AWRI Australian Wine Research Institute

Agrochemicals registered for use in Australian viticulture

22/23

AN ESSENTIAL REFERENCE
WHEN GROWING GRAPES
FOR **EXPORT** WINE

Compiled by Marcel Essling and Christa Schwarz
Updated 31 May 2022

Need help with an agrochemical or general grapegrowing issue?

Contact the AWRI helpdesk for free, confidential, technical support.

08 8313 6600

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Website: www.awri.com.au

Acknowledgements

This work is supported by Australia's grapegrowers and winemakers through their investment body, Wine Australia, with matching funds from the Australian Government. The AWRI is a member of the Wine Innovation Cluster in Adelaide. Assistance from the member companies of CropLife Australia in the publication of this document is gratefully acknowledged.

Wine Australia

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ISBN 978 0 648 5648 4 3
ISSN 1320 3703

Contents

Growing grapes for export wine?... choose the right chemical

Governments around the world set limits for the amount of residue of a fungicide, insecticide or herbicide that is legally allowed in a food, such as grapes or wine. These limits for agrochemicals are commonly referred to as MRLs (maximum residue limits), and for Australia they are listed in the Australia New Zealand Food Standards Code.

Over the past year, Australian wineries have exported wine worth more than $2.05 billion, mostly to countries that have MRLs vastly different to, and sometimes lower than, those set by the Australian Government. In fact, some chemicals commonly used by Australian grapegrowers do not have MRLs in certain major export markets. Often this is because grapes are not grown commercially in these countries and, therefore, there is no need to register products for use on grapes. As a result no MRL is set, which means that the importing country will either not allow any detectable residue of the agrochemical in wine, or only permit 'safe' amounts of it.

To ensure that wine meets the requirements of export markets, it is necessary to restrict the application of certain chemicals or to avoid their use altogether. Since 1991, some wineries have provided their grapegrowers with a list of recommended fungicides and insecticides and the associated 'export harvest interval' (the minimum number of days between the last application and harvest). The export harvest interval is sometimes much longer than the withholding period stated on the chemical label, and has been calculated to minimise the likelihood of residues having negative effects on fermentation or on wine sales, and to reduce the exposure of the public to agrochemicals.

The following tables list the preferred agrochemicals for use in the production of grapes for **export wine**, and any restrictions on their use, for the 2022/2023 season. Some biological control agents are also listed. The recommendations have been developed to satisfy the lowest MRL for any of Australia's major wine markets after considering available data on the persistence of the chemical, both on grapes and through winemaking. Many of these data were gathered as a result of a large, multi-agency research effort, funded by Wine Australia and the Dried Fruits Research and Development Council. A list of current MRLs and supporting information can be obtained by visiting the AWRI's website: www.awri.com.au, or by contacting the AWRI helpdesk on (08) 8313 6600 or helpdesk@awri.com.au.

If you are a member of the Australian wine industry and would like to receive email notices from the AWRI on technical issues, including agrochemicals, please visit www.awri.com.au/subscribe to subscribe to the AWRI's eBulletin.

Frequently asked questions

Are there exceptions to the restrictions on page 5 - 13?

Yes. Products may be used closer to harvest in consultation with the winery/grape purchaser. A winery may choose to ignore the restriction if the wine made from the grapes will be sold in Australia alone, or to an export market that permits residues of the agrochemical. In this case, the label withholding period is the minimum delay that should be observed between spraying the grapes and harvest.

Why does The Australian Wine Research Institute recommend that the application of some active constituents (for example spiroxamine) be restricted to before 80% capfall?

The recommendations in the tables have been developed to satisfy the lowest maximum residue limit (MRL) for *any* of Australia's major wine markets after considering available data on the persistence of the agrochemical, both on grapes and through winemaking.

In the case of spiroxamine, it is known that if it is sprayed onto grapes after 80% capfall, residues might be detectable in the resultant wine. Some of the markets to which Australia exports wine have a very low MRL for spiroxamine, or alternatively, have not announced their position on the course of action they would take if spiroxamine was detected in wine. To ensure that Australian wine meets MRLs set by all of these markets, the 80% capfall restriction is suggested.

Can I use a product that is not listed?

Yes. An unlisted product can be used provided that it is in consultation with the winery/grape purchaser and used according to the label specifications.

AWRI agrochemical and MRL app and online search facility

The AWRI agrochemicals and MRL databases have merged and the online search facility and app now offer combined information. Both platforms allow the user to rapidly access information contained in the current issue of the *Agrochemicals registered for use in Australian viticulture* booklet (often called the 'Dog book'). These tools also contain additional information derived from the AWRI database; that is, they allow the user to search for products registered for use on targets that are not listed in the Dog book. Users of the AWRI's previous agrochemicals app should remove the old version from their devices as it is no longer supported and download the new app by scanning the relevant QR code.

iOS devices

Android devices

Important points

- These recommendations have been developed as a general guide and assume that wine will be sent to a range of overseas markets. IF YOU ONLY SELL WINE IN AUSTRALIA, OR TO ONLY A FEW COUNTRIES, CONTACT THE AWRI TO DISCUSS HOW THE RECOMMENDATIONS MIGHT DIFFER. The AWRI can also provide advice regarding the persistence of a chemical on grapes or through winemaking, and MRLs for most major export destinations.
- Ask your winery/grape purchaser if they have specific chemical recommendations. These might differ from the advice in 'Recommendations' on pages 5 - 13.
- Some wineries do not approve the use of certain products/active constituents. These are underlined in the tables on pages 20 - 26. It is recommended that you contact your grape purchaser prior to the application of these products/active constituents.
- Grapevine growth stage can be variable across a block. When assessing grapevine phenology for the purpose of applying agrochemicals, base the assessment on the most advanced vines in the block to minimise the possibility of residues at harvest.
- To accurately identify the grapevine growth stage, use the chart on page 14. For more information consult Coombe, B. 1995. Adoption of a system for identifying grapevine growth stages. *Aust. J. Grape and Wine Res.* 1:104-110. The chart can also be downloaded from the AWRI website.
- A 30-day withholding period for all herbicide active constituents is recommended. If weed control is required within 30 days of harvest, contact your winery prior to spraying.
- The chemical label provides important information that must be followed including the personal protective equipment to be used when mixing chemicals or entering a vineyard after chemical use. See page 27 for more information about re-entry periods.
- When spraying, ensure that the amount of chemical applied does not exceed the rate specified on the manufacturer's label.
- If you are unable to keep to these recommendations, or if you need to spray closer than 30 days before harvest, contact your winery/grape purchaser or the AWRI for advice.
- Avoid spraying some types of foliar fertiliser closer than 60 days before harvest, as wine quality might be affected.
- Always read the label on the chemical container. The products mentioned in the table might not necessarily be registered for use in your state.
- Keep a record of agrochemical applications. Some wineries might not accept delivery of grapes without receipt of a signed spray diary from the producer. An industry-accepted spray diary template can be downloaded from the AWRI agrochemical webpage: www.awri.com.au/industry_support/viticulture/agrochemicals/.
- Grazing restrictions may apply to vineyards where agrochemicals have been used.

Key changes to this edition

This page presents a snapshot of changes to active constituents in this edition. For more detail, visit the AWRI website and view the June 2022 Agrochemical Update eBulletin.

New active constituents

- acetic acid
- iron phosphate
- iron powder
- polyoxin D zinc salt

New restriction on use in 'Recommendations' tables

- Products containing eugenol, geraniol and thimol are restricted to: Use no later than 14 days before harvest.

New configeration of the 'Recommendations' tables

- Information about mites has been consolidated on page 12.

How to use the following table

The table on the following pages presents recommended agrochemicals for use against the main fungal and insect pests in the production of grapes for export wine.

Products with the same first name are consolidated, with varying features shown in brackets. For example, Mancozeb, Mancozeb 750 DF, Mancozeb 750 WG and Mancozeb DF are shown as Mancozeb (750 DF, 750 WG, DF).

Active constituent	Activity group	Some registered products	Export harvest interval
Grouped alphabetically within each restriction on use for every target	Australian agrochemical codes	List of some chemical products available	The recommended withholding period for export grapes

Recommendations for export wine

Active constituent	Activity group	Some registered products	Export harvest interval
BLACK SPOT			
mancozeb Ω	M3	Dithane Rainshield Neo Tec, Fortuna Globe 750WG, Greenshield 750WG, Kencozeb 750DF, Manco 750 WG, Mancozeb (750 DF, 750 WG, DF), Manic WG, Mantra 750WG, Manzate (750 WG, DF), Manzeb, Penncozeb 750DF, Sinozeb 750 WG, Unizeb Disperss 750 DF	Use no later than 80% capfall.
metiram Ω	M3	Fruitcote, Polyram DF	
thiram Ω	M3	Thiragranz, Thiram (800 WG, DG)	
ziram Ω	M3	Ziragranz, Ziram (DG, Granuflo, WG)	
chlorothalonil §	M5	Applonil 720, Barrack (720, Betterstick), Barrow (900 WG, Stick 720SC), Bravo Weather Stik, Castor (720SC, 900 WG), Cavalry (Dry, Weatherguard), Cheers 720 Weathershield, Chlornil 720 SC, Chloro (720, 900 WG), Chloronil Pro, Chlorostar 900 WG, Chlorothalonil (720, 720SC, 900 WG), Chlortan 720, Clash (Dry 900 WG, Storm Guard 720SC), Conan (720, Sticks 720 SC), Echo (720, 900 WDG), Mueso (720, 900 WG, Stick 720), Whack (720, 900 WG)	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
copper oxychloride	M1	Cobox 500 WP, Oxydul DF	Use no later than 30 days before harvest.
dithianon	M9	Delan 700 WG, Dialon 700WG, Dinon 700 WG, Dithianon 700 WG, Dragon 700 WG, Dungeon 700 WG, Wrath 700WG	
BOTRYTIS BUNCH ROT - Review resistance management strategy on page 17			
fluopyram + tebuconazole	7 + 3	Luna Experience	Use no later than E-L 17, 12 leaves separated
fenhexamid	17	Fenhexamid 500 SC, Teldor 500 SC	Use no later than 80% capfall.
pyrimethanil #	9	Predict 600SC, Pyper 600 SC, Scala 600 SC	
azoxystrobin	11	Affix 250 SC, Agristar 250SC, Amistar 250 SC, A-star 250 SC, Avior (250 SC, 800 WG), Azoxy 250, AzoxyGuard 250 SC, Azoxys 250 SC, Azoxystrobin (250, 250 SC, 500 WG), Connect 800 WG, Galoxy 250SC, Mirador (250 SC, 625), Spartacus (250, 250 SC, 500WG), Stellar	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
chlorothalonil §	M5	Applonil 720, Barrack (720, Betterstick), Barrow (900 WG, Stick 720SC), Bravo Weather Stik, Castor (720SC, 900 WG), Cavalry (Dry, Weatherguard), Cheers 720 Weathershield, Chlornil 720 SC, Chloro (720, 900 WG) Chloronil Pro, Chlorostar 900 WG, Chlorothalonil (720, 720 SC, 900WG), Chlortan 720, Clash (Dry 900 WG, Storm Guard 720 SC), Conan (720, Sticks 720SC), Echo (500SC, 720, 900 WDG), Mueso (720, 900 WG, Stick 720), Whack (720, 900 WG)	
fenpyrazamine €	17	Prolectus	
tebuconazole + azoxystrobin	3 + 11	Aztec, Custodia (Forte)	

Ω Do not apply more than three sprays per season of Group M3 fungicides including in combination with Group 4.
§ Do not apply more than three sprays per season of chlorothalonil.
# Apply no more than 800 g active per hectare (maximum 2 L of 400 SC and 1.33 L of 600SC formulations).
€ Do not apply more than one spray per season of a product containing fenpyrazamine.

Active constituent	Activity group	Some registered products	Export harvest interval
BOTRYTIS BUNCH ROT *(CONT.)* - Review resistance management strategy on page 17			
cyprodinil ¥	9	Solaris 300 EC	Use no later than E-L 29, AND do not use within 60 days of harvest.
cyprodinil + fludioxonil ¥	9 + 12	Crossover WG, Cyprofludox WG, Missile, Swap WG, Switch	
polyoxin D zinc salt	19	Intervene WG	Use no later than E-L 34 (before commencement of veraison) AND not within 44 days of harvest.
eugenol, geraniol, thimol	46	Novellus	Use no later than 14 days before harvest.
potassium salts of fatty acids	U1	Ecoprotector	
hydrogen peroxide + peroxyacetic acid	M + M	(suppression only) Peracetic Acid, Peratec (PLUS), Peroxy Treat	Use no later than 7 days before harvest.
Aureobasidium pullulans	BM02	Botector	May be used until harvest.
Bacillus Amyloliquefaciens	BM02	Serenade Opti, Serifel	
DOWNY MILDEW - Review resistance management strategy on page 16			
ametoctradin + dimethomorph £	45 + 40	Zampro	Use no later than 80% capfall.
copper sulfate tribasic + mancozeb Ω	M1 + M3	Copman DF	
dimethomorph	40	Acrobat SC, Dimethomorph 500 SC, Downright, Meta Morph 500SC, Sphinx	
mancozeb Ω	M3	Dithane Rainshield Neo Tec, Fortuna Globe 750WG, Greenshield 750WG, Kencozeb 750DF, Manco 750 WG, Mancozeb (750 DF, 750 WG, 800 WP, DF), Manic WG, Mantra 750WG, Manzate (750 WG, DF), Manzeb, Penncozeb 750DF, Sinozeb 750 WG, Unizeb (420 SC, Disperss 750 DF)	
metalaxyl - M + mancozeb Ω	4 + M3	Axiom MZ WG, Ridomil Gold MZ WG	
metalaxyl + mancozeb Ω	4 + M3	Axiom MZ 720, Maxyl, Metal-Man MZ 720, Metman 720 WG, Zeemil (720WG, MZB 720 WP)	
metiram Ω	M3	Fruitcote, Polyram DF	
oxadixyl + propineb Ω	4 + M3	Rebound WP	
zineb Ω	M3	Zineb	
mandipropamid	40	Revus	Use no later than E-L 26 (capfall complete).
azoxystrobin	11	Affix 250SC, Agristar 250SC, Amistar 250SC, A-star 250SC, Avior (250 SC, 800 WG), Azoxy 250, AzoxyGuard 250 SC, Azoxys 250 SC, Azoxystrobin (250, 250 SC, 500 WG), Connect 800 WG, Galoxy 250SC, Mirador (250 SC, 625), Spartacus (250, 250 SC, 500WG), Stellar	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).

¥ Do not apply more than one spray per season of a product containing cyprodinil.

£ If only one spray of a product containing dimethomorph is applied per season, Zampro may be used up to E-L 31.

Ω Do not apply more than three sprays per season of Group M3 fungicides including in combination with Group 4.

Active constituent	Activity group	Some registered products	Export harvest interval
DOWNY MILDEW *(CONT.)* - Review resistance management strategy on page 16			
chlorothalonil §	M5	Applonil 720, Barrack (720, Betterstick), Barrow (900 WG, Stick 720SC), Bravo Weather Stik, Caster (720SC, 900 WG), Cavalry (Dry, Weatherguard), Cheers 720 Weathershield, Chlornil 720 SC, Chloro (720, 900WG), Chloronil Pro, Chlorostar 900 WG, Chlorothalonil (720, 720 SC, 900 WG), Chlortan 720, Clash (Dry 900 WG, Storm Guard 720 SC), Conan (720, Sticks 720SC), Echo (500SC, 720, 900 WDG), Mueso (720, 900 WG, Stick 720), Whack (720, 900 WG)	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
tebuconazole + azoxystrobin	3 + 11	Aztec, Custodia (Forte)	
amisulbrom + tribasic copper sulfate	21 + M1	Amicus Blue WG	Use no later than E-L 31, berries pea-size (not > 7 mm diameter).
trifloxystrobin	11	(suppression only) Flint 500 WG, Invictus 500 WG	
pyraclostrobin	11	Cabretta 250EC, Cabrio, Pavo 250 EC, Roadster 500 EC, Symbio 250 EC, Vipyr 250 EC	E-L 31 as above, AND do not use within 63 days of harvest.
copper formulations			Use no later than 30 days before harvest.
ammonium acetate	M1	Cop-IT	
ammonium complex	M1	Copperguard, Liquicop	
cuprous oxide	M1	Nordox 750 WG, Red Copper WG	
hydroxide	M1	Blue Shield DF, Champ (500WG, Dry Prill WG), Copper Hydroxide 400 WG, Flo-Bordo, Flowcop 500WG, Hydrocop WG, Kocide (Blue Xtra, Opti), Vitra 400 WG	
octanoate	M1	Tricop	
oxychloride	M1	Cobox 500 WP, Copper (Oxychloride, Oxychloride WP), Coppox (WG, WP), Cupro 375WG, EcoCopper 375WG, Isacop 500WP, Neoram 375 WG, Oxydul DF	
oxychloride + hydroxide	M1 + M1	Airone WG	
sulfate tribasic	M1	Bordeaux WG, Cuprofix Disperss, Tri-Base Blue, Tribasic Flowable, Tribasic Liquid	
dithianon	M9	Delan 700 WG, Dialon 700WG, Dinon 700 WG, Dithianon 700 WG, Dragon 700 WG, Dungeon 700 WG, Wrath 700WG	Use no later than 30 days before harvest.
metalaxyl - M + copper hydroxide	4 + M1	Ridomil Gold Plus	
metalaxyl + copper oxychloride	4 + M1	Axiom Plus, Copper Plus, Metalaxyl + Copper Oxychloride WP, Zeemil Plus	
sulfur + copper oxychloride	M2 + M1	Mildex WG	
hydrogen peroxide + peroxyacetic acid	M + M	Peratec PLUS (suppression only)	Use no later than 7 days before harvest.
potassium: bicarbonate + silicate	M2	EcoCarb Plus (suppression only)	

§ Do not apply more than three sprays per season of chlorothalonil.

Active constituent	Activity group	Some registered products	Export harvest interval
EUTYPA DIEBACK			
cyproconazole + iodocarb	3 + 28	Garrison Rapid Pruning Wound Dressing	Dormancy application.
fluazinam	29	Emblem, Gem, Zinam 500 SC	
tebuconazole	3	Gelseal, Greenseal, Sprayseal	
Trichoderma harzianum	n/a	Vinevax (Bio-Implants, Wound Dressing)	
PHOMOPSIS CANE AND LEAF SPOT			
fluazinam	29	Emblem, Gem, Zinam 500 SC	Dormancy spray.
mancozeb Ω	M3	Dithane Rainshield NeoTec, Fortuna Globe 750WG, Greenshield 750WG, Kencozeb 750DF, Mancozeb (750 DF, 750 WG, DF), Manic WG, Mantra 750WG, Manzate (750 WG, DF), Manzeb, Penncozeb 750DF, Unizeb (420 SC, Disperss 750DF)	Use no later than 80% capfall.
metiram Ω	M3	Fruitcote, Polyram DF	
dithianon	M9	Delan 700 WG, Dialon 700WG, Dinon 700 WG, Dithianon 700 WG, Dragon 700 WG, Wrath 700WG	Use no later than 30 days before harvest.
POWDERY MILDEW - Review resistance management strategy on page 18			
fluopyram + tebuconazole	7 + 3	Luna Experience	Use no later than E-L 17, 12 leaves separated.
pydiflumetofen	7	Miravis	Use no later than E-L 19, beginning of flowering when caps start loosening.
metrafenone	U8	Vivando	Use no later than 80% capfall.
spiroxamine	5	Prosper 500 EC, Spire 500 EC	
sulfur, elemental or crystalline sulfur	M2	Dusting Sulphur, Dusting Sulphur 900	Use no later than 12 weeks before harvest.
azoxystrobin	11	Affix 250SC, Agristar 250SC Amistar 250SC, A-star 250 SC, Avior (250SC, 800 WG), Azoxy 250, AzoxyGuard 250 SC, Azoxys 250 SC, Azoxystrobin (250, 250 SC, 500 WG), Connect 800 WG, Galoxy 250SC, Mirador (250 SC, 625) Spartacus (250, 250 SC, 500WG), Stellar	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
difenoconazole	3	Digger, Digger EW	
sulfur + tebuconazole	M2 + 3	Unicorn 745WG	
tebuconazole	3	Buzz Ultra 750WG, Laguna Xtreme 800WG, Orius 430 SC, Tebucon 430 SC, Tebuconazole (430SC, 750 WDG), Ultrateb 750WG, Zolo 430SC	
tebuconazole + azoxystrobin	3 + 11	Aztec, Custodia (Forte)	
cyflufenamid	U6	Flute 50 EW	Use no later than E-L 31, berries pea-size (not > 7 mm diameter).
mefentrifluconazole	3	Belanty	
paraffinic oil	n/a	BioPest, isoCLEAR HPO	

Ω Do not apply more than three sprays per season of Group M3 fungicides including in combination with Group 4.

Active constituent	Activity group	Some registered products	Export harvest interval
POWDERY MILDEW *(CONT.)* - Review resistance management strategy on page 18			
petroleum oil	n/a	JMS Stylet-Oil	Use no later than E-L 31, berries pea-size (not > 7 mm diameter).
pyriofenone	50	Kusabi 300 SC	
trifloxystrobin	11	Flint 500 WG, Invictus 500 WG	
pyraclostrobin	11	Cabretta 250EC, Cabrio, Pavo 250 EC, Roadster 500 EC, Symbio 250 EC, Vipyr 250 EC	E-L 31 as above, AND not within 63 days of harvest.
penconazole	3	Azotic, Delos, Pearl, Ruby 100EC, Topas 100 EC	Use no later than E-L 31, berries pea-size (not > 7 mm diameter) AND not within 60 days of harvest.
tetraconazole	3	Domark 40ME	
polyoxin D zinc salt	19	Intervene WG	Use no later than E-L 34 (before commencement of veraison) AND not within 44 days of harvest.
quinoxyfen	13	Legend, Quinfen 250 SC, Vitae	Use no later than E-L 34 (before commencement of veraison) AND not within 42 days of harvest.
triadimefon	3	Triadimefon 125	Use no later than 35 days before harvest.
triadimenol	3	Allitron, Triadimenol 250 EC, Tridim 250 EC	
copper ammonium acetate	M1	Cop-IT	Use no later than 30 days before harvest.
copper ammonium complex	M1	Copperguard, Liquicop	
myclobutanil	3	Myclonil WG, Mycloss Xtra, Stamina	
proquinazid	13	Talendo	
sulfur, present as elemental or crystalline sulfur	M2	Brimflo 800, Cosamil, Cosavet WG, Flosul 800, InnoSulph 800 WG, Kumulus DF, Microsul WG Elite, Microthiol Disperss, Nimbus WG, Sulfur (800 WG), Sulgran (80WG, WG), Sulphur (800 WG, WG), Thiovit Jet, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur, Yellowstone 800WG, Zulfa 800WG	
sulfur + copper oxychloride	M2 + M1	Mildex WG	
hydrogen peroxide + peroxyacetic acid	M + M	(suppression only) Peratec PLUS	Use no later than 7 days before harvest.
potassium bicarbonate	M2	EcoCarb	
potassium: bicarbonate + silicate	M2	EcoCarb Plus	

Active constituent	Activity group	Some registered products	Export harvest interval
AUSTRALIAN PLAGUE LOCUST			
Metarhizium anisopliae var. *acridum*	n/a	Green Guard SC Premium	Use no later than 7 days before harvest.
GARDEN WEEVIL			
abamectin + chlorantraniliprole	6 + 28	(suppression only) Voliam Targo	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
indoxacarb	22A	Avatar, Avatar eVo, Incarnate 300 WG, Indoxacarb 300 WG, Lepta 300 WG, Persona 300WG, Spymaster 300 WG	Use no later than E-L 31, berries pea-size (not > 7 mm diameter) AND not within 56 days of harvest.
GRAPEVINE MOTH			
chlorantraniliprole	28	Altacor Hort, Chlorantraniliprole 350 WG	Use no later than 80% capfall.
abamectin + chlorantraniliprole	6 + 28	Voliam Targo	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
spinetoram	5	Delegate	Use no later than E-L 31, berries pea-size (not > 7 mm diameter).
spinosad	5	Entrust Organic, Preserve 120 SC	
emamectin	6	Clama 50SC, Energise, Exclaim 44 SG, Oracle EC, Proclaim Opti, Warlock	Use no later than E-L 31, berries pea-size (not > 7 mm diameter) AND not within 56 days of harvest.
indoxacarb	22A	Avatar (eVo), Incarnate 300 WG, Indoxacarb 300 WG, Lepta 300 WG, Persona 300WG, Spymaster 300 WG	
Bacillus thuringiensis subspecies *aizawai*	11	Bacchus WG	May be used until harvest.
Bacillus thuringiensis subspecies *kurstaki*	11	Delfin, DiPel DF	
Trichogrammanza carverae	n/a	Trichogramma parasitic wasp	
GRAPEVINE SCALE †			
paraffinic oil	n/a	Bioclear, BioPest, D-C-Maxx nC24, Heavy Paraffinic Dormant Spray Oil, isoCLEAR HPO	Dormancy spray.
petroleum oil	n/a	All Seasons White Oil, D-C-Tron Plus Spray Oil, Sacoa Summer Spray Oil, Stifle	
spirotetramat	23	(suppression only) Movento 240 SC, Viento 240 SC	Use no later than E-L 18.
acetamiprid + pyriproxyfen ◊	4A + 7C	Trivor	Use no later than E-L 19.

† Some group 1B insecticides are registered for grapevine scale. Contact your winery or grape purchaser prior to any 1B insecticide application.
◊ Apply no more than once per season.

Active constituent	Activity group	Some registered products	Export harvest interval
LIGHT BROWN APPLE MOTH			
acetamiprid + pyriproxyfen ◊	4A + 7C	Trivor	Use no later than E-L 19.
chlorantraniliprole	28	Altacor Hort, Chlorantraniliprole 350 WG	Use no later than 80% capfall.
methoxyfenozide	18	Enigma 240 SC, Methoxyfenozide 240 SC, Peregrine, Prodigy, Slate 240, Venturi (Max)	
tebufenozide	18	Ecdypro 700 WP	
abamectin + chlorantraniliprole	6 + 28	Voliam Targo	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
spinetoram	5	Delegate	Use no later than E-L 31, berries pea-size (not > 7 mm diameter).
spinosad	5	Entrust Organic, Preserve 120 SC	
emamectin	6	Clama 50SC, Energise, Exclaim 44 SG, Oracle EC, Proclaim Opti, Warlock	Use no later than E-L 31, berries pea-size (not > 7 mm diameter) AND not within 56 days of harvest.
indoxacarb	22A	Avatar, Avatar eVo, Incarnate 300 WG, Indoxacarb 300 WG, Lepta 300 WG, Persona 300WG, Spymaster 300 WG	
Bacillus thuringiensis subspecies *aizawai*	11	Bacchus WG	May be used until harvest.
Bacillus thuringiensis subspecies *kurstaki*	11	Delfin, DiPel DF	
tetradecenyl acetate + tetradecadienyl acetate	n/a	Isomate LBAM Plus Pheromone, MD LBAM Pheromone	
Trichogrammanza carverae	n/a	Trichogramma parasitic wasp	
MEALYBUG ‡			
paraffinic oil	n/a	Bioclear, BioPest, isoCLEAR HPO	Dormancy spray.
spirotetramat	23	Movento 240 SC, Viento 240	Use no later than E-L 18.
acetamiprid + pyriproxyfen ◊	4A + 7C	Trivor	Use no later than E-L 19.
buprofezin	16	Applaud, Buprofezin 440, Scale & Bug, Uptown	Use no later than 80% capfall.
MEDITERRANEAN/QUEENSLAND FRUIT FLY			
A baiting program that does not target fruit or foliage is recommended.			
Control options for fruit fly are subject to APVMA permit conditions.			
Contact your winery or grape purchaser prior to use of any 1A, 1B, 2B or 3A insecticide.			

◊ Apply no more than once per season.
‡ Consult product label, registration may apply to specific mealybug species.

Active constituent	Activity group	Some registered products	Export harvest interval
MITES			
sulfur: as polysulfide	M2	Lime Sulphur	Apply as near as possible to budburst.
sulfur: as elemental or crystalline sulfur	M2	Cosamil, Cosavet WG, InnoSulph 800 WG, Microsul WG Elite, Nimbus WG, Sulfur 800 WG, Sulgran (80WG, WG), Sulphur (800 WG, WG), Thiovit Jet, Zulfa 800WG	Use no later than 30 days before harvest.
- BUD MITE (as for MITES and the following)			
sulfur: as elemental or crystalline sulfur	M2	Fungisul 80, Kumulus DF, Microthiol Disperss, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur, Yellowstone 800 WG	Use no later than 30 days before harvest.
- BUNCH MITE (as for MITES and the following)			
sulfur: as elemental or crystalline sulfur	M2	Wettable Sulphur, Yellowstone 800 WG	Use no later than 30 days before harvest.
- GRAPE LEAF BLISTER MITE (as for MITES and the following)			
paraffinic oil	n/a	Heavy Paraffinic Dormant Spray Oil	Dormancy spray.
petroleum oil	n/a	Stifle	
sulfur: as elemental or crystalline sulfur	M2	Brimflo 800, EcoSulfur 800WG, Flosul 800, Kumulus DF, Microthiol Disperss, Sulfur, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur, Yellowstone 800WG	Use no later than 30 days before harvest.
- GRAPE LEAF RUST MITE (as for MITES and the following)			
abamectin + chlorantraniliprole	6 + 28	Voliam Targo	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
sulfur: as elemental or crystalline sulfur	M2	Brimflo 800, Flosul 800, Fungisul 80, Kumulus DF, Microthiol Disperss, Sulfur, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur, Yellowstone 800WG	Use no later than 30 days before harvest.
- TWO SPOTTED MITE (as for MITES and the following)			
petroleum oil	n/a	Stifle	Dormancy spray.
abamectin + chlorantraniliprole	6 + 28	Voliam Targo	Use no later than E-L 29, berries pepper-corn size (not > 4 mm diameter).
etoxazole	10B	ParaMite	Use no later than 21 days before harvest.
SNAILS			
copper complex	n/a	Escar-go, Socusil	Dormancy spray.
metaldehyde	n/a	Axcela Slug and Snail, Metakill, Metaldehyde Snail and Slug, Metarex (Inov Snail and Slug, Snail and Slug), Pestmaster Snail and Slug, Slug Out, Slugger Slug and Snail, Snailex, Snail Trail	Ground application. Use no later than 7 days before harvest.
iron EDTA complex	n/a	Eradicate Snail and Slug Killer, Multiguard Snail and Slug Killer	Ground application. May be used until harvest.
iron phosphate anhydrous	n/a	Ironmax Pro	
iron powder	n/a	Eradicate Eco, Eco-Shield	

Active constituent	Activity group	Some registered products	Export harvest interval
WINGLESS GRASSHOPPER			
indoxacarb	22A	Avatar, Avatar eVo, Incarnate 300 WG, Indoxacarb 300 WG, Lepta 300 WG, Persona 300WG, Spymaster 300 WG	Use no later than E-L 31, berries pea-size (not > 7 mm diameter) AND not within 56 days of harvest.
Metarhizium anisopliae var. *acridum*	n/a	Green Guard SC Premium	Use no later than 7 days before harvest.

WEEDS

Contact your winery prior to any herbicide application within 30 days of harvest.

Herbicides registered for use in vineyards are listed on pages 23 and 24.

Products/active constituents underlined may not be approved for use by your winery. Contact your winery prior to the use of underlined products/active constituents.

The use of glyphosate products containing greater than 360 g of active per L in the growing season is not permitted by some wineries or grape purchasers.

Growth stage description

GROWTH STAGE ASSESSMENT IS **NOT** AN AVERAGE ACROSS THE VINEYARD. BASE GROWTH STAGE ASSESSMENTS ON THE **MOST ADVANCED VINES** IN THE BLOCK.

Budburst: When the first green tips are visible (E-L 4).

E-L 17: 12 leaves separated; inflorescence well developed, single flowers separated.

E-L 18: 14 leaves separated; flower caps still in place, but cap colour fading from green.

E-L 19: About 16 leaves separated; begining of flowering (first flower caps loosening).

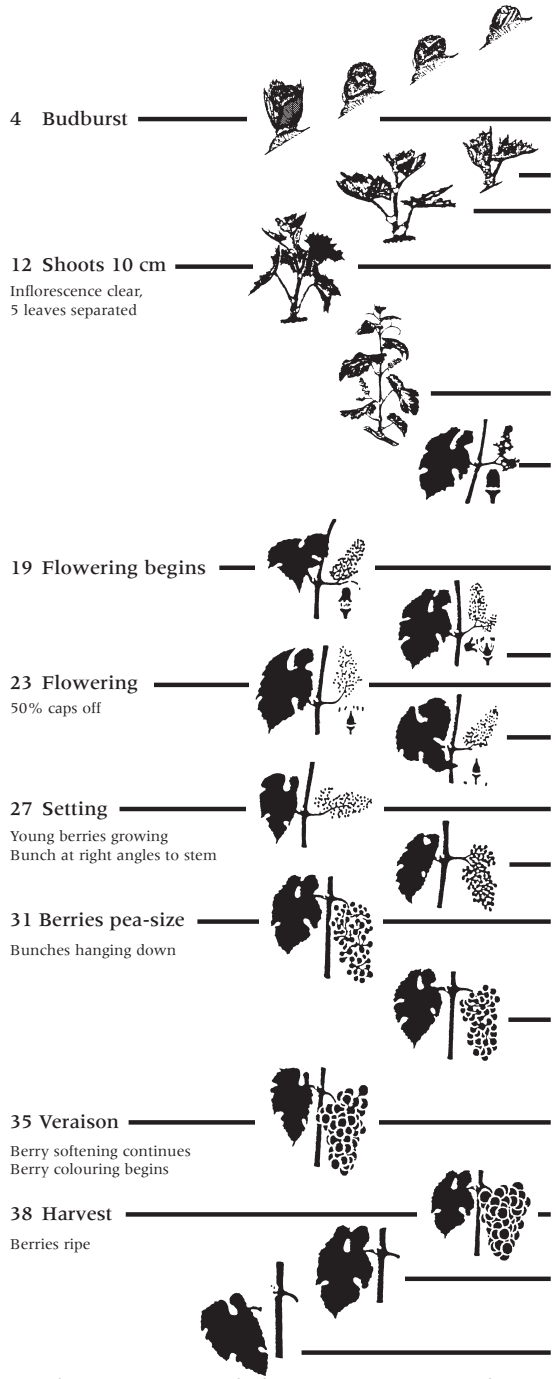
80% capfall: E-L stage 25; 80% of caps have just lifted and the largest berries are no more than 2 mm in diameter.

E-L 29: Just after berry set, berries pepper-corn size (not > 4 mm diameter); bunches tending downwards.

Pre-bunch closure: E-L stage 31; Berries have reached pea-size (not > 7 mm diameter); bunches hanging down.

E-L 34: Berries begin to soften and sugar starts increasing.
Veraison: E-L stage 35; when 50% of berries begin to soften and sugar starts increasing.

Grapevine growth stage table



Viticulture 1 - Resources. 2nd edition 2004. Dry, P. R., Coombe, B.G. (eds) Adelaide: Winetitles: p.153

Chemical resistance management strategies

What is 'chemical resistance'?

Chemical resistance is the inherited ability of an organism, be it a disease, weed or insect, to survive doses of an agrochemical that would normally control it. Resistance may develop after frequent use of one chemical or chemicals from the same activity group. Incorrect chemical use, such as under- or over-dosing or application at the wrong time in the life cycle of the target, can also promote resistance.

How does resistance develop?

Any population might contain a very small number of individuals that are naturally able to survive the application of a particular chemical. If the same chemical or chemicals from the same activity group are used repeatedly and exclusively, the susceptible individuals continue to be removed, and those with natural resistance survive and multiply to essentially dominate the population. The chemistry then 'fails' in the field.
It has been observed in vineyards that despite several herbicides being used over a season, they are often applied at the same time each season. As such, the weed species peculiar to that time are treated with the same herbicide each year, therefore promoting resistance.

Resistance countering measures

Manage unwanted pathogens, weeds and insects using non-chemical means when possible.
When using chemicals, get the most out of them by:

- timing them to when the target is most susceptible
- using the correct dose
- adding suitable adjuvants
- applying when the conditions are right.

Minimise chemical selection pressure by not overusing chemicals from the same activity group. CropLife Australia maintains resistance management strategies for fungicides, insecticides and herbicides. These are available at www.croplife.org.au.

Fungicide resistance status

Resistance to fungicides is a serious problem worldwide and Australia has not been spared. Resistance to many of the commonly used fungicides now exists.
CropLife Australia incorporates two initiatives in fungicide resistance management which ensure the best control with least risk of developing resistance. These are:
1. All fungicides have been classified by activity group, which appears as a number or letter and number code on the fungicide product label.
2. Strategies have been developed for the use of fungicides in crops where resistance by a particular organism is already evident or considered a risk.

Fungicide resistance status

The advice given in the CropLife strategies is valid at the time of going to print. Current versions of the strategies are available from the CropLife Australia website: www.croplife.org.au. CropLife can be contacted on 02 6273 2733 or info@croplife.org.au.

Downy mildew resistance management strategy

Resistance management strategy for the following fungicides:

Group 4	Phenylamides (PA)	**Group 45**	Quinone outside inhibitor, stigmatellin binding type (QoSI)
Group 11	Quinone outside inhibitor (QoI)		
Group 21	Quinone inside inhibitor (QiI)	**Group 45 + 40**	QoSI + CAA
Group 40	Carboxylic acid amide (CAA)	**Group 49**	Oxysterol binding protein homologue inhibitors (OSBPI)

1. Apply **all** these fungicides preventatively. **Group 4** fungicides should be applied before the first sign of oilspots or as soon as possible after an infection period.
2. **Group 49** fungicides should be applied prior to infection and only in mixtures with effective fungicides applied at an effective rate from a different cross resistance group. The mixing partner should give effective control of downy mildew at the rate and interval selected. Only apply **Group 49** for a maximum of one in every three sprays of the total number of downy mildew sprays, and no more than 2 applications per season.
3. Mixtures - co-formulations or tank mixes with label rate of alternative mode of action.
4. Apply a maximum of two consecutive applications of any one group.
5. Start preventative disease control sprays using **non-Group 4** protectant fungicides, typically when shoots are 10-20 cm long. Continue spraying at intervals of 7-21 days depending on disease pressure, label directions and rate of vine growth.
6. Limit the use of **Group 4** fungicides to periods when conditions favour disease development. Always apply **Group 4** fungicides in mixtures.Do not apply **Group 11** consecutively when applying alone.
7. Do not apply **Group 11** consecutively when applying alone.
8. Apply a maximum of two sprays per season of **Group 11 (**including in mixtures) and **Group 45+40** and **Group 49**.
9. Do not apply a spray containing **Group 40** as the last spray of the season.
10. Only apply a spray containing **Group 40** a maximum of 50% of the total number of downy mildew sprays.

	Group					
	4	**11**	**21 + M1**	**40** **45 + 40** **40 + M3**	**45 + 40**	**49**
Max. number of consecutive sprays	2	none	2	2	2	2
Max. number of solo sprays	none	2	3	2 (50%)	none	None
Max. number of sprays per season	4-mix	2	3	4-mix (50%*)	2	2-mix
Areas of higher agronomic risk	mix	mix	n/a	mix	n/a	mix

** Refer to Point 10*

Grey mould (Botrytis bunch rot) resistance management strategy

Resistance management strategy for the following fungicides:

Group 2	Dicarboximides	**Group 9**	Anilinopyrimidine (AP)
Group 7	Succinate dehydrogenase inhibitors (SDHI)	**Group 9+12**	AP + PP
		Group 11	Quinone outside inhibitor (QoI)
Group 7+3	SDHI + Demethylation inhibitors (DMI)	**Group 11+3**	QoI + DMI
		Group 17	Keto reductase inhibitors (KRI)
Group 7+12	SDHI + phenylpyrroles (PP)		

1. Always use an integrated disease management (IDM) approach to grey mould management in vines. Manipulate the bunch zone microclimate to reduce humidity and enable rapid drying of wet bunches. Always aim to reduce spore load, flower and fruit infection and limit regrowth of latent infections and disease spread by timely fungicide application in an IDM approach. Use fungicides registered to control *Botrytis* at label rates from as many different mode of action groups as possible when needed.
2. Apply all these fungicides as protectants before the first sign of disease.
3. Consecutive applications include from the end of one season to the start of the next.
4. Varying the number of fungicides applied targeting *Botrytis* changes the relative resistance risk to any one fungicide group. When three or fewer sprays are applied, it is recommended that three different groups of fungicides are used (see table below). When four sprays are applied, try to use three or four different groups of fungicide.

		Maximum recommended number of sprays which can contain Group:					
		2	**7 (incl. 7+3, 7+12)**	**9 (incl. 9+12)**	**11 (incl. 11+3)**	**12 (incl. 7+12 9+12)**	**17**
Total number of *Botrytis* targeting sprays	1	1	1	1	1	1	1
	2	1	1	1	1	2	1
	3	1	1	1	1	2	1
	4	2	1	2	2	2	2
	5+	2	2	2	2	2	2

5. If a **Group 11** or **7** fungicide is used solo, it should only be used in strict alternation with fungicides from a different mode of action group.
6. **Do not** apply more than two consecutive sprays from the same fungicide group, for any **Group 2, 7, 9** (including combinations with **Group 12**), **11+3** or **17** fungicide including from the end of one season to the start of the following season.
7. If two consecutive applications of **Group 11+3** fungicides are used, then they must be followed by at least the same number of applications of fungicide(s) from a different group(s) before a **Group 11** (including combinations with **Group 3**) fungicide is used again, either in the current or following season.
8. If resistance to a fungicide group has been detected within a region, only use that fungicide group in mixtures or in strict alternation with fungicides from a different cross-resistance group. A fungicide group that has been applied as the final application of the season should not be the first fungicide in the following season.
9. No specific resistance management strategy has been developed for low-risk fungicides, including those in **Group M** and **BM**. These products should be included in a management strategy as per label recommendations.

Powdery mildew resistance management strategy

Resistance management strategy for the following fungicides:

Group 3	Demethylation inhibitors (DMI)	**Group 11**	Quinone outside inhibitors (QoI)
Group 5	Amines (morpholines)	**Group 11+3**	QoI + DMI
Group 7	Succinate dehydrogenase inhibitors (SDHI)	**Group 13**	Aza-naphthalenes
		Group U6	Phenyl-acetamide
Group 7+3	SDHI + DMI	**Group 50**	Actin disruptors (aryl-phenyl-ketone)
Group 7+12	SDHI + phenylpyrroles (PP)		

1. Apply **all** these fungicides preventatively.
2. Consecutive applications include from the end of one season to the start of the next. Medium to high risk fungicides (**Group 7** and **11**) if used consecutively should be applied in a mixture or co-formulation with a registered, alternative mode of action for which resistance is not known - where these fungicides have been routinely used for many seasons, field research indicates there is an increased risk of powdery mildew resistance. To ensure effective powdery mildew control in these circumstances, either use alternative modes of action or apply in mixtures.
3. **Do not** apply more than two consecutive sprays of **Group 3, 5, 13, 50** and **U6**.

		Maximum recommended number of sprays which can contain Group:						
		3	**5**	**7 (incl. 7+3, 7+12)**	**11 (incl. 11+3)**	**13**	**50**	**U6**
Total number of powdery mildew targeting sprays	1	1	1	1	1	1	1	1
	2	2	1	1	1	2	1	1
	3	2	2	1	2	2	1	1
	4	2	2	1	2	2	2	2
	5	2	2	1	2	2	2	2
	6	3	3	2	2	3	3	2
	7	3	3	2	2	3	3	2
	8	3	3	2	2	3	3	2
	9+	3	3	3	2	3	3	2

CropLife disclaimer

These strategies are a guide only and do not endorse particular products, groups of products or cultural methods in terms of their performance. Always follow the product label for specific use instructions. While all effort has been taken with the information supplied in this document, no responsibility, actual or implied, is taken for the day to day accuracy of product or active constituent specific information.

Readers should check with the Australian regulator's (APVMA) product database for contemporary information on products and actives. The database can be sourced through www.apvma.gov.au. The information given in this strategy is provided in good faith and without any liability for loss or damage suffered as a result of its application and use. Advice given in this strategy is valid as at 30 June 2022. All previous versions of this strategy are now invalid.

Agrochemicals registered for use in Australian viticulture

The following products are registered by the Australian Pesticides and Veterinary Medicines Authority for use in wine-grape production in Australia. Always read the label on the chemical container, as the products listed in the table might not necessarily be registered for use in your state.

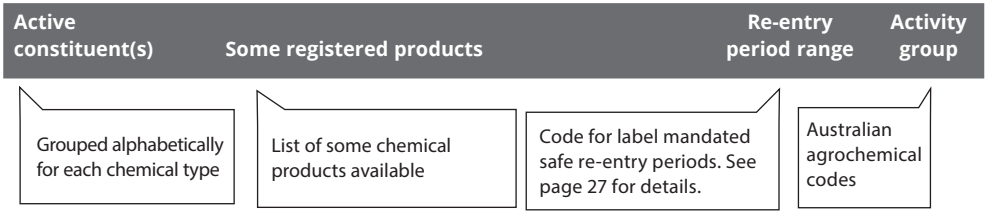
Some products in the following tables are underlined. Underlined products are those which some wineries do not permit the use of, or only allow in certain circumstances. It is recommended that you contact your winery or grape purchaser prior to the use of these products.

The re-entry period is the minimum amount of time that must pass between when a pesticide is applied to an area and when that area can be entered without protective clothing and equipment. An explanation of the key and more information about re-entry periods can be found on page 27.

To avoid the development of chemical resistance, it is necessary to know how the product works. Most chemicals have been allocated an 'activity group' based on their mode of action. The activity group appears on the product label as a number (or letter and number) for fungicides, a letter for herbicides and a number and letter or only a letter in the case of insecticides and miticides. Sometimes the resistance management strategy is also shown on the label.

The export restriction on use for many of the insecticides listed in the table below has not been provided. Due to international pressures, the use of agrochemicals belonging to chemical groups such as the organophosphates and carbamates is not encouraged. The recommended restriction on use for all 1A, 1B, 2B, 4A and 4C insecticides listed in this booklet is 'Use no later than 80% capfall'. In addition, it is recommended that any 3A insecticides that are not restricted to use during dormancy only (label withholding period), should not be used later than 80% capfall. However, it is essential that you contact your winery/grape purchaser prior to the application of any 1A, 1B, 2B, 3A, 4A or 4C insecticide.

How to use the following table



Active constituent(s)	Some registered products	Re-entry period	Activity group
FUNGICIDE			
ametoctradin + dimethomorph	Zampro	a	45 + 40
amisulbrom + tribasic copper sulfate	Amicus Blue	j	21 + M1
Aureobasidium pullulans	Botector	a	BM02
azoxystrobin	Affix 250SC, Agristar 250SC, Amistar 250 SC, A-Star 250 SC, Avior (250SC, 800 WG) , Azoxy 250, AzoxyGuard 250 SC, Azoxys 250 SC, Azoxystrobin (250, 250 SC, 500 WG), Connect 800 WG, Galoxy 250SC, Mirador (250 SC, 625), Spartacus (250, 250 SC, 500WG), Stellar	a, q	11
Bacillus amyloliquefaciens	Serenade Opti, Serifel		44
boscalid*	Filan, Rinkals, The Boss 500	a	7
captan*	Captan, Captan (800 WG, 900 WG, WG)	a, m	M4
chlorothalonil	Applonil 720, Barrack (720, Betterstick), Barrow (900 WG, Stick 720SC), Bravo Weather Stik, Castor (720SC, 900WG), Cavalry (Dry, Weatherguard), Cheers 720 Weathershield, Chlornil 720 SC, Chloro (720, 900 WG), Chloronil Pro, Chlorostar 900 WG, Chlorothalonil (720, 720SC, 900 WG), Chlortan 720, Clash (Dry, Storm Guard), Conan (720, Sticks 720SC), Echo (500SC, 720, 900 WDG), Mueso (720, 900WG, Stick 720), Whack (720, 900 WG)	a	M5
copper formulations			
ammonium acetate	Cop-IT	a	M1
ammonium complex	Copperguard, Liquicop	a	M1
cuprous oxide	Nordox 750 WG, Red Copper WG	a	M1
hydroxide	Blue Shield DF, Champ (500WG, Dry Prill WG), Copper Hydroxide 400 WG, Flo-Bordo, Flowcop 500WG, Hydrocop WG, Kocide (Blue Xtra, Opti), Vitra 400 WG	a	M1
octanoate	Tricop	a	M1
oxychloride	Cobox 500 WP, Copper Oxychloride (WP), Coppox (WG, WP), Cupro 375WG, EcoCopper 375WG, Isacop 500WP, Neoram 375 WG, Oxydul DF	a	M1
oxychloride + hydroxide	Airone WG	l	M1 + M1
sulfate tribasic	Bordeaux WG, Cuprofix Dispurss, Tri-Base Blue, Tribasic Flowable, Tribasic Liquid	a	M1
copper sulfate tribasic + mancozeb	Copman DF	a, c	M1 + M3
cyflufenamid	Flute 50 EW	a	U6
cyproconazole + iodocarb	Garrison Rapid Pruning Wound Dressing	a	3 + 28
cyprodinil	Solaris 300 EC	a	9
cyprodinil + fludioxonil	Crossover WG, Cyprofludox WG, Missile, Swap WG, Switch	a	9 + 12

* Restricted for use by some wineries. Contact your winery or grape purchaser prior to use.

Active constituent(s)	Some registered products	Re-entry period	Activity group
FUNGICIDE *(CONT.)*			
difenoconazole	Digger, Digger EW	a	3
dimethomorph	Acrobat SC, Dimethomorph 500 SC, Downright, MetaMorph 500, Sphinx	a, n	40
dithianon	Delan 700 WG, Dialon 700WG, Dinon 700 WG, Dithianon 700 WG, Dragon 700 WG, Dungeon 700 WG, Wrath 700WG	a	M9
eugenol, geraniol, thymol	Novellus	a	46
fenhexamid	Fenhexamid 500 SC, Teldor 500 SC	a	17
fenpyrazamine	Prolectus	a	17
fluazinam	Emblem, Gem, Zinam 500 SC	a, s	29
fluopyram + tebuconazole	Luna Experience	a	7 + 3
hydrogen peroxide + peroxyacetic acid	Peracetic Acid, Peratec (PLUS), Peroxy Treat	a	M + M
iprodione*	Aquaflow 500 SC, Chief (250 Liquid, Aquaflo, Topflo), Drover Guard 500 SC, Ipral 250, Iprine (250, 500), Iprodex 250, Iprodione (250, 500, 500 SC, Aquaflow 500), Lavor 250, Rovral (Aquaflo, Liquid), Transact	a	2
mancozeb	Dithane Rainshield Neo Tec, Fortuna Globe 750WG, Greenshield 750WG, Kencozeb 750DF, Manco 750 WG, Mancozeb (750 DF, 750 WG, 800 WP, DF), Manic WG, Mantra 750WG, Manzate (750 WG, DF), Manzeb, Penncozeb 750DF, Sinozeb 750 WG, Unizeb (420 SC, Disperss 750 DF)	a	M3
mandipropamid	Revus	a	40
mefentrifluconazole	Belanty	a	3
metalaxyl - M + copper hydroxide*	Ridomil Gold Plus	a	4 + M1
metalaxyl - M + mancozeb*	Axiom MZ WG, Ridomil Gold MZ WG	a	4 + M3
metalaxyl + copper oxychloride*	Axiom Plus, Copper Plus, Metalaxyl + Copper Oxychloride WP, Zeemil Plus	a	4 + M1
metalaxyl + mancozeb*	Axiom MZ 720, Maxyl, Metal-man MZ 720, Metman 720 WG, Zeemil (720 WG, MZB 720 WP)	a, r	4 + M3
metiram	Fruitcote, Polyram DF	a	M3
metrafenone	Vivando	a	U8
myclobutanil	Myclonil WG, Mycloss Xtra, Stamina	h	3
oxadixyl + propineb	Rebound WP	a	4 + M3
paraffinic oil	BioPest, isoCLEAR HPO	a	unspecified
penconazole	Azotic, Delos, Pearl, Ruby 100EC, Topas 100 EC	a	3
petroleum oil	JMS Stylet-Oil	a	unspecified
phosphorous acid*	Agri-Fos 600, Crop Doc 600, Dominator 600, Fungacid 600, Fungi-Fos (400, 400 pH 7.2), Ken-Fos 600, Phos Phyt 400, Phospot (400 pH 7.2, 600), Sprayphos (400, 600, 620), Throw Down	a	33
polyoxin D zinc salt	Intervene WG	a	19

* Restricted for use by some wineries. Contact your winery or grape purchaser prior to use.

Active constituent(s)	Some registered products	Re-entry period	Activity group
FUNGICIDE *(CONT.)*			
potassium bicarbonate	EcoCarb	a	M2
potassium bicarbonate + potassium silicate	EcoCarb Plus	a	M2
potassium salts of fatty acids	Ecoprotector	a	U1
procymidone*	Fortress 500, Metapris 500 SC, Nosclex 800 WG, Procym 800 WG, Procymidone (500, 500SL), Prodone 500SC, Proflex 500, Sporex, Sumisclex 500	p	2
proquinazid	Talendo	a	13
pydiflumetofen	Miravis	a	7
pydiflumetofen + fludioxonil *	Miravis Prime	a	7 + 12
pyraclostrobin	Cabretta 250EC, Cabrio, Pavo 250 EC, Roadster 500 EC, Symbio 250 EC, Vipyr 250 EC	a	11
pyrimethanil	Predict 600 SC, Pyper 600 SC, Scala 600 SC	a	9
pyriofenone	Kusabi 300 SC	a	50
quinoxyfen	Legend, Quinfen 250 SC, Vitae	a	13
spiroxamine	Prosper 500 EC, Spire 500 EC	e, f	5
sulfur + copper oxychloride	Mildex WG	a	M2 + M1
sulfur + tebuconazole	Unicorn 745WG	i	M2 + 3
sulfur, present as elemental or crystalline sulfur	Brimflo 800, Cosamil, Cosavet WG, Dusting Sulphur (900), Flosul 800, InnoSulph 800 WG, Kumulus DF, Microsul WG Elite, Microthiol Disperss, Nimbus WG, Sulfur (800 WG), Sulgran (80WG, WG), Sulphur (800 WG, WG), Thiovit Jet, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur, Yellowstone 800WG, Zulfa 800WG	a	M2
tebuconazole	Buzz Ultra 750WG, Gelseal, Greenseal, Laguna Xtreme 800 WG, Orius 430 SC, Sprayseal, Tebucon 430 SC, Tebuconazole (430SC, 750 WDG), Ultrateb 750WG, Zolo 430 SC	a, j	3
tebuconazole + azoxystrobin	Aztec, Custodia (Forte)	a	3 + 11
tetraconazole	Domark 40ME	a	3
thiram	Thiragranz, Thiram (DG, 800 WG)	a	M3
triadimefon	Triadimefon 125	a	3
triadimenol	Allitron, Citadel, Triadimenol 250 EC, Tridim 250 EC	a	3
Trichoderma harzianum	Vinevax (Bio-Implants, Wound Dressing)	a	unspecified
trifloxystrobin	Flint 500 WG, Invictus 500 WG	a	11
zineb	Zineb	a	M3
ziram	Ziragranz, Ziram (DG, Granuflo, WG)	a	M3

* Restricted for use by some wineries. Contact your winery or grape purchaser prior to use.

Active constituent(s)	Some registered products	Re-entry period	Activity group
HERBICIDE			
2,2-DPA-sodium (dalapon-sodium)	Dalapon 740 SP	a	J
acetic acid	Boost Plus, Weed Terminator	a	Z
amitrole + ammonium thiocyanate*	Amitat, Amitrole (250, 47T, T)	a	Q
amitrole + paraquat*	Alliance, Guerrilla, Para-Trooper (SL), P-Quat Advance	a, k	Q + L
bromoxynil + diflufenican	Bentley, Colt, Cougar, DFF + Brom MX, Lobak, Meerkat, Ruger	a	C + F
carfentrazone-ethyl	Artillery, Carfentrazone 240 EC, Carfentrazone-ethyl 240 EC, Elevate (400 EC), Hammer 400 EC, Knocker 240 EC, Nail 600 EC, Rage 400 EC, Spike, Spotlight Plus, Squatter 400 EC, Thrash 240EC	a	G
dichlobenil	Casaron 4G	a	O
diquat	Desiquat, Desi-Tex 200, Dia-Kill 200, Diquat 200, Reglone, Sanction 200	a	L
diquat + paraquat	Blowout, Brown Out 250, Combik 250, Di-Par 250, EOS, Kwicknock 250, Paradat, Paradym 250, Paraquat + Diquat 250, Revolver, Scorcher 250, Speedy 250, Spray & Sow, Spray Seed 250, Squadron 250	a	L + L
fluazifop-P	Cannonade 212 EC, Fluazaway 212, Fusilade Forte, Fuzilier, Resilience, Rootout 212	a	A
flumioxazin*	Chateau	a	G
glufosinate-ammonium	Basta, Beast 200, Biffo, Cease, Commando 200, Exile, Exonerate, Exonerate 200 SL, Fascinate (200 SL, 280SL, Dry), Faster-TG 200, Fiestar, Fosinate 200 SL, Gamma, Glufonium 200 SL, Glufos, Glufosinate 200, Glufosinate-Ammonium 200, G-FOS 200, Muster, Sky-7th 200	a	N
glyphosate-ipa*	AllOut 450, BioChoice 360, Cropmaster 450, Eraze (360 Bi-aquatic, 510 Bi-aquatic), Gladiator CT, Glister (360, 450), Glymount 450, Glypho 450, Glyphosate (360, 450, 450 CT, 450 SL, 510), Ken-Up (450 CT, 500 Flexi, Aquatic 360), Knockout 450, Musta 450, Panzer 450, Pestmaster Aqua-Tech 360, Pestmaster Glyphosate CT, Raze, Rico 450 GLY, Roundup (Biactive, CT), SixGun (360, 510), SquareDown 360, Wipe-Out (450, Bio)	a	M
glyphosate-ipa + mas	Weedmaster Duo	a	M
glyphosate-mas*	Bazooka Dry 800 SG, Glister 680 SG, GLY 680 Dry, Glyphosate (680, 700, 700SG, 875), Ken-Up Dry 680 WG, Knockout Dry 700 SG, Roundup Ready Plantshield	a	M
glyphosate-mea*	Glyphosate 450 SL, Wipe-Out Pro	a	M
glyphosate-potassium salt*	Cropmaster Ultra 540, Firebolt, Glyphosate 540K, GLY 540 SL, Gold TX 540 GLY, Ken-Up Dry Super K, Knockout (Extreme, Pro 540), Max Out 540, Rico HPS 540 GLY, Roundup (Dura, Ready PL, Ultra MAX), Warlord 540 Hi-Load, Wipe-Out Accelerate	a	M
glyphosate-potassium salt + ipa*	Weedmaster Argo	a	M

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Active constituent(s)	Some registered products	Re-entry period	Activity group
HERBICIDE *(CONT.)*			
glyphosate-potassium salt + mas*	Weedmaster Dual Salt Technology	a	M
glyphosate-potassium salt + mea*	Glyphosate 550 Twin Salt, Promix 550 GLY	a	M
glyphosate-potassium, monoethylamine + mono-ammonium salt*	Crucial	a	M
haloxyfop-R methyl ester	Circus 520EC, Decree 520EC, Dictum 520EC, Exert 520, Feathertop 520, Firepower (900), Hallotop 520EC, Halox-F (520, 900 EC), Haloxy 900 EC, Haloxyfop (520, 520 EC, 900EC), Haloxyken 520, Hermes 520, Jasper 520, Recon 520, Verdict 520	a	A
isoxaben	Gallery 750 DF	a	O
napropamide	Devrinol C 500 WG	a	K
nonanoic acid	Beloukha, Brut, Slasher, Slayer (Organic), Weed Terminator N	a	unspecified
norflurazon	Zoliar (800 DF, DF)	a	F
oryzalin	Cameo 500, Oryzalin 500, Prolan 500, Surflan 500	a	D
oxyfluorfen	Cavalier, Cavalier 500SC, Crossbar 240, Encore 240, Gowel 240 EC, Ox 240, Oxen 240EC, Oxy-F 240, Oxyfan 240 EC, Oxyfluorfen 240 EC, Point, Striker	a	G
paraquat	Explode (250, 300Plus), Gramoxone 360 Pro, P-Quat (250 SL, 300 SL, Advance), Par-Q 250, Para-Ken (250, 334), Paradox 250, Paraquat (250, 250 SL, Plus 360), Parashot 250, Powerquat 300 SL, Shirquat 250, Sinmosa 250, Sprayquat 250, Spraytop (250SL, 330), Uniquat 250	a	L
pendimethalin	Charger 330 EC, Cronos 440EC, Cyclone 330 EC, Panda 435, Panida Grande, Pendi 330, Pendimethalin (330, 330EC, 440 EC), Rifle 440	a, c	D
pine oil*	BioWeed	a	unspecified
quizalofop-P-ethyl*	Atomic Selective, Elantra Xtreme, Leopard (200 EC), Quiz, Quizalofop 200EC, Quizalofop-P-ethyl 200 EC, Sextant, Tiger Gold 250	a, n	A
simazine	Simanex 900 WG, SimaPhos 900 WG, Simaquest 900 WG, Simazine (500 Flowable, 900 WDG, 900 WG), S-Zine (600 SC, 900)	a	C
trifluralin	Trampoline 480, Tricon Flexi 480, Tri-F 480, Triflur X, Trifluralin (480, 480 EC), Trifluralinx (480, 580), Triflurasip 480, Trilogy (600), Uni-Try	a	D

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Active constituent(s)	Some registered products	Re-entry period	Activity group
INSECTICIDE			
abamectin + chlorantraniliprole	Voliam Targo	a	6 + 28
acetamiprid + pyriproxyfen*	Trivor	a	4A + 7C
alpha-cypermethrin*	Alpha Duo 100, Alpha Duop 100, Alpha Forte 250 SC, Alpha C 100EC, Alpha-C 300EC, Alpha Cyper 300 SC, Alpha-Cypermethrin (100 EC, 250 SC), Alphanex 100EC, Alpha-Scud (300 SC, Elite), Astound Duo, Buzzard, Chieftain Duo 100EC, Dominex Duo, Ellias (300 EC, Plus 400 EC), Ken-Tac 100, UniChoice 100 EC	a, c	3A
Bacillus thuringiensis subspecies:	aizawai: Bacchus WG kurstaki: Delfin, DiPel DF	a	11
bifenthrin*	Arrow 100 EC, Astral 250 EC, BiFendoff 100, Bifenthrin (100, 100 EC, 250EC, Ultra 300 EC), Bifentin 100EC, Bi-Thrin 100EC, Cropro Zeus, Starlet 250EC, Tal-Ken 100, Talstar 250 EC, Venom (100 EC, 240SC)	a, o	3A
buprofezin	Applaud, Buprofezin 440, Scale & Bug Insecticide, Uptown	a	16
carbaryl*	Bugmaster Flowable, Carbaryl 500 SC	d	1A
chlorantraniliprole	Altacor Hort, Chlorantraniliprole 350 WG	a	28
chlorpyrifos*	Chlorban 500EC, Chlor-P 500, Chlorpos 500EC, Chlorpyrifos (500, 500 EC), Fortune 500, Generifos 500 EC, Kensban 500, Pyrigran, Strike-Out (500 EC, 500 WP), suSCon Green, Sureban 500 EC	a	1B
clothianidin*	Samurai (bare soil application only)	a	4A
copper complex	Escar-Go, Socusil	a	unspecified
diazinon*	Diazinon	a	1B
emamectin	Clama 50SC, Energise, Exclaim 44 SG, Oracle EC, Proclaim Opti, Warlock	b	6
esfenvalerate*	Sumi-Alpha Flex	a	3A
etoxazole	ParaMite	a	10B
fenitrothion*	Fenitrothion 1000 EC	a	1B
fipronil*	Albatross (200 SC, 800), Amulet Cue-Lure, Cannonball 200SC, Fipronil 200SC, Fiptron 200, Maestro 200SC, Regal 800 WG, Regent 200SC, Region 200 SC, Seeker 200 SC, Vista 200SC	a	2B
indoxacarb	Avatar (eVo), Incarnate 300 WG, Indoxacarb 300 WG, Persona 300WG, Spymaster 300 WG	a	22A
iron phosphate anhydrous	Ironmax Pro	a	unspecified
iron EDTA complex	Eradicate Snail and Slug Killer, Multiguard Snail and Slug Killer	a	unspecified
iron powder	Eradicate Eco, Eco-Shield	a	unspecified
maldison (malathion)*	Fyfanon 440 EW, Hy-Mal	a	1B
metaldehyde	Axcela Slug and Snail, Metakill, Metaldehyde Snail and Slug, Metarex (Inov Snail + Slug, Snail + Slug), Pestmaster Snail + Slug, Slug Out, Slugger Slug + Snail, Snailex, Snail Trail		unspecified

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Active constituent(s)	Some registered products	Re-entry period	Activity group
INSECTICIDE *(CONT.)*			
metaldehyde + fipronil	Transcend		2B
Metarhizium anisopliae var. *acridum*	Green Guard SC Premium	d	unspecified
methomyl*	Electra 225, KDpc Metho, Landrin 225, Lannate L, Lannomyl 225, Lymo 225, Methomyl (225, 225SL), Nudrin 225, Pirate, Seneca (Ultra 400SP), Sinmas 225	a, d	1A
methoxyfenozide	Enigma 240 SC, Methoxyfenozide 240 SC, Peregrine, Prodigy, Slate 240, Venturi (Max)	a	18
paraffinic oil	Bioclear, BioPest, D-C-Maxx nC24, Heavy Paraffinic Dormant Spray Oil, isoCLEAR HPO	a	unspecified
petroleum oil	All Seasons White Oil, D-C-Tron Plus Spray Oil, JMS Stylet-Oil, Sacoa Summer Spray Oil, Stifle	a	unspecified
pyrethrins*	PyGanic	a	3A
pyrethrins + piperonyl butoxide*	Py-Bo Natural Pyrethrum	a	3A
spinetoram	Delegate	a	5
spinosad	Entrust Organic, Naturalure, Preserve 120 SC	a	5
spirotetramat	Movento 240 SC, Viento 240 SC	a	23
sulfoxaflor*	Transform	a	4C
sulfur, present as elemental or crystalline sulfur	Brimflo 800, Cosamil, Cosavet WG, EcoSulfur 800WG, Flosul 800, InnoSulph 800 WG, Kumulus DF, Microsul WG Elite, Microthiol Dispersss, Nimbus WG, Sulfur (800 WG), Sulgran (80WG, WG), Sulphur (800 WG, WG), Thiovit Jet, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur, Yellowstone 800 WG, Zulfa 800WG	a	M2
sulfur, present as polysulfide	Lime Sulphur	a	M2
tebufenozide	Ecdypro 700 WP	a	18
tetradecenyl acetate + tetradecadienyl acetate	Isomate LBAM Plus Pheromone, MD LBAM Pheromone		unspecified
trichlorfon*	Lepidex 500, Trepidex 500, Tyranex 500 SL	a	1B
Trichogrammanza carverae	Trichogramma parasitic wasp		unspecified
PLANT GROWTH REGULATORS			
Contact your winery or grape purchaser prior to the application of any plant growth regulator.			
chlormequat*	CC-77, Getset	a	unspecified
cyanamide*	Dormex, Duomax HC520	a	unspecified
ethephon*	Ethephon (720, 720 SL, Xtra 900), Ethon 720, K-Ethephon, Promote (720, Opti, Plus 900)	g	unspecified
gibberellic acid*	Accelerate 200 SG, GBR Acid, Gibb (100, 200), Gibber, N-Large, ProGibb SG	a	unspecified
methyl esters of fatty acids*	Waiken	c	unspecified

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Re-entry period

The re-entry period is the minimum amount of time that must pass between when an agrochemical is applied and when the treated area can be entered without protective clothing and equipment.

Re-entry periods are set to protect people from exposure to agrochemicals that can occur by inhalation or skin contact if they enter an area without proper protective equipment.

The agrochemical label provides information about the re-entry period and any protective clothing or equipment that must be used if the re-entry period is not met. **Different products from the same activity group may have different re-entry requirements.** The advice provided in these tables lists the various re-entry periods for the active constituent.

Where the re-entry period specifies a range of days, the shorter period relates to low exposure activities and the longer period to higher exposure activities. Check the label for details.

This advice is intended as a guide.

Consult each product label for re-entry period directions.

a	Do not enter treated area until the spray has dried
b	8 hours
c	12 hours
d	1 day
e	1 to 16 days depending on vineyard activity being performed
f	1 to 28 days depending on vineyard activity being performed
g	2 days
h	4 days depending on vineyard activity being performed
i	4 to 23 days depending on vineyard activity being performed
j	5 days
k	5 to 23 days depending on vineyard activity being performed
l	6 days depending on vineyard activity being performed
m	7 days
n	8 days
o	12 days depending on vineyard activity being performed
p	9 to 24 days depending on vineyard activity being performed
q	9 to 27 days depending on vineyard activity being performed
r	15 to 33 days depending on vineyard activity being performed
s	12 to 32 days depending on the vineyard activity being performed

Exotic vineyard pests

Australia's vineyards are kept free from the world's most severe pests and diseases by national biosecurity systems which prevent, respond to and recover from incursions. You have an important role to play in protecting your property and the entire viticulture industry from biosecurity threats.

1. Be aware of biosecurity threats

Make sure you and your vineyard workers are familiar with the most important exotic pest threats of grapevines.

2. Use pest-free propagation material

Ensure all propagation material is from trusted sources and vineyard inputs are fully tested, pest-free and preferably certified. Keep good records of planting material.

3. Keep it clean

Practising good sanitation and hygiene will help prevent the entry and movement of pests onto your vineyard. Workers, visitors, vehicles and equipment can spread pests, so make sure they are clean before entering and leaving your vineyard. Limit entry points to the property, have a designated visitor area and provide vehicle and personnel wash-down facilities.

4. Check your vineyard

Monitor your grapevines frequently. Knowing the usual appearance of your vineyard and grapevines will help you recognise new or unusual plant symptoms or pests. Keep written and photographic records of all unusual observations. Constant vigilance is vital for early detection of any exotic plant pest.

5. Abide by the law

Be aware of and respect laws and regulations established to protect the viticulture industry, Australian agriculture and your region.

6. Report anything unusual

If you suspect a new pest, call the exotic plant pest hotline.

1800 084 881

More information on biosecurity for viticulture can be found in the *Biosecurity Manual for the Viticulture Industry* available from the Farm Biosecurity website: http://www.farmbiosecurity.com.au/industry/viticulture/.

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