunes)	-	2
	FS 2001	Peaches (including apricots and nectarine)	-	4
Fenpyroximate	FS 0012	Stone Fruit	-	0.4
	DF 0014	Prunes, dried	-	0.7
Fipronil	FS 0012	Stone Fruit	0.01	
Flonicamid	FS 0014	Plums (including prunes)	-	0.1
	FS 2001	Peaches (including apricots and nectarine)	-	0.7
Fluazifop-p-butyl	FS 0012	Stone Fruit	0.05	*0.01
Flubendiamide	FS 0012	Stone Fruit	-	2
Fludioxonil	FS 0012	Stone Fruit	5	Po5
	FS 0240	Apricot	10	-
	FS 0247	Peach	10	-
Flumioxazin	FS 0012	Stone Fruit	*0.02	*0.02
Fluopyram	FS 0012	Stone Fruit	2	-
	FS 0014	Plums (including prunes)	-	0.5
	FS 2001	Peaches (including apricots and nectarine)	-	1
Flupyradifurone	FS 0014	Plums (including prunes)	-	0.4
	FS 2001	Peaches (including apricots and nectarine)	-	1.5
	DF 0014	Prunes, dried	-	3
Flusilazole	FS 0240	Apricot	-	0.2
	FS 0247	Peach	-	0.2
Flutriafol	FS 0014	Plums (including prunes)	-	0.4
	FS 2001	Peaches (including apricots and nectarine)	-	0.6
	DF 0014	Prunes, dried	-	0.9
Fluvalinate	FS 0012	Stone Fruit	0.05	-
Fluxapyroxad	FS 0014	Plums (including prunes)	-	1.5
	FS 2001	Peaches (including apricots and nectarine)	-	1.5
	DF 0014	Prunes, dried	-	5

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Forchlorfenuron	FS 0014	Plums (including prunes)	T*0.01	-
	FS 0247	Peach	1	-
	DF 0014	Prunes, dried	T*0.01	-
Fosetyl	FS 0012	Stone Fruit (except peaches)	T1	-
Glufosinate and Glufosinate ammonium	FS 0012	Stone Fruit	*0.05	-
Glufosinate-Ammonium	FS 0012	Stone Fruit	-	0.15
	DF 0014	Prunes, dried	-	0.3
Glyphosate	FS 0012	Stone Fruit	0.2	-
Haloxyfop	FS 0012	Stone Fruit	*0.05	*0.02
Hexythiazox	FS 0012	Stone Fruit	1	0.3
	DF 0014	Prunes, dried	-	1
Hydrogen Phosphide	DF 0167	Dried fruits	-	Po0.01
Imidacloprid	FS 0012	Stone Fruit	0.5	-
	FS 0014	Plums (including prunes)	-	1.5
	FS 2001	Peaches (including apricots and nectarine)	-	1.5
	DF 0014	Prunes, dried	-	5
Indoxacarb	FS 0012	Stone Fruit	2	1
	DF 0014	Prunes, dried	-	3
Inorganic bromide	DF 0014	Prunes, dried	20	-
	DF 0167	Dried fruits (except peach, prunes)	30	-
Iprodione	FS 0012	Stone Fruit	10	-
	FS 0247	Peach	-	10
Isofetamid	FS 0014	Plums (including prunes)	-	0.8
	FS 2001	Peaches (including apricots and nectarine)	-	3
	DF 0014	Prunes, dried	-	3
Isoxaben	FS 0012	Stone Fruit	*0.01	-
Kresoxim-Methyl	FS 0247	Peach	-	1.5
Lindane		Fruits (except peach, plums)	E0.5	-
	FS 0014	Plums (including prunes)	E0.5	-
	FS 0247	Peach	E2	-
Maldison	FS 0012	Stone Fruit	5	-
	DF 0167	Dried fruits	8	-
Mandestrobin	FS 0012	Stone Fruit	3	-
Metalaxyl	FS 0012	Stone Fruit	0.2	0.2
Metaldehyde		Fruits	1	-
Methidathion	FS 0012	Stone Fruit	*0.01	-
Methiocarb		Fruits	T0.1	-
Methomyl see also Thiodicarb	FS 0012	Stone Fruit	1	-
Methomyl	FS 0014	Plums (including prunes)	-	1
	FS 0247	Peach	-	0.2

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Methoxyfenozide	FS 0012	Stone Fruit	-	2
	DF 0014	Prunes, dried	-	2
Methyl bromide		Fruits	*T0.05	-
	DF 0167	Dried fruits	*0.05	Po*0.01
Metrafenone	FS 2001	Peaches (including apricots and nectarine)	-	0.7
Milbemectin	FS 0012	Stone Fruit	0.1	
Myclobutanil	FS 0014	Plums (including prunes)	-	2
	FS 2001	Peaches (including apricots and nectarine)	-	3
Napropamide	FS 0012	Stone Fruit	*0.1	-
Norflurazon	FS 0012	Stone Fruit	*0.2	-
Novaluron	FS 0012	Stone Fruit	0.5	7
	DF 0014	Prunes, dried	-	3
Omethoate		Fruits	2	-
Oryzalin		Fruits	0.1	-
Oxyfluorfen	FS 0012	Stone Fruit	0.05	-
Paclobutrazol	FS 0012	Stone Fruit	*0.01	-
Parathion-Methyl	FS 0247	Peach	-	0.3
Paraquat		Fruits	*0.05	-
	FS 0012	Stone Fruit	-	*0.01
Penconazole	FS 2001	Peaches (including apricots and nectarine)	-	0.08
Pendimethalin	FS 0012	Stone Fruit	*0.05	-
Penthiopyrad	FS 0012	Stone Fruit	5	4
Permethrin	FS 0012	Stone Fruit	-	2
Phosmet	FS 0240	Apricot	-	10
	FS 0247	Peach	-	10
Phosphine	DF 0167	Dried fruits	*0.01	-
Phosphorous acid	FS 0012	Stone Fruit (except peach)	T100	-
	FS 0247	Peach	100	-
Piperonyl butoxide		Fruits	8	-
	DF 0167	Dried fruits	8	Po0.2
Pirimicarb		Fruits	0.5	-
	FS 0012	Stone Fruit	-	3
Procymidone	FS 0012	Stone Fruit	T10	-
Propargite	FS 0012	Stone Fruit	3	4
Propiconazole	FS 0012	Stone Fruit	2	-
	FS 0014	Plums (including prunes)	-	Po0.4
	FS 0247	Peach	-	Po5
Pymetrozine	FS 0012	Stone Fruit	*0.05	-
Pyraclostrobin	FS 0014	Plums (including prunes)	-	0.8
	FS 2001	Peaches (including apricots and nectarine)	-	0.3
Pyrethrins		Fruits	1	-
	DF 0167	Dried fruits	1	Po0.2
Pyridaben	FS 0012	Stone Fruit	0.5	-

Chemical	Codex Code	Description	APVMA MRL mg/kg	Codex MRL mg/kg
Pyrimethanil	FS 0014	Plums (including prunes)	-	2
	FS 0240	Apricot	-	3
	FS 0247	Peach	-	4
Saflufenacil	FS 0012	Stone Fruit	*0.03	0.01
Simazine		Fruits	*0.1	-
Spinetoram	FS 0012	Stone Fruit	0.2	-
	FS 0014	Plums (including prunes)	-	0.09
	FS 0240	Apricot	-	0.15
	FS 0247	Peach	-	0.3
Spinosad	FS 0012	Stone Fruit	1	0.2
Spirodiclofen	FS 0012	Stone Fruit	-	2
Spirotetramat	FS 0012	Stone Fruit	1	3
	DF 0014	Prunes, dried	-	5
Sulfoxaflor	FS 0012	Stone Fruit	1	-
	FS 0014	Plums (including prunes)	-	0.5
	FS 2001	Peaches (including apricots and nectarine)	-	0.4
Sulfuryl Fluoride	DF 0167	Dried fruits	0.07	Po0.06
Tebuconazole	FS 0012	Stone Fruit	*0.01	-
	FS 0014	Plums (except prunes)	-	1
	FS 0240	Apricot	-	2
	FS 0247	Peach	-	2
	DF 0014	Prunes, dried	-	3
Tebufenozide	FS 0247	Peach	-	0.5
Terbacil	FS 0012	Stone Fruit	*0.04	-
Tetraniliprole	FS 0012	Stone Fruit	0.7	-
	DF 0014	Prunes, dried	3	-
Thiacloprid	FS 0012	Stone Fruit	2	0.5
Thiamethoxam	FS 0012	Stone Fruit	-	1
Trichlorfon	FS 0012	Stone Fruit	T3	-
	DF 0167	Dried fruits	2	-
Trifloxystrobin	FS 0012	Stone Fruit	5	3
Trifluralin		Fruits	*0.05	-
Triforine	FS 0012	Stone Fruit	10	-

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

NOTE: For the groups "Stone fruits", "Dried fruits" and "Fruits" listed above, crop exclusions (if any) have not been specified.

* 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 2019. Compilation 4. Prepared 15 January 2020. CODEX MRLs: CODEX Alimentarius International Food Standards database (February 2020), http://www.fao.org/fao-who-codexalimentarius/codex-texts/dbs/pestres/en/

Appendix 7. Summerfruit Agrichemical Regulatory Risk Assessment

Stone Fruit
Agrichemical Regulatory
Risk assessment

October 2020

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 summerfruits as well as current initiatives aimed at addressing identified pest management deficiencies.

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

Problem	Active Constituents	Chemical Group	Comment	Activities
Insect and mite pests				
Aphids				
Black peach aphid	Acetamiprid + novaluron	**4A + 15**	Acetamiprid APVMA – Under review Novaluron EU: No authorisation in place	
	Imidacloprid	**4A**	APVMA: Under review Canada: Under review EU: Removal of all field uses USA: Re-registration with new risk mitigation measures	
	Maldison	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
	Pirimicarb	**1A**	Codex - JMPR Periodic re-evaluation 2020	
	Pymetrozine	**9B**	EU- Being phased out Codex – No registrant support	
	Spirotetramat	**23**		
	Sulfoxaflor	**4C**	USA – Pollinator concerns	
Cherry aphid	Diazinon	**1B**	EU – Deregistered Codex - To be reviewed by 2020/21	
	Maldison	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
	Pirimicarb	**1A**	Codex - JMPR Periodic re-evaluation 2020	
	Spirotetramat	**23**		
	Sulfoxaflor	**4C**	USA – Pollinator concerns	

Problem	Active Constituents	Chemical Group	Comment	Activities
Green peach aphid	Acetamiprid + novaluron	**4A + 15**	Acetamiprid APVMA – Under review Novaluron EU: No authorisation in place	
	Clothianidin (Nectarine & peach)	**4A**	APVMA: Under review Canada: Proposal to cancel foliar use in orchards, strawberries and turf EU: Removal of all field uses USA: Re-registration with new risk mitigation measures[5]	
	Diazinon	**1B**	EU: No authorisation Codex - To be reviewed by 2020/21.	
	Imidacloprid	**4A**	APVMA: Under review Canada: Under review EU: Removal of all field uses USA: Re-registration with new risk mitigation measures	
	Maldison	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
	Methomyl	**1A**	APVMA: nominated for review Canada: Re-evaluation completed (2018). Majority of uses removed EU: No authorisations (Authorisation expired 31/8/19)	
	Pyrethrins	**3A**		
	Pirimicarb	**1A**	Codex - JMPR Periodic re-evaluation 2020	
	Pymetrozine	**9B**	EU- Being phased out Codex – No registrant support	
	Sulfoxaflor	**4C**	USA – Pollinator concerns	
	Thiacloprid	**4A**	APVMA: Under review EU: Being phased-out	

[5] Clothianidin: Berry fruit, Fruiting vegetables, ornamentals, pome fruit, turf Reduction in yearly total rate

Problem	Active Constituents	Chemical Group	Comment	Activities
Beetles				
Apple weevil	Alpha-cypermethrin	**3A**	EU: Proposed restricted authorisation & Candidate for substitution	
	Indoxacarb	**22A**	EU: Proposed non-renewal	
Dried fruit beetles	Bifenthrin	**3A**	Canada: Subject to phase-out until 31/12/2020 EU: No authorisation in place	
Fuller's rose weevil	Indoxacarb	**22A**	EU: Proposed non-renewal	
Garden weevil	Alpha-cypermethrin	**3A**	EU: Proposed restricted authorisation & Candidate for substitution	
	Indoxacarb	**22A**	EU: Proposed non-renewal	
Redshouldered leaf beetle	Carbaryl	**1A**	Canada: Review recently completed, retained but with many uses deleted Codex: Toxicology review scheduled 2020[6] EU: Authorisation not renewed	
	Methomyl	**1A**	APVMA: nominated for review Canada: Re-evaluation completed (2018). Majority of uses removed EU: No authorisations (Authorisation expired 31/8/19)	
Lepidoptera				
Black cutworm	Chlorantraniliprole	**28**		
Budworms (*Helicoverpa* spp.)	Carbaryl	**1A**	Canada: Review recently completed, retained but with many uses deleted Codex: Toxicology review scheduled 2020 EU: Authorisation not renewed	
	Indoxacarb	**22A**	EU: Proposed non-renewal	
	Methomyl	**1A**	APVMA: nominated for review Canada: Re-evaluation completed (2018). Majority of uses removed EU: No authorisations (Authorisation expired 31/8/19)	
	Pyrethrins	**3A**		

[6] Not supported by original manufacturer

Problem	Active Constituents	Chemical Group	Comment	Activities
Cabbage white butterfly	Pyrethrins	**3A**		
Caterpillars	Pyrethrins	**3A**		
	Spinetoram	**5**		
Fall armyworm	Chlorantraniliprole (PER89259)	**18**		
	Methomyl (PER89293)	**1A**	APVMA: nominated for review Canada: Re-evaluation completed (2018). Majority of uses removed EU: No authorisations (Authorisation expired 31/8/19)	
	Spinetoram (PER89241)	**5**		
	Spinosad (PER89870)	**5**		
Fruit-tree borer	Carbaryl	**1A**	Canada: Review recently completed, retained but with many uses deleted Codex: Toxicology review scheduled 2020 EU: Authorisation not renewed	
Grapevine moth	Pyrethrins	**3A**		
Lightbrown apple moth	Acetamiprid + novaluron	**4A + 15**	Acetamiprid APVMA – Under review Novaluron EU: No authorisation in place	
	Carbaryl	**1A**	Canada: Review recently completed, retained but with many uses deleted Codex: Toxicology review scheduled 2020 EU: Authorisation not renewed	
	Chlorantraniliprole	**28**		
	Chlorpyrifos	**1B**	APVMA: Under review. Potential issues w.r.t. environmental loading and worker exposure. Codex: Scheduled for review by JMPR in 2021 Canada: Cancellation of most uses. EU: Cancellation of use USA – EPA decision to allow continued use	
	Indoxacarb	**22A**	EU: Proposed non-renewal	
	Pyrethrins	**3A**		

Problem	Active Constituents	Chemical Group	Comment	Activities
Lightbrown apple moth	Spinetoram	**5**		
	Spinosad	**5**		
Orange fruit borer	Carbaryl	**1A**	Canada: Review recently completed, retained but with many uses deleted Codex: Toxicology review scheduled 2020 EU: Authorisation not renewed	
Oriental fruit moth	Acetamiprid + novaluron	**4A + 15**	Acetamiprid APVMA – Under review Novaluron EU: No authorisation in place	
	Carbaryl	**1A**	Canada: Review recently completed, retained but with a large number of uses deleted Codex: Toxicology review scheduled 2020 EU: Authorisation not renewed	
	Chlorantraniliprole	**28**		
	Clothianidin (Nectarine & peach)	**4A**	APVMA: Under review Canada: Proposal to cancel foliar use in orchards, strawberries and turf EU: Removal of all field uses USA: Re-registration with new risk mitigation measures	
	Clothianidin (PER13527 Apricots)	**4A**		
	Cydia pomonella granulosis virus			
	Indoxacarb	**22A**	EU: Proposed non-renewal	
	Maldison	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
	Spinetoram	**5**		
	Spinosad	**5**		
	Thiacloprid	**4A**	APVMA: Under review EU: Being phased-out	

Problem	Active Constituents	Chemical Group	Comment	Activities
Fruit fly				
Fruit fly	Alpha-cypermethrin (PER14875)	**3A**	EU: Proposed restricted authorisation & Candidate for substitution	
Fruit fly (orchard clean-up)	Dimethoate (PER13859)[7]	**1B**	Codex: MRL deletion recommended. EU proposing to set all MRLs to < 0.01 mg/kg	
Lesser Queensland fruit fly	Spinetoram (PER12590)	**5**		
Mediterranean fruit fly	Acetamiprid + novaluron	**4A + 15**	Acetamiprid APVMA – Under review Novaluron EU: No authorisation in place	
	Clothianidin	**4A**	APVMA: Under review Canada: Proposal to cancel foliar use in orchards, strawberries and turf EU: Removal of all field uses USA: Re-registration with new risk mitigation measures	
	Etofenprox	**3A**		
	Spinetoram (PER12590)	**5**		
	Thiacloprid (PER14562)	**4A**	APVMA: Under review EU: Being phased-out	
	Trichlorfon (PER14683)	**1B**	APVMA – nominated for review Codex – No MRLs Europe – deregistered US – No MRLs	

[7] Post-harvest orchard clean-up treatment

Problem	Active Constituents	Chemical Group	Comment	Activities
Queensland fruit fly	Acetamiprid + novaluron	**4A + 15**	Acetamiprid APVMA – Under review Novaluron EU: No authorisation in place	
	Chlorpyrifos	**1B**	APVMA: Under review. Potential issues w.r.t. environmental loading and worker exposure. Codex: Scheduled for review by JMPR in 2021 Canada: Cancellation of most uses. EU: Cancellation of use USA – EPA decision to allow continued use	
	Clothianidin	**4A**	APVMA: Under review Canada: Proposal to cancel foliar use in orchards, strawberries and turf EU: Removal of all field uses USA: Re-registration with new risk mitigation measures	
	Etofenprox	**3A**		
	Fipronil	**2B**	APVMA – Under review Codex: Re-evaluation scheduled for 2021/22 EU: No authorisation in place	
	Spinetoram (PER12590)	**5**		
	Trichlorfon	**1B**	APVMA – nominated for review Codex – No MRLs Europe – deregistered US – No MRLs	

Problem	Active Constituents	Chemical Group	Comment	Activities
Grasshoppers/Locusts				
Australian plague locust Migratory locust Spur-throated locust	Chlorpyrifos (PER11843)	**1B**	APVMA: Under review. Potential issues w.r.t. environmental loading and worker exposure. Codex: Scheduled for review by JMPR in 2021 Canada: Cancellation of most uses. EU: Cancellation of use USA – EPA decision to allow continued use	
	Maldison (PER11843)	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
Green treehopper	Carbaryl	**1A**	Canada: Review recently completed, retained but with many uses deleted. Codex: Toxicology review scheduled 2020 EU: Authorisation not renewed	
Wingless grasshopper	Carbaryl	**1A**		
	Indoxacarb	**22A**	EU: Proposed non-renewal	
	Maldison	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
Jassids/Plant bugs				
Apple dimpling bug (Yellow mirid)	Sulfoxaflor	**4C**	USA: Pollinator concerns	
Rutherglen bug	Pyrethrins	**3A**		
	Maldison	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
	Trichlorfon	**1B**	APVMA – nominated for review Codex – No MRLs Europe – deregistered US – No MRLs	

Problem	Active Constituents	Chemical Group	Comment	Activities
Mealybug & Scale insects				
Frosted scale	Paraffinic/petroleum oil	-		
	Sulfur	UN		
Oystershell scale	Paraffinic/petroleum oil	-		
Pear scale	Petroleum oil	-		
San Jose scale	Acetamiprid + novaluron	4A + 15	Acetamiprid: APVMA – Under review Novaluron: EU: No authorisation in place	
	Chlorpyrifos	1B	APVMA: Under review. Potential issues w.r.t. environmental loading and worker exposure. Codex: Scheduled for review by JMPR in 2021 Canada: Cancellation of most uses. EU: Cancellation of use USA – EPA decision to allow continued use	
	Diazinon	1B	EU – Deregistered Codex - To be reviewed by 2020/21.	
	Methidathion	1B	APVMA: Use will not be permitted in AU after 4 February 2021. EU: Deregistered USA: Deregistered	
	Paraffinic/petroleum oil	-		
	Spirotetramat	23		
	Sulfur	M2		
Scale insects	Paraffinic/petroleum oil	-		
Tuber mealybug	Spirotetramat	23		
Longtailed mealybug	Spirotetramat	23		

Problem	Active Constituents	Chemical Group	Comment	Activities
Mites				
Bryobia mite	Bifenazate	**20D**	EU: Proposed non-renewal	
	Clofentezine	**10A**		
	Etoxazole	**10B**	EU: Uses restricted to greenhouse ornamentals only EU: Candidate for substitution	
	Fenbutatin oxide (Nectarine & peaches)	**12B**	APVMA – Nominated for review Codex - To be reviewed 2020/21. No supporting registrant EU: No authorisation in place	
	Sulfur	**M2**		
	Paraffinic/petroleum oil	**-**		
European red mite	Bifenazate	**20D**	EU: Proposed non-renewal	
	Clofentezine	**10A**		
	Dicofol	**UN**		
	Etoxazole	**10B**	EU: Uses restricted to greenhouse ornamentals only EU: Candidate for substitution	
	Fenbutatin oxide (Nectarine & peaches)	**12B**	APVMA – Nominated for review Codex - To be reviewed 2020/21. No supporting registrant EU: No authorisation in place	
	Hexythiazox	**10A**		
	Maldison	**1B**	APVMA: Under review – chemistry Codex: Re-evaluation scheduled for 2022/23	
	Paraffinic oil/petroleum oil	**-**		
	Propargite	**12C**	APVMA – nominated for review	
	Pyridaben	**21A**		
	Tebufenpyrad	**21A**		
Mites	Paraffinic/petroleum oil	**-**		
	Propargite	**12C**		

Problem	Active Constituents	Chemical Group	Comment	Activities
Two-spotted (Red spider) mite	Dicofol	**UN**		
	Paraffinic/petroleum oil	**-**		
	Bifenazate	**20D**	EU: Proposed non-renewal	
	Chlorfenapyr	**13**	EU: No authorisation in place	
	Clofentezine	**10A**		
	Etoxazole	**10B**	EU: Uses restricted to greenhouse ornamentals only EU: Candidate for substitution	
	Fenbutatin oxide (Nectarine & peaches)	**12B**	APVMA – Nominated for review Codex - To be reviewed 2020/21. No supporting registrant EU: No authorisation in place	
	Hexythiazox	**10A**	Codex: No MRLs	
	Milbemectin	**6**		
	Paraffinic/petroleum oil	**-**		
	Propargite	**12C**	APVMA – nominated for review	
	Pyridaben	**21A**		
	Tebufenpyrad	**21A**		
Thrips				
Plague thrips	Pyrethrins	**3A**		
	Tau-fluvalinate (Nectarine, peach & plum)	**3A**		
Thrips	Methomyl	**1A**	APVMA: nominated for review Canada: Re-evaluation completed (2018). Majority of uses removed EU: No authorisations (Authorisation expired 31/8/19)	
Western flower thrips	Abamectin + chlorantraniliprole (PER85380)	**6 + 28**		
	Spinetoram	**5**		
	Spinosad	**5**		
	Spirotetramat (PER84804)	**23**		

Problem	Active Constituents	Chemical Group	Comment	Activities
Other				
European earwig	Carbaryl	**1A**	Canada: Review recently completed, retained but with many uses deleted Codex: Toxicology review scheduled 2020 EU: Authorisation not renewed	
	Chlorpyrifos	**1B**	APVMA: Under review. Potential issues w.r.t. environmental loading and worker exposure. Codex: Scheduled for review by JMPR in 2021 Canada:Cancellation of most uses. EU: Cancellation of use USA – EPA decision to allow continued use	
Pear and cherry slug	Spinetoram	**5**		
	Spinosad	**5**		

Problem	Active Constituents	Chemical Group	Comment	Activities
DISEASES				
Bacterial canker/blast	Copper	**M1**	EU: Candidate for substitution	
	Mancozeb	**M3**	APVMA: Nominated for review Canada: Under review Codex: To be reviewed 2022/23 EU: Proposed non-renewal of authorisation	
Bacterial spot	Copper	**M1**	EU: Candidate for substitution	
Bactericide	Iodine	**M**		
Blossom blight	BLAD	**BM01**		
	Captan	**M4**		
	Chlorothalonil	**M5**	APVMA – Previously nominated for review Canada – Review completed; continued use acceptable EU: Deregistered[8].	
	Copper	**M1**	EU: Candidate for substitution	
	Cyprodinil	**9**	Canada – Under review	
	Dodine (Nectarine & peach)	**U12**		
	Fluopyram +trifloxystrobin	**7 + 11**		
	Iprodione	**2**	Europe – Deregistered Canada – Majority of food crop uses deleted Codex – Review scheduled for 2022/23	
	Mancozeb	**M3**	APVMA: Nominated for review Canada: Under review Codex: To be reviewed 2022/23 EU: Proposed non-renewal of authorisation	
	Mandestrobin	**11**		
	Penthiopyrad	**7**		
	Procymidone	**2**	Codex: MRLs deleted EU: No authorisations	

[8] Chlorothalonil - Withdrawal authorisations by 20 November 2019. Max period of grace: 20 May 2020. Commission Implementing Regulation (EU) 2019/677 https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32019R0677&from=EN

Problem	Active Constituents	Chemical Group	Comment	Activities
Blossom blight	Sulfur	**M2**		
	Ziram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of all uses Codex - To be reviewed 2020/21	
Brown rot	BLAD	**BM01**		
	Captan	**M4**		
	Chlorothalonil	**M5**	APVMA – Previously nominated for review Canada – Review recently completed, continued use considered acceptable EU: Deregistered	
	Copper	**M1**	EU: Candidate for substitution	
	Cyprodinil	**9**	Canada – Under review	
	Dithianon	**M9**	EU: Restricted use to non-edible crops	
	Fludioxonil (Po)	**12**	EU – Under review EU: Candidate for substitution	
	Fluopyram	**7**		
	Iprodione	**2**	Europe – Deregistered Canada – Majority of food crop uses deleted Codex – Review scheduled for 2022/23	
	Mancozeb	**M3**	APVMA: Nominated for review Canada: Under review Codex: To be reviewed 2022/23 EU: Proposed non-renewal of authorisation	
	Mandestrobin	**11**		
	Penthiopyrad	**7**		
	Potassium salts (Nectarines)	**M2**		
	Propiconazole	**3**	APVMA - Nominated for review	
	Sulfur	**M2**		
	Thiram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of all foliar uses Codex - To be reviewed 2022/23 Europe – No authorisation in place	

Problem	Active Constituents	Chemical Group	Comment	Activities
Brown rot	Trifloxystrobin	**11**		
	Triforine	**3**	APVMA - Nominated for review	
	Ziram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of all uses Codex - To be reviewed 2022/23	
Collar rot	Fosetyl-Al (PER85273)	**33**		
Crown gall	*Agrobacterium radiobacter*			
Freckle or scab	Copper	**M1**	EU: Candidate for substitution	
	Dithianon (Apricot, nectarine & peach)	**M9**	EU: Restricted use to non-edible crops	
	Mancozeb	**M3**	APVMA: Nominated for review Canada: Under review Codex: To be reviewed 2022/23 EU: Proposed non-renewal of authorisation	
	Penthiopyrad	**7**		
	Sulfur	**M2**		
	Thiram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of all foliar uses Codex - To be reviewed 2022/23 Europe – No authorisation in place	
	Ziram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of all uses Codex - To be reviewed 2022/23	
Fungi	Iodine	**M**		
Grey mould	Fludioxonil (Po)	**12**	EU – Under review EU: Candidate for substitution	

Problem	Active Constituents	Chemical Group	Comment	Activities
Leaf curl	Chlorothalonil	**M5**	APVMA – Previously nominated for review Canada – Review recently completed, continued use considered acceptable EU: Deregistered	
	Copper	**M1**	EU: Candidate for substitution	
	Dithianon (Nectarines and & peaches)	**M9**	EU: Restricted use to non-edible crops	
	Dodine	**U12**		
	Sulfur	**M2**		
	Ziram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of all uses Codex - To be reviewed 2022/23	
Leather rot	Metalaxyl / Metalaxyl-M (Peaches)	**4**	Metalaxyl - EU: Candidate for substitution Metalaxyl-M - EU: Restricted use approval	
Peach blight	Dithianon	**M9**	EU: Restricted use to non-edible crops	
Phytophthora stem rot	Copper	**M1**	EU: Candidate for substitution	
Phytophthora trunk rot	Fosetyl-Al (PER85273)	**33**		
	Metalaxyl/metalaxyl-M (Peaches)	**4**	Metalaxyl EU: Candidate for substitution Metalaxyl-M EU: Restricted use approval	
Rust	Chlorothalonil	**M5**	APVMA – Previously nominated for review Canada – Review recently completed, continued use considered acceptable EU: Deregistered	
	Copper	**M1**	EU: Candidate for substitution	
	Dithianon (Nectarine, peaches & plums)	**M9**	EU: Restricted use to non-edible crops	
	Mancozeb	**M3**	APVMA: Nominated for review Canada: Under review Codex: To be reviewed 2022/23 EU: Proposed non-renewal of authorisation	

Problem	Active Constituents	Chemical Group	Comment	Activities
Rust	Metiram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of foliar uses Codex - To be reviewed 2022/23	
	Sulfur	**M2**		
	Zineb	**M3**	APVMA - Nominated for review Codex - To be reviewed 2022/23 EU: No authorisation in place	
Shot hole	Chlorothalonil	**M5**	APVMA – Previously nominated for review Canada – Review recently completed, continued use considered acceptable EU: Deregistered	
	Copper	**M1**	EU: Candidate for substitution	
	Dithianon	**M9**	EU: Restricted use to non-edible crops	
	Fluopyram + trifloxystrobin	**7 + 11**		
	Mancozeb	**M3**	APVMA: Nominated for review Canada: Under review Codex: To be reviewed 2022/23 Mancozeb - EU: Proposed non-renewal of authorisation	
	Metiram	**M3**		
	Sulfur	**M2**		
	Thiram	**M3**	APVMA - Nominated for review Canada – Proposed cancelling of all foliar uses Codex - To be reviewed 2022/23 Thiram - Europe – No authorisation in place	
	Ziram	**M3**		
Silver leaf	Cyproconazole + Iodocarb	**3 + 28**	APVMA - Nominated for review EU: Candidate for substitution	
Stem end rot	Iprodione (Po)	**2**	Europe – Deregistered Canada – Majority of food crop uses deleted Codex – Review scheduled for 2022/23	

Problem	Active Constituents	Chemical Group	Comment	Activities
Transit rot (Rhizopus soft rot)	Fludioxonil (Po)	**12**	EU – Under review EU: Candidate for substitution	
	Iprodione (Po)	**2**	Europe – Deregistered Canada – Majority of food crop uses deleted Codex – Review scheduled for 2022/23	
Trunk and stem canker	Copper	**M1**	EU: Candidate for substitution	
	Metalaxyl-/Metalaxyl-M (Peaches)	**4**	Metalaxyl - EU: Candidate for substitution Metalaxyl-M - EU: Restricted use approval	

Problem	Active Constituents	Chemical Group	Comment	Activities
WEEDS				
Broadleaf weeds and grasses	Carfentrazone-ethyl	**G**		
	Dichlobenil	**O**	EU: No authorisation in place	
	Diquat	**L**	APVMA - Currently under review EU: No authorisation in place	
	Fluazifop-P	**A**		
	Flumioxazin	**G**	EU: Candidate for substitution	
	Glufosinate-ammonium	**N**	EU: No authorisation in place	
	Glyphosate	**M**	Ongoing issues internationally	
	Haloxyfop-P	**A**		
	Napropamide	**K**		
	Norflurazon	**F**	EU: No authorisation in place	
	Oryzalin	**D**		
	Oxyfluorfen	**G**	EU: Candidate for substitution	
	Paraquat	**L**	APVMA - Currently under review EU: No authorisation in place Rotterdam Convention - nomination	
	Pendimethalin	**D**	EU: Candidate for substitution	
	Terbacil (Peach)	**C**	EU: No authorisation in place	
Plant growth regulators				
	1-methylcyclopropene			
	Aminoethoxyvinylglycine (avg)			
	Ammonium thiosulfate (Peaches & plums)			
	Cyanamide (Plums)			
	Ethephon (Peaches)			
	Gibberellic acid			
	Paclobutrazol			

MT17019 – Regulatory support and coordination. This multi-industry project has been funded by Hort Innovation using industry research and development levies and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.