



A new way to
control your
worst enemy in
wine grapes.

DuPont™ Avatar®
horticultural insecticide

 *The miracles of science™*

Now listed by the Australian Wine
Research Institute for use on
export wine grapes up to
bunch closure. See
AWRI website
for details.

Avatar,[®] advanced insecticide technology from DuPont.[™]



Light Brown Apple Moth



**Selective control of
Light Brown Apple Moth
in wine grapes.**

Avatar[®] is programmed to selectively target Light Brown
Apple Moth – without disrupting beneficial insects.

The power.

Avatar® belongs to a new family of insecticides called oxadiazines. It has a unique mode of action that selectively targets Light Brown Apple Moth, which is the key caterpillar pest in wine grapes.

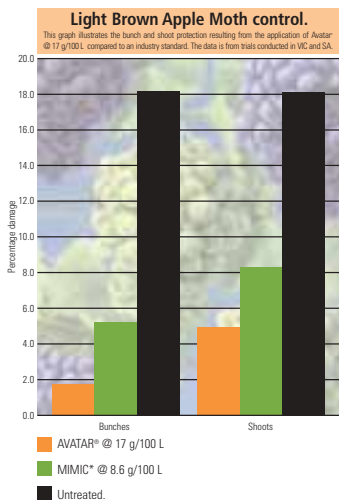
How Avatar® works.

Avatar® eradicates key caterpillar pests by paralysing their nervous system. Its active ingredient, indoxacarb, achieves this effect via ingestion and, to a lesser extent, by contact.

Death usually occurs within 2-3 days but larvae stop feeding within 0-4 hours after ingestion, providing immediate crop protection.

Symptoms of treated pests.

Treated larvae appear non-mobile (sluggish) with perhaps occasional twitching and will often lie in a characteristic "C" shape. Larvae will not respond to physical stimuli (ie being nudged by point of pen). They would therefore be susceptible to predators or simply drop off the plant.



Light Brown Apple Moth larvae'



Light Brown Apple Moth adult'



Light Brown Apple Moth damage to grapes'



Light Brown Apple Moth leaf damage'

The glory.

Gentle on beneficial insects.

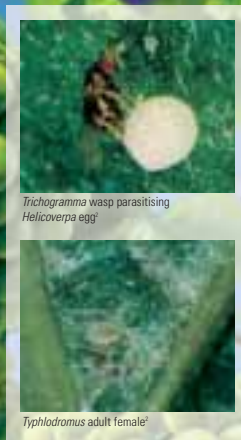
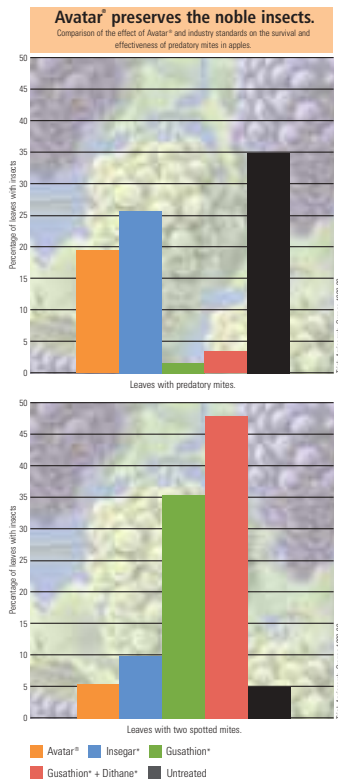
Because the advanced new chemistry of Avatar® is active only against its target pests, most beneficial insects such as spiders, predatory mites and parasitic wasps are spared. This makes it the ideal insecticide for use in Integrated Pest Management (IPM) programmes.

So while it's controlling Light Brown Apple Moth, beneficial mite populations in your vineyard are spared. Avatar® is relatively soft on the beneficial predatory mites, allowing them to help keep pest mites under control.

Avatar® does not have any significant impact on the *Trichogramma* parasitoid wasp of Light Brown Apple Moth.

Some species of predatory beetles (ladybirds) and lacewing may be affected by a direct spray of Avatar®. However, research has shown that these species will be unaffected by dried residues on the surface of the leaf, allowing rapid recovery of their populations.

Used with other soft chemistry options, Avatar® will preserve beneficial insect populations for as long as possible to gain the maximum benefit from an IPM programme.



² Insect photographs supplied courtesy of NSW Agriculture.

Performance characteristics and features.

Toxicity tests – formulated Avatar*

Acute oral LD ₅₀	Rat	1867mg/kg ♂ 687mg/kg ♀
Acute dermal LD ₅₀	Rat	>5000mg/kg
Acute inhalation LD ₅₀	Rabbit	>5.6mg/L
Dermal irritation	Rabbit	Slight
Primal eye irritation	Rabbit	Moderate
Dermal sensitisation	Guinea pig	Not a sensitiser

Crop safety.

Avatar* has been extensively tested in a variety of environmental conditions and demonstrates excellent crop safety. No crop effects have been observed in Australia or overseas over a number of years of research trials.

Product stability.

Avatar* is very stable at high temperatures and is not broken down readily by UV light (sunlight), both of which contribute to its residual activity. Performance will not be affected even under Australian summer conditions.

Avatar* is stable in a range of water pH levels. Therefore no buffering agents are required.

Rainfastness.

Avatar* bonds strongly to plant material and is highly rainfast once spray solutions have dried onto the leaf.

DO NOT apply Avatar* if rainfall is expected within 2 hours.

Worker safety.

Avatar* has relatively lower toxicity than many older OP, SP, and carbamate insecticides currently available. However, Avatar* is a schedule 6 poison. Appropriate safety precautions and equipment should be used when handling and using this product (see label for directions). Re-entry into vineyards treated with Avatar* is permitted after the spray has dried on the crop.

Environmental profile.

Avatar* has a favourable environmental profile. It degrades readily in the environment and, when used as directed, poses minimal risk to aquatic life, birds and mammals. When used according to the label, Avatar* is unlikely to contaminate surface or ground water. Care should be taken to use spray equipment appropriately and minimise the risk of off-target spray drift.

Resistance management.

As part of the oxadiazine family of insecticides, Avatar* is a Class 22A Insecticide. Its active ingredient, indoxacarb, has demonstrated excellent control of resistant insect populations. You can ensure that Avatar* remains an effective tool for insect control by using it according to the following management procedures:

- **DO NOT** apply more than the labelled number of applications for a particular crop in any one season (See Directions For Use section of this brochure and product label).
- Rotate use of Avatar* with alternate mode-of-action products.



Directions for use.



Spray preparation.

Avatar® is easy to use and measure and comes packed in a convenient 500g bottle. Its dry, dustless, water-dispersible granule formulation also reduces the risk of contact from product spillage.

Avatar® mixes readily in water provided that it is added directly into the partially filled spray tank and the correct mixing order is followed. The spray solution does, however, require constant agitation.

Always add dry Avatar® to water in spray tank. **DO NOT** pre mix or slurry mix in bucket.

Mixing instructions.

In tank mixtures Avatar® must be in suspension before adding companion products or a surfactant (if required).

Fill spray tank to 1/4-1/2 full of water. Measure the amount of Avatar® required for the area to be sprayed.

Add Avatar® directly to the spray tank with the agitation engaged. Mix thoroughly to disperse the insecticide. Once dispersed, the material must be kept in suspension at all times by continuous agitation. Use mechanical or hydraulic means. **DO NOT** use air agitation.

If the spray solution is left standing, ensure thorough re-agitation of the spray mix until it is fully re-suspended. **DO NOT** allow spray mix to sit overnight, as re-suspension may be difficult.

Is a surfactant required?

A surfactant helps to increase the spreading of Avatar® on hard-to-wet crops. This means the residual activity of Avatar® and the distribution of the product on plant leaves and absorption by target larvae will be enhanced.

For wine grapes add a non-ionic surfactant at the rate of 15 g/l/100L (eg Agral 600® @25 ml/100L or Citowett® @15 ml/100L).

DO NOT add a non-ionic surfactant/wetting agent if you are mixing with another product which already contains a surfactant and/or the product advises not to add a surfactant or when mixing with a liquid fertiliser.

DO NOT use BS1000® or Activator 90® as they may cause crop phytotoxicity in horticultural crops.

Product compatibility.

Avatar® is compatible with most commonly used fungicides, insecticides and foliar fertilisers (see the label for full details).

When preparing spray mixture, it is important to follow the correct mixing sequence according to formulation type (see below) while keeping the spray mixture fully agitated.

Order of mixing sequence:

1. Water soluble bags
2. Dry flowable products/water dispersible granules (Avatar®, Nustar®)
3. Wettable powders
4. Water-based suspension concentrates
5. Water-soluble concentrates
6. Oil-based suspension concentrates
7. Emulsifiable concentrates
8. Adjuvants, surfactants
9. Soluble fertilisers, e.g. calcium nitrate

Spray coverage.

Avatar® strongly binds to plant material and resists wash off. However Avatar® does not move within the plant and will not protect new growth. Good spray coverage is essential for effective insect control.

It is recommended that Avatar® be applied to vines in an optimum water volume to ensure good spray coverage whilst minimising spray run-off. Water volumes will vary according to crop stage development. (Refer to the Application section of the label).

Dilute or concentrate.

Avatar® can be applied with either dilute or concentrate spraying equipment. Apply the same total amount of product to the target crop for both systems. (Refer to the Application

section of the label). The minimum recommended spray volume for application with concentrate spraying equipment is 250 L/ha. Thorough grape coverage is essential.

Respraying intervals.

Avatar® has excellent residual activity and will protect your crop for a period of 10-14 days. A range of factors influences the length of residual activity. These include:

- insect sensitivity
- crop growth stage
- pest pressure
- spray coverage
- number of sequential applications of Avatar® (maximum of 3 applications per crop).

It is recommended that Avatar® be applied at 10 day intervals for Light Brown Apple Moth.

Spray programme.

There is a maximum of 3 Avatar® applications per crop per year. For Light Brown Apple Moth, apply the first treatment timed for egg hatch 140 Degree Days after moths are detected in traps. Up to 3 applications of Avatar® can be applied up to bunch closure (before larvae become entrenched). **DO NOT** retreat within 10 days.

Withholding period.

DO NOT apply later than 8 weeks before harvest (up to bunch closure).

• **New listed by the Australian Wine Research Institute for use on export wine grapes up to bunch closure (E-L stage 31).**
Please refer to the AWRII winegrid or their website: www.awri.com.au

The use of Avatar® on wine grapes is unlikely to unduly prejudice export trade in Australian wine. Under actual conditions of use, the risk of measurable residues of indoxacarb occurring in wine is likely to be small.

Avatar[®] checklist.

- **Always read the label before use**
- Use the correct Avatar[®] rate
- Always check compatibility with other products
- Follow the recommended mixing sequence when preparing spray mixtures
- Add a recommended surfactant (unless precluded by other products)
- Ensure good spray coverage. Ensure equipment is properly calibrated for either dilute or concentrate spraying and to minimise off-target spray drift
- Apply Avatar[®] at a minimum water volume of 250 L/ha
- Best timing: monitor pest thresholds and crops before spraying and after application
- Plan ahead: be aware of withholding periods prior to applying Avatar[®] to your crop – especially in the case of export crops.

For more information on Avatar[®] contact your local DuPont reseller or the DuPont Product Hotline on Freecall 1800 257 169 or visit www.dupont.com.au/ag

**Avatar[®] is available in
500g single packs and 3kg six packs.**

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horticultural insecticide

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