

# DRIED GRAPE APPROVED SUPPLIER PROGRAM MANDATORY CHEMICAL SPRAY DIARY 2017-2018

The Dried Grape Approved Supplier Program (DGASP) is recognised as the official quality assurance program for the dried grape industry. The program is fully supported by all dried grape processors.

The DGASP is aimed at meeting Australia's food safety requirements while minimising the compliance record keeping requirements for growers. To date, more than 1,000 dried fruit growers have successfully completed the formal training requirements to enable them to participate in the DGASP.

The use of a spray diary is the critical element of the DGASP. It must be maintained accurately and all processors will require the Dried Fruits Australia spray diary or equivalent to be **submitted by harvest or 6 February 2018**, whichever comes first.

Ensure you meet this obligation by keeping it up-to-date throughout the growing season. If the spray diary is not received, it may jeopardise the approved supplier status of the grower and reduced returns may apply.

## INSTRUCTIONS

### Step 1

Complete the property map and record each patch of a variety as a separate section (A, B, etc.) ensuring changes of plantings from previous years are made.

### Step 2

Complete the chemical use record sheet at the time each spray is applied to your property.

### Step 3

By 6 February 2018, the original white copies of the map and chemical spray records must be forwarded to your processor. Failure to do so will jeopardise approved supplier status and may lead to additional grading processes being undertaken to ensure the quality of fruit. Any additional costs involved in these tasks will be linked to the supplier.

The yellow copy is retained for your records.

### Assistance

If you have any questions regarding the use of the spray diary, please contact your processor - Sunbeam Foods (03) 5051 4400, Australian Premium Dried Fruits (03) 5022 9700 or Murray River Organics (03) 2282 2826 - or Dried Fruits Australia (03) 5023 5174.

### Disclaimer

The Dried Fruits Australia has used all reasonable care in compiling this spray diary, but does not warrant the accuracy or completeness of the information in this publication.

## MAXIMUM RESIDUE LIMITS

A maximum residue limit (MRL) is the maximum amount of chemical residue that is acceptable in food products. MRLs are established for all crops and vary from product to product and country to country. MRLs are expressed as the quantity of chemical residue (milligrams) per quantity of product (kilogram).

Australian dried grape growers must adopt management practices that ensure residues fall below the MRLs of domestic and export markets.

## ACTIONS TO MINIMISE HARVEST RESIDUES

To avoid unwanted and unnecessary chemical residues at harvest, there are several steps growers can take:

- **Strategies:** Focus on early season management to significantly reduce disease or pests.
- **Spray timing:** Ensure that sprays are timed to match the peak in pest or disease pressure. This will help to reduce the pest and disease load during the season. Poorly timed sprays can result in inadequate pest and disease control, requiring subsequent treatments to remedy problems later in the season. Late season sprays may not be effective and increase the risk of having excessive residues at harvest.
- **Spray efficiency:** Optimise effectiveness of spray applied by using the most appropriate nozzles, fan speed, and filters. Adjust volume applied to canopy size and use water sensitive paper in the canopy to test coverage.
- **Encourage beneficial insects:** Wasps, ladybirds, lacewings and predatory mites are prevalent in some orchards and assist with the control of pests. Careful choice of insecticides can protect biological control agents throughout the season and prevent the build-up of pest populations.
- **Seek advice:** If you have to spray within six weeks of harvest, contact the staff at your local state Department of Agriculture. There are some chemicals you should avoid using at that time of the year, and the staff will be able to advise you on alternatives.

# CHEMICALS REGISTERED FOR DRIED GRAPES

*Last updated Jan 2018*

Chemicals listed in **bold** have an industry restriction on use so that overseas MRL levels will not be exceeded in dried grapes. Please adhere to the industry recommended restriction on use rather than the label withholding period.

Active constituent(s)	Some registered product names	Restriction on use
<b>Black spot</b>		
<b>benalaxyl + mancozeb</b>	Galben M	<b>Use no later than 80% capfall</b>
<b>chlorothalonil</b>	Applonil 720, Barrack 720, Barrack Betterstick, Bond 720, Bravo 720, Bravo Weather Stik, Calvary Weatherguard, Cheers 720, Cheers 720 Weathershield, Chlornil 720SC, Chloro 720, Chloronil Pro, Chlorothalonil, Chlorothalonil 900WG, Chlortan 720, Conan 720, Conan Sticks 720SC, Echo 720, Echo 900WDG, Elect 500, Fung-o-nil 500, Unite 720, Whack 720, Whack 900WG	
<b>metiram</b>	Polyram DF	
<b>thiram</b>	Thiragranz, Thiram DG, Thiram 800WG	
<b>ziram</b>	Ziragranz, Ziram DG, Ziram Granuflor	
<b>copper oxychloride</b>	Cobox 500WP, Copper Oxychloride WP, Oxydul DF	<b>Use no later than 49 days before harvest</b>
<b>dithianon</b>	Delan 700WG, Dinon 700WG, Dragon 700WG	<b>Use no later than 28 days before harvest</b>
<b>mancozeb</b>	Choice Mancozeb 750WG, Dithane Rainshield Neo Tec, Fortuna Globe 750WG, Kencozeb 750DF, Mancoflo, Mancozeb 750DF, Mancozeb 750WG, Mancozeb DF, Manic WG, Manzate DF, Manzeb, Penncozeb 750DF, Sinozeb 750WG, Sinozeb Xtend 750DF, Unizeb 750DF, Unizeb Disperss 750DF	
<b>Phomopsis cane and leaf spot</b>		
fluazinam	Emblem, Gem	Dormant spray only, -30-day re-entry period
metiram	Polyram DF	Use no later than 80% capfall
<b>copper sulphate tribasic + mancozeb</b>	Novofix Disperss	<b>Use no later than 49 days before harvest</b>
<b>dithianon</b>	Delan 700 WG, Dinon 700WG, Dragon 700WG	<b>Use no later than 28 days before harvest</b>
<b>mancozeb</b>	Choice Mancozeb 750WG, Dithane Rainshield Neo Tec, Fortuna Globe 750WG, Kencozeb 750DF, Mancoflo, Mancozeb 750DF, Mancozeb 750WG, Mancozeb DF, ManicWG, Manzate DF, Manzeb, Penncozeb 420SC Penncozeb 750DF, Sinozeb Xtend 750DF, UniZeb 750DF, Unizeb Disperss 750DF	
<b>Powdery mildew</b>		
boscalid	Filan (do not apply to any set berries)	<b>Use no later than 5% capfall</b>
<b>azoxystrobin</b>	Affix 250SC, Amistar 250SC, Avior 800WG, Azaka, Azoxystrobin 250, Azoxystrobin 250SC, Azoxystrobin 500WG, Connect 800WG, Kelpie Azoxy250, Mirador 250SC, Spartacus 250SC, Spartacus 500WG, Stellar, Supernova 250SC	<b>Use no later than 80% capfall</b>
<b>difenoconazole</b>	Digger	
<b>hexaconazole</b>	Viva	
<b>metrafenone</b>	Vivando	
<b>pyraclostrobin</b>	Cabrio, Cabrio WG	
<b>spiroxamine</b>	Prosper 500 EC	
<b>sulfur + tebuconazole</b>	Unicorn 745WG	
<b>tebuconazole</b>	Buzz Ultra 750WG, Folicur 430 SC, Laguna Xtreme 800WG, Launch, Orius 430 SC, Zolo 430 SC	
<b>tebuconazole + azoxystrobin</b>	Custodia	
<b>tetraconazole</b>	Domark 40 ME, Mettle 40ME	
<b>cyflufenamid</b>	Flute 50EW	<b>Use no later than 56 days before harvest</b>
<b>paraffinic oil</b>	BioPest	
<b>penconazole</b>	Azotic, Delos, Pearl, Ruby 100EC, Topas 100EC	
<b>pyriofenone</b>	Kusabi 300SC	
<b>trifloxystrobin</b>	Flint 500 WG	
<b>copper ammonium acetate</b>	Cop-IT	<b>Use no later than 49 days before harvest</b>
<b>copper ammonium complex</b>	Copperguard, Liquicop	
<b>proquinazid</b>	Talendo	
<b>sulphur + copper oxychloride</b>	Mildex WG	<b>Use no later than 42 days before harvest</b>
quinoxifen	Legend, Quinfen 250SC	
<b>myclobutanil</b>	Mycloss Xtra	
<b>triadimefon</b>	Triadimefon 125	
<b>triadimenol</b>	Allitron, Bayfidan 250EC, Citadel, Triadimenol 250EC, Tridim 250EC	
sulphur, present as elemental or crystalline sulphur	Cosamil, Cosavet WG, David Grays Sulphur Spray, Flosul 800 InnoSulph 800WG, Kendon Sulphur, Kumulus DF, Microsul WG Elite, Microthiol Disperss, Notion, Rutec Sulfur, Solo 800WG, Sulfostar DF, Sulfur 800WG, Sulgran WG, Sulphur 800WG, Sulphur WG Thiovit Jet, Top Wetable Sulphur, Uni Shield, Wetable Sulphur	
sulfur, elemental or crystalline sulfur	Dusting Sulphur, Dusting Sulphur 900	
hydrogen peroxide +peroxyacetic acid (suppression only)	Peratec PLUS (suppression only)	
potassium bicarbonate	Ecocarb	
<b>Downy mildew</b>		
ametoctradin + dimethomorph	Zampro	<b>Use no later than 80% capfall</b>
azoxystrobin	Affix 250SC, Amistar 250SC, Avior 800WG, Azaka, Azoxystrobin 250, Azoxystrobin 250SC, Azoxystrobin 500WG, Connect 800WG, Kelpie Azoxy250, Mirador 250SC, Spartacus 250SC, Spartacus 500WG, Stellar, Supernova 250SC	
<b>benalaxyl + mancozeb</b>	Galben M	
<b>chlorothalonil</b>	Applonil 720, Barrack 720, Barrack Betterstick, Bond 720, Bravo 720, Bravo Weather Stik, Calvary Weatherguard, Cheers 720, Cheers 720 Weathershield, Chlornil 720SC, Chloro 720, Chloronil Pro, Chlorothalonil, Chlorothalonil 720, Chlorothalonil 900WG, Chlortan 720, Conan 720, Conan Sticks 720SC, Echo 500SC, Echo 720, Echo 900WDG, Elect 500, Fung-o-nil 500, Unite720, Whack 720, Whack 900WG	
<b>dimethomorph</b>	Acrobat SC, Downright, Sphinx	
<b>metiram</b>	Polyram DF	
<b>oxadixyl + propineb</b>	Rebound WP	
<b>pyraclostrobin</b>	Cabrio, Cabrio WG	
<b>tebuconazole + azoxystrobin</b>	Custodia	
<b>zineb</b>	Zineb	

Active constituent(s)	Some registered product names	Restriction on use
<b>Downy mildew cont.</b>		
mandipropamid	Revus	Use no later than 70 days before harvest
trifloxystrobin	Flint 500 WG (suppression only)	Use no later than 56 days before harvest
amisulbrom + tribasic copper sulphate	Amicus blue	Use no later than 49 days before harvest
copper ammonium acetate	Cop-IT	
copper ammonium complex	Copperguard, Luquicop	
copper cuprous oxide	Ag Copp 750, Nordox 750 WG, Red Copper WG	
copper hydroxide	Blue Shield DF, Champ Dry Prill WG, Flo-Bordo, Hydrocop, Kocide Blue Xtra, Kocide Opti, Vitra 400WG	
copper octanoate	Tricop	
copper oxychloride	Cobox 500WP, Copper Oxychloride, Copper Oxychloride 500WP, Copper Oxychloride WP, Coppox WG, Coppox WP, Neoram 375WG, Oxydul DF, Uni-Guard 500WP	
copper sulphate tribasic	Bordeaux WG, Cuprofix Disperss, Tri-Base Blue, Tribasic Liquid	
copper sulphate tribasic + mancozeb	Copman DF, Novofix Disperss	
metalaxyl - M + copper hydroxide	Ridomil Gold Plus	
metalaxyl - M + mancozeb	Ridomil Gold MZ WG	
metalaxyl + copper oxychloride	Axiom Plus, Copper Plus, Medley Plus, Metalaxyl + Copper Oxychloride WP, Zeemil Plus	
metalaxyl + mancozeb	Axiom MZ 720, Max MZ, Maxyl, Medley MZ, Metal-Man MZ 720, Zeemil 720WG, Zeemil MZB 720WP	
sulphur + copper oxychloride	Mildex WG	
dithianon	Delan 700 WG, Dinon 700WG, Dragon 700 WG	Use no later than 28 days before harvest
mancozeb	Choice Mancozeb 750WG, Dithane Rainshield Neo Tec, Fortuna Globe 750WG, Kencozeb 750DF, Mancoflo, Mancozeb 750 DF, Mancozeb 750WG, Mancozeb DF, Manic WG, Manzate DF, Manzeb, Penncozeb 420SC, Penncozeb 750DF Sinozeb 750 WG, Sinozeb Xtend 750DF, UniZeb 750DF, Unizeb Disperss 750DF	
hydrogen peroxide + peroxyacetic acid (suppression only)	Peratec PLUS (suppression only)	Use no later than 7 days before harvest
hosporous acid <sup>1</sup>	Agri-Fos 600, CropDoc 600, Dominator 600, Fungacid 600 Fungi-Fos 400, Fungi-Fos 400 ph 7.2, Grow-Phos 600 Phos Phyt 400, Phospot 400, Phospot 400 pH 7.2, Phospot 600, Sprayphos 400, Sprayphos 600 Sprayphos 620, Throw Down, Throw Down 600	Use no later than 5 days before harvest. Use no more than 2 sprays per season
<b>Botrytis bunch rot</b>		
boscalid <sup>2</sup>	Filan (do not apply to any set berries)	Use no later than 5% capfall
azoxystrobin	Affix 250SC Amistar 250SC, Avior 800WG, Azaka, Azoxystrobin 250, Azoxystrobin 250SC, Azoxystrobin 500WG, Connect 800WG, Kelpie Azoxy 250, Mirador 250SC, Spartacus 250SC, Spartacus 500WG, Stellar, Supernova 250SC	Use no later than 80% capfall
chlorothalonil	Applonil 720, Barrack 720, Barrack Betterstick, Bond 720, Bravo 720, Bravo Weather Stik, Calvary Weatherguard, Cheers 720, Cheers 720 Weathershield, Chlornil 720SC, Chloro 720, Chloronil Pro, Chlorothalonil, Chlorothalonil 720, Chlorothalonil 900WG, Chlortan 720, Conan 720, Conan Sticks 720SC, Echo 500SC Echo 720, Echo 900WDG, Elect 500, Fung-o-nil 500, Unite 720, Whack 720, Whack 900WG,	
fenhexamid	Teldor 500 SC	
fenpyrazamine	Prolectus	
pyrimethanil	Predict 600SC, Protector 400SC, Pyrus 400SC, Scala 400SC	
tebuconazole + azoxystrobin	Custodia	
cyprodinil	Solaris 300 EC	Use no later than 56 days before harvest
cyprodinil + fludioxonil <sup>3</sup>	Cyprofludox WG, Missile, Switch	Use no more than 2 sprays per season
potassium salts of fatty acids	Ecoprotector	Use no later than 14 days before harvest
hydrogen peroxide + peroxyacetic acid	Peracetic Acid, Peratec, Peratec PLUS, Peroxy Treat (suppression only)	Use no later than 7 days before harvest
iprodione	Aquaflow 500SC, Chief 250 Liquid, Chief Aquaflor, Corvette Flowable, Corvette Liquid, Ippon 500 Aquaflor, Ipral 250, Iprine 250, Iprine 500, Iprodex 250, Iprodione 250, Iprodione Aquaflow 500, Iprodione Liquid 250, Rovral Aquaflor, Rovral Liquid, Shelby 250, Sindon 500SC, Sinpro 500SC, Subscribe, Transact	
<b>Eutypa dieback</b>		
fluazinam	Emblem, Gem	Dormant treatment only
tebuconazole	Gelseal, Greenseal	
trichoderma herzianum	Vinevax Bio Implants, Vinevax Wound Dressing	
<b>Light brown apple moth</b>		
chlorantraniliprole	Altacor, Altacor Hort	Use no later than 80% capfall
methoxyfenozide	Prodigy	
spinetoram	Delegate	
emamectin	Proclaim, Warlock	
indoxacarb	Avatar	Use no later than 56 days before harvest
spinetoram	Delegate	
<i>bacillus thuringiensis</i> subspecies. <i>aizawari</i>	Bacchus WG,	May be used until harvest
<i>bacillus thuringiensis</i> subspecies. <i>kurstaki</i>	Delfin, DiPel DF	
tetradecenyl acetate + tetradecadienyl acetate	Isomate LBAM Plus Pheromone, MD LBAM Corto, MD LBAM Flex Pheromone, MD LBAM Pheromone	

Active constituent(s)	Some registered product names	Restriction on use
<b>Grapevine moth</b>		
<b>chlorantraniliprole</b>	Altacor, Altacor Hort	<b>Use no later than 80% capfall</b>
<b>emamectin</b>	Proclaim, Warlock	
<b>indoxacarb</b>	Avatar	
<b>spinetoram</b>	Delegate	
<b>spinosad</b>	Success 2 Naturalyte	
<b>maldison (malathion)</b>	Fyfanon 440EW, Hy-Mal, Maldison 500	<b>Use no later than 56 days before harvest</b>
<b>methidathion</b>	Suprathion 400EC	
<i>bacillus thuringiensis</i> subspecies. <i>aizawari</i>	Bacchus WG,	
<i>bacillus thuringiensis</i> subspecies. <i>kurstaki</i>	Delfin, DiPel DF	May be used until harvest
<b>Bud mite, bunch mite and grape leaf rust mite</b>		
sulfur, present as polysulfide	Lime Sulphur	Apply as near as possible to budburst
sulfur, present as elemental or crystalline sulfur	Cosamil, Cosavet WG, InnoSulph 800WG, Kumulus DF, Microsul WG Elite, Microthiol Disperss, Notion, Solo 800WG, Sulfostar DF, Sulfur 800WG, Sulgran WG, Sulphur 800WG, Thiovit Jet, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur	Use no later than 7 days before harvest
<b>Grape leaf blister mite</b>		
paraffinic oil	Heavy Paraffinic Dormant Spray Oil	
petroleum oil	Stifle, Vicol Winter Oil	Dormant spray only
sulfur, present as polysulfide	Lime Sulphur	Apply as near as possible to budburst
sulfur, present as elemental or crystalline sulfur	Cosamil, Cosavet WG, David Grays Sulphur Spray, Flosul 800, InnoSulph 800WG, Kendon Sulphur, Kumulus DF, Microsul WG Elite Microthiol Disperss, Notion, Rutec Sulfur, Solo 800WG, Sulfostar DF, Sulfur 800WG, Sulphur WG, Sulgran WG, Sulphur 800WG, Thiovit Jet, Top Wettable Sulphur, Uni-Shield, Wettable Sulphur	Use no later than 7 days before harvest
<b>Grapevine scale</b>		
paraffinic oil	Bioclear, BioPest, Heavy Paraffinic Dormant Spray Oil Trump Spray Oil	
petroleum oil	All Seasons White Oil, D-C-Tron Plus Spray Oil, Socoa Summer Spray Oil, Stifle, Vicol Summer Oil, Vicol Winter Oil	<b>Dormant spray only</b>
<b>spirotetramat</b>	Movento 240SC (suppression only)	<b>14 leaves separated, flower caps still in place, but cap colour fading from green</b>
<b>Long tailed mealy bug</b>		
paraffinic oil	Bioclear, BioPest, Trump Spray Oil	Dormant spray only
<b>buprofezin</b>	Applaud, Scale & Bug, Strident	
<b>spirotetramat</b>	Movento 240SC	<b>Use no later than 80% capfall</b>
<b>Thrips</b>		
<b>dimethoate</b>	Nufarm dimethoate	<b>Use no later than 80% capfall VIC, SA &amp; WA only</b>
<b>Vinegar fly</b>		
trichlorfon	Dipterex 500 SL Insecticide, Nufarm Lepidex 500	Spray drying racks when flies are troublesome
<b>Earwigs</b>		
<b>indoxacarb</b>	Avatar	<b>Use no later than 80% capfall</b>
<b>methidathion</b>	Supracide 400	<b>Use no later than 28 days before harvest</b>
<b>Plague locust &amp; wingless grasshoppers</b>		
<b>indoxacarb</b>	Avatar	<b>Use no later than 56 days before harvest</b>
<i>metarhizium anisopliae</i> var. <i>acridium</i>	Green Guard SC, Green Guard SC Premium	Use no later than 7 days before harvest
<b>Snails &amp; slugs</b>		
copper complex	Escar-go, Socusil	Dormant spray only
metaldehyde	Meta(pellets), Metarex Snail and Slug Bait, Pestmaster Snail and Slug pellets, Slug Out (bait) Slugger (Slug & Snail pellets)	
iron EDTA complex	Multiguard Snail and Slug Killer	Apply to vineyard floor, use no later than 7 days before harvest
<b>Plant growth regulators</b>		
chlormequat	CC-77, Getset	
cynamide	Cyan, Dormex, Duomax HC520	
ethephon	E-Phon, Ethephon 480, Ethephon 720, Ethephon 720 SL, Ethrel 720, K-Ethephon, Promote 720, Promote 900	
gibberellic acid	Gala, GBR Acid, GBR Acid 200SG, Gibb 100, Gibb 200, Gibber, N-Large, ProGibb SG	
methyl esters of fatty acids	Waiken	

Chemicals listed in **bold** have an industry restriction on use so MRL levels will not be exceeded in dried grapes.

Please adhere to the industry recommended withholding periods rather than the label recommendations.

- It is advised that you contact your processor prior to the application of phosphorous acid spray.
- Do not apply Filan to developing berries.
- Do not apply Switch at both flowering and growth stage E-L 31 (when berries are pea-sized 7mm diameter).
- Gem and Shirlan have a 32-day re-entry period.

Some products that appeared in the previous season's diary have been deleted in the 2017-2018 spray diary. The reasons for deletion include loss of registration, pending loss of registration, or lack of MRLs in export markets.

Herbicides for use in vineyards		
Active constituent(s)	Common trade names	Critical comments
2-2-DPA-sodium (dalapon-sodium)	Dalapon 740 SP	<b>Do not apply in vines between flowering and harvest</b> Systemic herbicide, controlling grasses and broadleaf weeds
amitrole + ammonium thiocyanate	Amitrole 250, Amitrole T	
amitrole + paraquat	Alliance, Para-Trooper	
bromoxynil + diflufenican	Bentley, Colt, Cougar, Difluken B, Jaguar, Kelpie DFF+Brom MX	Control of broadleaf Weeds <b>Use only when vines are FULLY DORMANT</b>
carfentrazone-ethyl	Artillery, Carfentrazone 240 EC, Carfentrazone-ethyl 240 EC, Elevate, Hammer 400 EC, Nail 240 EC, Nail 600 EC, Spotlight Plus	<b>Do not apply in vines between flowering and harvest</b> Apply with a knockdown herbicide for improved control of certain broadleaf weeds
dichlobenil	Casaron 4G, Casoron G	Soil applied pre-emergent control of weeds
diquat	Desiquat, Dia-Kill 200, Diquat 200, Reglone	Target weed applied desiccant controlling annual and broadleaf weeds
diquat + paraquat	Blowout, Brown Out 250, Combik 250, Di-Par 250, EOS, Kwicknock 250, Paradat, Paradym 250, Paraquat + Diquat 250, Paraquat/Diquat Pre-Seed 250, Revolver, Scorcher 250, Speedy 250, Spray & Sow, Spray Seed 250, Spraykill 250, Uni spray 250	
fluazifop-P	Fusilade Forte, Fuzilier, Resilience, Rootout 212	Systemic herbicide for grass control only
flumioxazin	Chateau	Soil applied (residual) control of various grasses and broadleaf weeds
glufosinate-ammonium	Basta, Biffo, Cease, Commando 200 Exile, Exonerate, Exonerate 200 SL, Fascinate 200 SL Faster-TG 200, Fiestar, Gamma, Glufonium 200 SL Glufosinate 200, Glufosinate-Ammonium 200, Kelpie G-FOS 200, Sky-7th 200	Non-selective herbicide, partially systemic desiccant
glyphosate-ipa	AllOut 450, BioChoice 360, ClearUp Glyphosate 450, Eradicator 540, Eraze 360 Bi-aquatic, Eraze 510 Bi-aquatic, Gladiator, Glistar 360, Glistar 450, Glymont 450, Glyphosate 360, Glyphosate 360 SL Glyphosate 450, Glyphosate 450 CT, Glyphosate 450 SL, Glyphosate 510, Glyphosate 510 SL, Glyphosate CT Kelpie Rico 450 GLY, Ken-Up 450 CT, Ken-Up Aquatic 360, Knockout 450, Pestmaster Aqua-Tech 360, Pestmaster Glyphosate CT, Raze, Roundup, Roundup Biactive, Roundup CT, Sanos 360, Sanos 450, Sickle 540, Square Down 360, Wipe-Out 450, Wipe-Out Bio,	Systemic herbicide, non-selective
glyphosate- ipa + carfentrazone ethyl	Broadway	
glyphosate- ipa + mas	Credit, Weedmaster Duo	
glyphosate-mas	Bazooka Dry 800 SG, ClearUp 700 Bio-Dri, ClearUp 700 Dri Broadacre, ClearUp 840 Dry-Flo, Gladiator Dry 680 WG, Glistar 680 SG, Glyphosate 680, Glyphosate 700, Glyphosate 700SG, Glyphosate 875, Ken-Up-Dry 680 WG, Roundup Ready Plantshield,	
glyphosate-mea	Clear Up 450 SL, Glyphosate 450 SL	
glyphosate-potassium salt	Cotton Glyphosate 495, Firebolt, Gladiator Optimax, Glyphosate 540K, Glyphosate K-Tech 500 SL, Kelpie GLY 540SL Max Out 540, Roundup Dura, Roundup Ready PL, Roundup UltraMAX, Touchdown Hitech, Warlord 540 Hi-Load, Wipe-Out Accelerate	
glyphosate-potassium salt + ipa	Weedmaster Argo	
glyphosate-potassium salt + mas	Weedmaster Dual Salt Technology	
haloxyfop-R methyl ester	Convict, Exert 520, Firepower, Haloxyfop 520, Haloxyfop 520 EC, Haloxyfop 900 EC Haloxyken 520, Hermes 520, Jasper 520, Recon 520, Verdict 520	Herbicide for the control of grasses
isoxaben	Gallery 750 DF	Soil applied, pre- emergence control of certain weeds including broadleaf weeds
napropamide	Devrinol WG	
norflurazon	Zoliar DF	Soil applied (residual) control provided for up to 6 months, non-selective
oryzalin	Cameo 500, Oryzalin 500, Prolan 500, Stonewall, Surflan 500	Soil applied (residual), non-selective
oxyfluorfen	Cavalier, Convert 240 EC, Crossbar 240, GoalTender, Gowel 240 EC, Ox 240, Oxen 240 EC, Oxyfan 240 EC, Oxyfluorfen 240 EC, Point, Striker	Soil applied (residual), non-selective, with some post-emergent activity on actively growing seedlings
paraquat	Explode 250, Gramoxone 250, Nuquat 250, Paradox 250, Para-Ken 250, Para-Ken 334, Paraquat 250, Paraquat 250 SL, Powerquat 300 SL, Shirquat 250, Sinmosa 250, Spayquat 250, Spraytop 250 SL, Uniquat 250	Desiccant herbicide, non-selective
pendimethalin	Cronos 440 EC, Fist 330, Panda 435, Panida Grande, Pendimethalin 330, Pendimethalin 330 EC, Pendimethalin 440 EC, Rifle 440, Romper 440 EC,	Soil applied (residual) for grasses and broadleaf weeds <b>Do not apply after woolly bud stage</b>
pine oil	BioWeed	Organic alternative herbicide
quizalofop-P-ethyl	Atomic Selective Herbicide, Elantra, Electra Xtreme, Leopard, Leopard 200EC, Quinella 100 EC, Quinella Upgrade, Quiz, Quizalofop-P-ethyl 200 EC, Sextant, Tiger Gold 250	Systemic herbicide, for control of grasses
simazine	Gesatop 600 SC, Gesatop Granules 900 WG Kelpie S-Zine900, Kelpie S-Zine900WG, Simagranz, Simanex 900 WG, SimaPhos 900 WG, Simaquest 900 WG, Simazine 500 Flowable, Simazine 900 DF, Simazine 900 WDG, Simazine 900 WG	Soil applied (residual), non-selective
trifluralin	Trampoline 480, Tricon Flexi 480, Triflur X, Trifluralin 480, Trifluralin 480 EC, Triflurasip 480, Trilogy, Trilogy 600, Uni-Try	Soil applied, pre-emergent control of certain annual grasses & broadleaf weeds

# WHAT IS FUNGICIDE RESISTANCE?

Fungicide resistance is the ability of a plant disease causing organism to survive doses of a fungicide. Resistance may develop after the frequent use of one fungicide, or fungicides from the same activity group.

Resistance to many of the commonly used fungicides now exists and is a serious problem worldwide.

With any resistance management, it is important to:

- Prevent the build-up of resistant individuals in the disease population;
- Minimise fungicide selection pressure by not overusing fungicides from the same activity group.

Croplife Australia incorporates two initiatives in fungicide resistance management that 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.

## Powdery mildew

- Apply all these fungicides preventatively.
- Consecutive applications include from the end of one season to the start of the next.
- Mixtures - co-formulations or tank mixes with label rate of alternative mode of action.

Fungicide activity group(s)	Resistance management strategy
<b>Group 3</b> Dimethylation inhibitors (DMI)	<b>Group 3</b> <ul style="list-style-type: none"> <li>• <i>Do not</i> - apply more than two consecutive sprays of a <b>Group 3</b> fungicide</li> <li>• <i>Do not</i> - apply more than three <b>Group 3</b> sprays per season.</li> <li>• <i>Do not</i> - use <b>Group 3</b> fungicides curatively</li> </ul>
<b>Group 5</b> Amines (morpholines)	<b>Group 5</b> <ul style="list-style-type: none"> <li>• <i>Do not</i> - apply more than two consecutive sprays of <b>Group 5</b> fungicide.</li> <li>• <i>Do not</i> - apply more than three <b>Group 5</b> fungicide sprays per season.</li> </ul>
<b>Group 7</b> Succinate dehydrogenase inhibitors (SDHI)	<b>Group 11</b> <ul style="list-style-type: none"> <li>• <i>Where these fungicides have been routinely used for many seasons, field research indicates there is an increased risk of powdery mildew resistance.</i> To ensure effective powdery mildew control in these circumstances, either use alternative modes of action or apply in mixtures</li> <li>• <i>Do not</i> - make consecutive applications if applied alone</li> <li>• <i>Do not</i> - apply more than two sprays per season, including mixtures</li> </ul>
<b>Group 11</b> Quinone outside inhibitors (qol) and combinations of Group 3	<b>Group 13</b> <ul style="list-style-type: none"> <li>• <i>Do not</i> - apply more than two consecutive sprays <b>Group 13</b> fungicide</li> <li>• <i>Do not</i> - apply more than three <b>Group 13</b> sprays per season.</li> </ul>
<b>Group 13</b> Aza-naphthalenes	<b>Group U6</b> <ul style="list-style-type: none"> <li>• <i>Do not</i> - apply more than two consecutive sprays of <b>Group U6</b> fungicide</li> <li>• <i>Do not</i> - apply more than two Group U6 sprays per season</li> </ul>
<b>Group U6</b> Phenyl-acetamide	<b>Group U8</b> <ul style="list-style-type: none"> <li>• <i>Do not</i> - apply more than two consecutive sprays of <b>Group U8</b> per season</li> <li>• <i>Do not</i> - apply more than four Group U8 sprays per season</li> </ul>
<b>Group U8</b> Actin disruptors (aryl-pheny-ketone) fungicides	

## Downy mildew

- Apply all these fungicides preventatively.
- Group 4 fungicides should be applied before the first sign of oil spots or as soon as possible after an infection period.
- Mixtures - co-formulations or tank mixes with label rate of alternative mode of action.
- Apply maximum of two consecutive applications of any one group.
- Start preventative disease control sprays using non-group 4 protectant fungicides, typically when shoots are 10-20cm long. Continue spraying at intervals of 7-21 days depending on disease pressure, label directions and rate of vine growth.
- Limit the use of group 4 fungicides to periods when conditions favour disease development. Always apply group 4 fungicides in mixtures.

Fungicide activity group(s)	Resistance management strategy
<p><b>Group 4</b> Phenylamide</p> <p><b>Group 11</b> Quinine outside inhibitor</p> <p><b>Group 21</b> Quinone inside inhibitor</p> <p><b>Group 40</b> Carboxylic acid amide</p> <p><b>Group 45</b> Quinone outside inhibitor, stigmatellin binding type fungicides</p>	<p>Start preventative disease control sprays when shoots are approximately 10-20 cm long and continue spraying at 7 to 21-day intervals with protectant or non-phenylamide fungicides.</p> <p><b>Group 4</b> When conditions favour disease development, apply two consecutive sprays of a group 4 fungicide.</p> <ul style="list-style-type: none"> <li>• <b>Do not</b> apply more than two consecutive sprays of a group 4 fungicide</li> <li>• <b>Do not</b> apply more than four sprays of a group 4 fungicide per season</li> </ul> <p><b>Group 11</b></p> <ul style="list-style-type: none"> <li>• <b>Do not</b> apply more than two sprays per season of a group 11 fungicide</li> <li>• <b>Do not</b> make consecutive applications if applied alone</li> </ul> <p><b>Group 21</b></p> <ul style="list-style-type: none"> <li>• <b>Do not</b> apply more than two consecutive applications of a group 21 fungicide</li> <li>• <b>Do not</b> apply more than three solo sprays</li> <li>• <b>Do not</b> apply more than three sprays per season</li> </ul> <p><b>Group 40</b></p> <ul style="list-style-type: none"> <li>• <b>Do not</b> apply more than two consecutive sprays of a group 40 fungicide</li> <li>• <b>Do not</b> apply more than a total of four sprays of a group 40 fungicide per season (mix 50%)</li> </ul> <p><b>Group 45</b></p> <ul style="list-style-type: none"> <li>• <b>Do not</b> apply more than two consecutive sprays of a group 45 fungicide</li> <li>• <b>Do not</b> apply more than a total of four sprays per season of a group 45 fungicide (mix)</li> </ul>

This information is extracted from CropLife Australia (valid as at 7 June 2017) and a site maintained by Marcel Essling and Anne Lord at the Australian Wine Research Institute [www.awri.com.au](http://www.awri.com.au) with amendments made by Dried Fruits Australia to ensure that the information is suitable for dried fruit.