B. Chemicals that may be useful in rotation to reduce resistance

DEPENDING ON VALID, REGISTRATIONS, PERMITS, OR EXEPTIONS THAT APPLY

Some of the permits/registrations listed here may already be invalid due to review outcomes

Western Flower Thrips

- Capsicums
- Cucumbers

Greenhouse Whitefly

- Capsicums
- Cucumbers

Two Spotted Mites (Spider Mites)

- Capsicums
- Cucumbers

Western flower Thrips

CAPSICUMS

Western Flower Thrips Add later: Image of Life cycle as per web page, noting time between life stages, total life span and stages not killed by contact					
AVAILABLE CHEMICALS: reg, permit, (Note re exemptions later)					
Example brand names	Active constituent	Chemical group	Registration or Permit No and Dates	Rate (Low volume only)	Standout comments
Supracide (Syngenta)	Methidathion	Group 1B	PER7837, expires 30/9/07	2L/ha get /100mL	WHP 7 days, max 3 sprays/crop
Lannate/Marlin (Crop Care/Bayer)	Methomyl	Group 1A	PER7836, expires 30/9/07	2L/ha get /100mL, glasshouse?	WHP 1 day, max 3 sprays/crop
Success (Dow)	Spinosad	Group 5A	no permits for capsicums	PER6793 Cucumber, to 30/6/06	
Vertimec (Syngenta)	Abamectin	Group 6A	no permits for capsicums	PER7833 Cucumber, to 30/9/08	
Endosulfan (Farmoz)	Endosulfan	Group 2A	PER8321, expires 30/9/08	190mL/100mL	WHP 7 days, max 2 sprays/crop

CUCUMBERS

Western Flower Thrips Add later: Image of Life cycle as per web page, noting time between life stages, total life span and stages not killed by contact					
AVAILABLE CHEMICALS: reg, permit, (Note re exemptions later)					
Example brand name	Active constituent	Chemical group	Registration or Permit No and Dates	Rate (Low volume only)	Standout comments
Supracide (Syngenta)	Methidathion	Group 1B	no permits for cucumbers	PER7837 Capsicum, to 30/9/07	
Lannate/Marlin (Crop Care/Bayer)	Methomyl	Group 1A	PER7836, expires 30/9/07	2L/ha get /100mL	WHP 1 day, max 3 sprays/crop
Success (Dow)	Spinosad	Group 5A	PER6793, expires 30/3/06	80mL/100mL	WHP 1 day, avoid stock grazing on treated crop/waste
Vertimec (Syngenta)	Abamectin	Group 6A	PER7833, expires 30/9/08	90mL/100mL	WHP 3 days, max 2 sprays/crop
Endosulfan (Farmoz)	Endosulfan	Group 2A	PER8321, expires 30/9/08	190mL/100mL	WHP 7 days, max 2 sprays/crop

Greenhouse Whitefly

CAPSICUMS

Whitefly (Greenhouse whitefly/SL Whitefly) Add later: Image of Life cycle as per web page, noting time between life stages, total life span and stages not killed by contact					
AVAILABLE CHEMICALS: reg, permit, (Note re exemptions later)					
Example brand names	Active constituent	Chemical group	Registration or Permit No and Dates	Rate (Low volume only)	Standout comments
Lannate/Marlin	*Methomyl*	Group 1A	no current permits	PER7836 Capsicum, WFT to 31/12/07	
Confidor (Bayer)	Imidacloprid	Group 4A	no current permits	PER7815 Cucumber, to 30/11/07 PER5735 Brassicas, to 28/2/08	
Ambush (AgNova)	Permethrin	Group 3A	no current permits, NRA 48193/0503		
Applaud (Dow)	Buprofezin	Group 17A	no current permits	PER7627 Cucumber.eggplant, SL whitefly, to 31/3/06, QLD, WA & NT only	
Chess (Syngenta)	Pymetrozine	Group 9A	no current permits	PER7629 Cucumber to 31/3/06, SL whitefly, NSW, QLD, NT & WA only	
Admiral/Knack (Sumitomo)	Pyriproxyfen	can't find	no current permits	PER7628 Cucumber,eggplant, to 30/3/06, SL whitefly, QLD, WA & NT only	
Bulldock (Bayer)	Betacyfluthrin	Group 3A	PER7356, expires 31/7/08		
D-C-tron Oil	Petroleum oil	Pest oil	no current permits in SA	PER8249 Capsicum, to 31/3/10, QLD, WA &NT only	

CUCUMBERS

Whitefly (Silverleaf whitefly, Greenhouse whitefly) Add later: Image of Life cycle as per web page, noting time between life stages, total life span and stages not killed by contact					
AVAILABLE CHEMICALS: reg, permit, (Note re exemptions later)					
Example brand names	Active constituent	Chemical group	Registration or Permit No and Dates	Rate (Low volume only)	Standout comments
Lannate/Marlin	*Methomyl*	Group 1A	no permits	PER7836 WFT, to 30/9/07	
Confidor (Bayer)	Imidacloprid	Group 4A	PER7815, expires30/11/07	25mL/100mL	WHP 1 day
Ambush (AgNova)	Permethrin	Group 3A	no current permits, NRA 48193/0503	PER8765 Cucumber, cucumber moth larvae, WA only	
Applaud (Dow)	Buprofezin	Group 17A	no permits in SA	PER7627 Cucumber, SL whitefly, to 31/3/06, QLD, WA & NT only	
Chess (Syngenta)	Pymetrozine	Group 9A	no permits in SA	PER7629 Cucumber, SL whitefly, to 31/3/06, NSW, QLD, WA & NT only	
Admiral/Knack (Sumitomo)	Pyriproxyfen	can't find	no permits in SA	PER7628 Cucumber, SL whitefly, to 31/3/06, QLD, WA & NT only	
Bulldock (Bayer)	Betacyfluthrin	Group 3A	no permits for cucumbers	PER7356 Capsicum, to 31/7/08	
D-C-tron Oil	Petroleum oil	Pest oil	no permits in SA	PER8249 Capsicum, to 31/3/10, QLD, WA &NT only	

Two Spotted Mites

CAPSICUMS

Mites (red spider/two spotted mites, broad mites)					
AVAILABLE CHEMICALS: reg, permit, (Note re exemptions later)					
Example brand names	Active constituent	Chemical group	Registration or Permit No and Dates	Rate (Low volume only)	Standout comments
Vertimec (Syngenta)	Abamectin	Group 6A	permit expired 2003	PER7355 Cucumber,zucchini, TSM, to 31/3/07 PER6650 Eggplant ,TSM, to 16/8/08	
Kelthane (Crop Care)	Dicofol	Group 2B	no current permits, NRA 48201/1000	PER7282 Passionfruit, Passionfruit mite, to 30/3/06 NSW, QLD only	
Omite (Crompton)	Propargite	Group 14A	no current permits, NRA 48086/0702		
Acramite (Crompton)	Bifenazate	Group 2D	no permits ever issued, no NRA		
Masta-mite (Crompton)	Dicofol/Tetradifon	Group 2B	no permits ever issued, no NRA		
Morestan (Bayer)	Oxythioquinox	Group X	no permits ever issued, NRA 33992/0704		
Talstar (FMC)	Bifen*thrin	Group 3A	PER8331, expires 31/3/06	40mL/100mL	harvest after 1 day

CUCUMBERS

Mites (red spider/two spotted mites, broad mites)					
AVAILABLE CHEMICALS: reg, permit, (Note re exemptions later)					
Example brand name	Active constituent	Chemical group	Registration or Permit No and Dates	Rate (Low volume only)	Standout comments
Vertimec (Syngenta)	Abamectin	Group 6A	PER7355, expires 31/3/07	300mL/ha get /100mL	WHP 3 days, max 2 sprays/crop
Kelthane (Crop Care)	Dicofol	Group 2B	no current permits, NRA 48201/1000	PER7282 Passionfruit, Passionfruit mite, to 30/3/06 NSW, QLD only	
Omite (Crompton)	Propargite	Group 14A	no current permits, NRA 48086/0702		
Acramite (Crompton)	Bifenazate	Group 2D	no permits ever issued, no NRA		
Masta-mite (Crompton)	Dicofol/Tetradifon	Group 2B	no permits ever issued, no NRA		
Morestan (Bayer)	Oxythioquinox	Group X	no permits ever issued, NRA 33992/0704		
Talstar (FMC)	Bifenthrin	Group 3A	permit expired 2004	PER8331 Capsicum, to 31/3/06	

C. Key insecticide properties

**** Note: Please seek additional advice to confirm any decision prompted by information contained here because:***

- ***Not all risks and benefits are fully covered***
- ***This list does not rate resistance levels***
- ***Impact on beneficial insects is noted in some cases***
- ***Pesticide group is noted in the list above***

Chemicals summarised and pest targets

ACTIVE CONSTITUENT	EXAMPLE TRADE NAME	PEST TARGETS INCLUDED
Spinosad	Success/Naturalyte	Various pests: including thrips and whitefly
Methamidaphos	Nitofol	Various pests: including thrips, whitefly and mites
Natural pyrethrin	Py Bo	Various pests: including thrips, whitefly and mites
Methomyl	Lannate	Various pests: including thrips and whitefly
Pymetrozine	Chess	whitefly, aphids
Methidathion	Supracide	Thrips
Endosulfan	Endosulfan/Thiodan	Thrips
Imidacloprid	Confidor	Whitefly
Beta-cyfluthrin	Bulldock	Whitefly
Kelthane	Dicofol	Mites
Oxythioquinox	Morestan	Mites
Abamectin	Vertimec	Mites
Abamectin	Agrimec	Mites
Bifenthrin	Talstar	Mites
Propargite	Omite	Mites
Permethrin	Ambush	Mites

Chemicals to be added to the review

	Admiral	Whitefly

** DISCLAIMER: This information is not endorsed by any manufacturer or distributor and is not provided as technical advice for product users. It is incomplete information and does not include all factors that may affect chemical behaviour – e.g. use of pH buffers **

<table>
<tr><td colspan="2">Common brand name: Success Naturalyte®</td><td colspan="3">Active constituent: Spinosad – various pests</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Safe to predatory insects, mites and spiders. May temporarily reduce parasitoid wasp and ant populations. Avoid direct application to bees. Once dried will not harm foraging bees.</td></tr>
<tr><td>Mode of action: Contact, ingestion and ovicidal-like activity.</td><td colspan="2">Life stages impacted: nymphs and adults. For legumes entrenched Heliothis and looper larvae will not be controlled.</td><td colspan="2">Time to kill: Results observed 1-3 days</td></tr>
<tr><td>Coverage notes:
Good coverage of insect feeding sites is essential as Spinosad is non-systemic.

Apply min volume of 250L/ha and increase spray volume as crop grows. Use nozzles that give droplets in the size range of 150-200 microns. High water volumes definitely help.

Can add wetting agent to improve coverage.

Ensure spray dries completely before rain.
Repeat applications 7-14 days as new infestations occur.
Witholding period 3 days in most cases.</td><td>Resistance management;
DO NOT APPLY MORE THAN 4 TIMES PER CROP.
Do not use lower than label rates.
For WFT: use 3 consecutive sprays only, 3-5 days apart when temp>20deg & 6-12 days apart when temp <20deg.
For further control switch to approved product from another chemical group.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:
Some crops suggest use of a non ionic wetter, i.e. for waxy surfaces like Brassica leaves.

Oils certainly help penetration if chasing leafminers.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Can use with wetting agents.
???? no information</td><td>Breakdown sensitive to:
1. pH: Use only clean water, pH 5-9
2. High salinity: currently making enquiries. Any more specific details on that?
3. Temperature: Above 24deg., but insects may hide if too hot. (not over 28 deg. for aerial spray-drying out > not sticking)
4. Low humidity: ?
5. UV light: rapid breakdown so re-infestations can occur and establish rapidly (can look like spray failures).Store and mix product out of direct sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days
▪ Old product may suffer from settling out (as with all SCs). Needs to be stirred thoroughly to re-suspend bottom sediment if this has occurred.</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Nitofol®</td><td colspan="3">Active constituent: Methamidophos –various pests</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Direct application is highly toxic to all beneficial insects, invertebrates, birds, mammals and humans.</td></tr>
<tr><td>Mode of action: Systemic insecticide with contact and digestive action.? Inhibits nervous system.</td><td colspan="2">Life stages impacted: Eggs, nymphs and adults because of contact and systemic action.?</td><td colspan="2">Time to kill: On contact or ingestion ?</td></tr>
<tr><td>Coverage notes:

Good coverage is essential. Apply as a full cover spray.
Do not use at higher concentrations than recommended for crop.

Highly hazardous on contact but breaks down rapidly.

DO NOT USE IN GLASSHOUSES OR ENCLOSED SPACES.

Witholding period for workers 1 day after spraying. Variable harvest witholding periods, see product label for specific crops.</td><td>Resistance management:

For WFT: use 3 consecutive sprays only, up to 5 days apart. For further control switch to approved product from another chemical group.

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

Some crops suggest use of a wetter, i.e. for waxy surfaces like Brassica leaves.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Compatible with Antracol®, Bulldock®, Folimat® and Fruvit®

DO NOT MIX CONCENTRATES.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ Prior to pouring shake container vigorously.
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Py-Bo®</td><td colspan="4">Active constituent: Natural Pyrethrum – whitefly, thrips, aphids</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="4">Compatability with beneficial insects: Harmful on contact to beneficials. Spray in the evening to avoid bees and wasps which forage during the day.</td></tr>
<tr><td>Mode of action: Contact.</td><td colspan="2">Life stages impacted: Contact with target insect - any life stage ?</td><td colspan="3">Time to kill: Instant paralysis and death</td></tr>
<tr><td>Coverage notes:

Thorough coverage including under surfaces is essential. Can be sprayed, fogged and misted.</td><td>Resistance management:

No known problems !

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

Mixed with 480g/Lpiperonyl butoxide 1:6 synergist ratio</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Mix with fungicides and foliar fertilizers</td><td colspan="2">Breakdown sensitive to:
1. pH: Stable at pH5-9
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Very rapid breakdown in UV light</td></tr>
<tr><td colspan="6">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply very late in the day, even at night if warm</td></tr>
</table>

<table>
<tr><td colspan="3">Common brand name: Lannate®, Marlin®</td><td colspan="3">Active constituent: Methomyl – whitefly & Western Flower Thrips</td></tr>
<tr><td colspan="3">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site:
http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Direct application is highly toxic to all beneficial insects, invertebrates, birds, mammals and humans.</td></tr>
<tr><td>Mode of action: Systemic insecticide with contact and digestive action. Inhibits nervous system.</td><td colspan="2">Life stages impacted: Eggs, nymphs and adults because of contact and systemic action.</td><td colspan="2">Time to kill: on contact or ingestion</td></tr>
<tr><td>Coverage notes:
DO NOT APPLY AS FOG OR MIST.
DO NOT USE IN GLASSHOUSES OR ENCLOSED SPACES.
Best applied to young insects.
Good coverage essential.

Highly hazardous to all on contact but breaks down rapidly.</td><td>Resistance management:

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

For optimum results add non-ionic wetting agent at 0.025% (eg 25mL/100L).</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

DO NOT MIX CONCENTRATES.
Do not mix more than 2 products.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: Water hardness and electrolytes can be a problem – emulsifier agglomerates.
3. Temperature:
4. Low humidity: ?
5. UV light: Mix and spray promptly.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ Agitation required to fully mix insecticides. Noted more problems in times of drought. Water hardness increases and more mixing of additives by growers
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Chess®</td><td colspan="3">Active constituent: Pymetrozine - whitefly, aphids</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: ?</td></tr>
<tr><td>Mode of action: Contact and digestive action ?.</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td colspan="2">Time to kill: ?</td></tr>
<tr><td>Coverage notes:
Thorough coverage and penetration into canopy is essential.

Do not apply if rain is expected within 6 hours.

Variable harvest witholding periods, see product label for specific crop.</td><td>Resistance management:
Do not apply more than 2 sprays per crop. Do not apply consecutive sprays.

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:
Suggest use of a wetter for waxy surfaces like Brassica leaves.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

?

DO NOT MIX CONCENTRATES.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Supracide®</td><td colspan="3">Active constituent: Methidathion - Western flower thrips</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Dangerous to bees. Do not apply when bees are foraging. Harmful to beneficial insects and not suitable for IPM programs.</td></tr>
<tr><td>Mode of action: Contact and digestive action. Attacks nervous system ?.</td><td colspan="2">Life stages impacted: Eggs ?, adults and nymphs.</td><td colspan="2">Time to kill: ?</td></tr>
<tr><td>Coverage notes:
Thorough coverage and penetration into canopy is essential.

Do not apply if rain is expected within 6 hours.

Variable harvest witholding periods, see product label for specific crop.</td><td>Resistance management:
WFT details ?
Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:
Suggest use of a non-ionic surfactant wetter, for waxy surfaces like Brassica leaves.
DO NOT MIX SUPRACIDE® WITH OILS ON CITRUS.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

?

DO NOT MIX CONCENTRATES.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

Common brand name: Thiodan®, Endosulfan			***Active constituent:*** Endosulfan – Western flower thrips	
For details of any current permit or registration: **Please see attached notes.** **Please check for recent changes to permits on the APVMA web site:** http://www.apvma.gov.au			**Compatability with beneficial insects:** Dangerous to bees. Do not apply when bees are foraging.	
Mode of action: Contact and by digestion.	**Life stages impacted:** Adults and nymphs.		**Time to kill:** ?	
Coverage notes: Records of sprays must be kept according to label specifications. Only apply when temperature, wind and humidity are favourable. Do not apply when temperature inversion conditions exist. DO NOT APPLY IF RAIN IS EXPECTED WITHIN 2 DAYS. DO NOT IRRIGATE FOR AT LEAST 2 DAYS AFTER SPRAYING. DO NOT APPLY TO ENCLOSED CROPS (eg glasshouses). For most crops a limit of 2 sprays is permitted. Thorough coverage and penetration into canopy is essential. Variable harvest witholding periods, see product label for specific crop.	**Resistance management:** Apply 2 consecutive sprays only and do not apply more than 2 sprays in total per crop. Apply sprays 3 days apart if 20 deg or higher, and 6 days apart if temperature is below 20 deg. Do not use lower than label rates as this will speed up selection for resistance. Ensure chemical rotation partners are also effective against target pest.	**Use of oils and adjuvants:** Not permitted for use on Brassicas. ? DO NOT USE ADDITIONAL ADJUVANTS.	**Compatibility for mixing** (with fungicides fertilisers, trace elements etc.) DO NOT MIX CONCENTRATES. Can be mixed with Thiram®, Ziram® and copper oxychloride. Do not mix endosulfan with more than one of these products. Avoid mixing with alkaline solutions.	**Breakdown sensitive to:** 1. pH: ? 2. High salinity: ? 3. Temperature: ? 4. Low humidity: ? 5. UV light: Do not store in sunlight.
Key notes on usage: ▪ ***To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days*** ▪ ***Refer closely to label specifications for record keeping regulations and limits to spray conditions.***				

<table>
<tr><td colspan="2">Common brand name: Applaud®</td><td colspan="3">Active constituent: Buprofezin - Whitefly specific</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Safe to bees, predatory insects, mites and spiders. May be toxic to predatory ladybeetle eggs and larvae.</td></tr>
<tr><td>Mode of action: Persistent insecticide/acaricide with contact and digestive action. Stops moulting. Not translocated</td><td colspan="2">Life stages impacted: Inhibits moulting of nymphs and larvae. Suppresses oviposition by adults and adults lay sterile eggs.</td><td colspan="2">Time to kill: Slow since it inhibits moulting. Adults not affected greatly</td></tr>
<tr><td>Coverage notes:
Use sufficient water to ensure complete wetting of all surfaces.

DO NOT APPLY if heavy rain is imminent.

Witholding period until spray has dried. For harvest witholding periods see product label for specific crop.</td><td>Resistance management:
DO NOT USE MORE THAN 2 SPRAYS PER SEASON

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:
Do not mix with pest oils.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)
Compatible with most commonly used Insecticides and Fungicides.
DO NOT USE with highly alkaline or highly acidic products.</td><td>Breakdown sensitive to:
1. pH- Stable in acidic and alkaline media
2. High salinity: ?
3. Temperature: Stable
4. Low humidity: ?
5. UV light: Stable but do not store in direct sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ Do not store in direct sunlight. Do not apply by air.
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="3">Common brand name: Confidor®</td><td colspan="3">Active constituent: Imidacloprid - whitefly</td></tr>
<tr><td colspan="3">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Do not spray any plants while bees are foraging</td></tr>
<tr><td>Mode of action: Systemic insecticide with contact and digestive action.
Good root-systemic action.</td><td colspan="2">Life stages impacted: Adults and nymphs because of contact and systemic action.</td><td colspan="3">Time to kill: On contact or ingestion</td></tr>
<tr><td>Coverage notes:

Apply as a full cover spray. For whitefly ensure underside of leaves are sprayed.

Can be applied as a foliar spray or soil drench.

Variable harvest witholding periods, see product label for specific crops.</td><td>Resistance management:

Annuals: Do not apply more than one spray. Perennials: Use a max of 3 sprays per year and rotate with other chemicals

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

In cotton recommended to use Pulse Penetrant</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Compatible with Antracol®, Baycor®, or Nitofol®.

DO NOT MIX CONCENTRATES.</td><td colspan="2">Breakdown sensitive to:
1. pH: Stable at pH 5-11
2. High salinity: ?
3. Temperature:
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ Prior to pouring shake container vigorously.
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="3">Common brand name: Bulldock 25 EC®</td><td colspan="3">Active constituent: Beta-cyfluthrin - whitefly</td></tr>
<tr><td colspan="3">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Dangerous to bees. Do not apply when bees are foraging.</td></tr>
<tr><td>Mode of action: Contact (not systemic).</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td colspan="2">Time to kill: ?</td></tr>
<tr><td>Coverage notes:
Thorough coverage and penetration into canopy is essential.
Do not apply if rain is expected within 6 hours.
Variable harvest witholding periods, (1 to 7 days), see product label for specific crop.</td><td>Resistance management:

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:
Some crops suggest use of a wetter, i.e. for waxy surfaces like Brassica leaves.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Compatible with most common fungicides and herbicides.

DO NOT MIX CONCENTRATES.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="3">Common brand name: Kelthane®</td><td colspan="3">Active constituent: Dicofol - mites</td></tr>
<tr><td colspan="3">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Low hazard to bees. May be applied at any time.</td></tr>
<tr><td>Mode of action: Systemic insecticide with contact and digestive action.?</td><td colspan="2">Life stages impacted: Adults and nymphs because of contact and systemic action.?</td><td colspan="2">Time to kill: On contact or ingestion?</td></tr>
<tr><td>Coverage notes:

Apply as a full cover spray.

Variable harvest witholding periods, see product label for specific crops.</td><td>Resistance management:

Annuals: Do not apply more than one spray. Perennials: Use a max of 3 sprays per year and rotate with other chemicals

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

Can add wetting agent (Agral® recommended).</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Compatible with most fungicides.

Do not mix with Bordeaux mixture, lime, zinc sulphate or carbaryl or highly alkaline substances.</td><td>Breakdown sensitive to:
1. pH: Hydrolyses at pH>7
2. High salinity: ?
3. Temperature: Sensitive to heat
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Morestan®</td><td colspan="3">Active constituent: Oxythioquinox - mites</td></tr>
<tr><td colspan="2">Mode of action: ?</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td>Time to kill: ?</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Limit spraying particularly of fruit trees to allow activity of predatory mites</td></tr>
<tr><td>Coverage notes:

Thorough coverage and penetration into canopy is essential.
Spraying during high temperatures may cause sunburn blemishes on fruit.</td><td>Resistance management:

Apply early when mites are building up.

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

Do not apply 2 weeks before or 3 weeks after application of an oil spray.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Best to apply alone. Do not mix with strongly alkaline substances.

DO NOT MIX WITH OTHER CONCENTRATES.</td><td>Breakdown sensitive to:
1. pH: Stable at pH5-9 ?
2. High salinity:
3. Temperature: Do not apply if temperature higher than 30deg.
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Vertimec®</td><td colspan="3">Active constituent: Abamectin – two spotted mites</td></tr>
<tr><td colspan="2">Mode of action: Contact and digestive action. Has limited systemic activity but exhibits translaminar movement</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td>Time to kill: Up to 7 days</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Do not apply when bees are foraging. Safe to non-feeding insects.</td></tr>
<tr><td>Coverage notes:

Do not apply with equipment that may leave large droplets. Thorough coverage and penetration into canopy is essential.
Do not apply when temperatures above 28deg.</td><td>Resistance management:

Do not apply more than 2 sprays if mites are present per crop. Vertimec® should not be applied in 2 consecutive seasons without an unrelated chemical being used

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

Do not apply to apples or pears before or after Delan® or Captan® Use precautions when applying with summer oil</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)</td><td>Breakdown sensitive to:
1. pH: Stable at pH5-9
2. High salinity: ?
3. Temperature: stable up to 25°C, Do not apply when temp exceed 28°or are expected to exceed 28°C within 48 hrs after application
4. Low humidity: ?
5. UV light: Do not store in sunlight.
6. Vertimec® that is not absorbed into plants is quickly degraded. Allow at least 28 days between applications</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Agrimec®</td><td colspan="3">Active constituent: Abamectin – two spotted mites</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Do not apply when bees are foraging. Safe to non-feeding insects.</td></tr>
<tr><td>Mode of action: Contact and digestive action.</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td colspan="2">Time to kill: Up to 7 days.</td></tr>
<tr><td>Coverage notes:

AS FOR VERTIMEC ?</td><td>Resistance management:

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="2">Common brand name: Talstar 100 EC®</td><td colspan="3">Active constituent: Bifenthrin – mites</td></tr>
<tr><td colspan="2">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Dangerous to bees. Do not apply when bees are foraging. Not suitable for IPM programs where predatory mites and other insect predators are providing effective pest control.</td></tr>
<tr><td>Mode of action: Contact and digestive action.</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td colspan="2">Time to kill: ?</td></tr>
<tr><td>Coverage notes:
Thorough coverage and penetration into canopy is essential. Can be applied to soil and leaves.
DO NOT APPLY AS FOG OR MIST.
Variable harvest witholding periods, see product label for specific crop.</td><td>Resistance management:

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:
Talstar® contains a wetter surfactant.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Compatible with most common fungicides and herbicides.

DO NOT MIX CONCENTRATES.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="3">Common brand name: Omite®</td><td colspan="3">Active constituent: Propargite - mites</td></tr>
<tr><td colspan="3">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: ?</td></tr>
<tr><td>Mode of action: Contact and digestive action ?.</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td colspan="2">Time to kill: ?</td></tr>
<tr><td>Coverage notes:
Thorough coverage and penetration into canopy is essential.

Do not exceed recommended concentrations per crop as Omite® can be toxic to leaves when used in excess.

Variable harvest witholding periods, see product label for specific crop.</td><td>Resistance management:
No information?

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

DO NOT ADD WETTING AGENTS OR OILS AS A LEAF TOXIN MAY FORM.</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Not recommended for mixing as may become ineffective or cause damage.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ Agitate when mixing and add product slowly to water
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>

<table>
<tr><td colspan="3">Common brand name: Ambush®</td><td colspan="3">Active constituent: Permethrin - mites</td></tr>
<tr><td colspan="3">For details of any current permit or registration:
Please see attached notes.
Please check for recent changes to permits on the APVMA web site: http://www.apvma.gov.au</td><td colspan="3">Compatability with beneficial insects: Dangerous to bees. Do not spray when bees are foraging.</td></tr>
<tr><td>Mode of action: Contact ?</td><td colspan="2">Life stages impacted: Adults and nymphs.</td><td colspan="2">Time to kill: ?</td></tr>
<tr><td>Coverage notes:
Thorough coverage and penetration into canopy is essential.

Variable harvest witholding periods, see product label for specific crop.</td><td>Resistance management:
No information?

Do not use lower than label rates as this will speed up selection for resistance.

Ensure chemical rotation partners are also effective against target pest.</td><td>Use of oils and adjuvants:

No information?</td><td>Compatibility for mixing (with fungicides fertilisers, trace elements etc.)

Can be mixed with Agral®, copper oxychloride, Omite® and Pyrimor®. Do not mix with more than one other chemical.

DO NOT MIX CONCENTRATES.</td><td>Breakdown sensitive to:
1. pH: ?
2. High salinity: ?
3. Temperature: ?
4. Low humidity: ?
5. UV light: Do not store in sunlight.</td></tr>
<tr><td colspan="5">Key notes on usage:
▪ Agitate when mixing and add product slowly to water. Agitate while spraying.
▪ To minimise UV breakdown and get maximum contact with pest insects best to apply late in the day/early morning on warm days</td></tr>
</table>