



Conserve your predatory mites

At a glance:

- Predatory mites are vital for the sustainable control of pest mites in vines.
- Avatar® is the product of choice to control LBAM in vines without disrupting the predatory mite population.

Although Light Brown Apple Moth (LBAM) is recognised as the most important pest of vines, it is essential not to forget the damage mites can do in your vineyard. Mites such as the Rust, Bunch, Blister and Two Spotted mites. For example, Grape Rust mites and Grape Bud mites have been implicated as the common cause of 'Restricted Growth Syndrome' (Bernard, Horne and Hoffman 2005), spring leaf crinkling and autumn bronzing.

The most efficient natural predators of mites are the predatory mites (Sommers and Quirk 2004). The predatory mites have long been the backbone of Integrated Pest Management of mites in

orchards, and are also important in vineyards. Once established in the orchard or vineyard, predatory mites are the cheapest and most sustainable way to control pest mites.

Research work has been carried out to test the compatibility of many fungicides (Bernard, Horne Hoffman 2004) registered for use in grapes for their effect on predatory mites. This work has confirmed other research that mancozeb was toxic to predatory mite populations, but copper hydroxide (KOCIDE®) has no effect.

In other trial work undertaken in Australia and New Zealand, AVATAR® has also demonstrated safety to other predatory mites such as *Metaseiulus occidentalis* (aka *Galendromus occidentalis*), *Phytoseiulus persimilis*, *Typhlodromips montdorensis* and *Typhlodromus sp.* (DuPont unpublished data)

The impact of a single insecticide or fungicide spray on predatory mites can have season long implications as re-colonisation from untreated refugia is problematic due to the mite's lack of mobility when compared to other predators such as lacewings, predatory bugs and beetles. Other predators can recolonise from sources outside the vineyard whereas it takes some time for predatory mites. It is therefore vital to preserve your resident predatory mites. Insecticides such as AVATAR® and BTs have little or no impact on predatory mites, whereas other LBAM insecticides such as emamectin benzoate (the active ingredient of PROCLAIM¹) have a registration[#] for the suppression of mites. The western predatory mite *Metaseiulus occidentalis* is reported to suffer 80% mortality from an application of PROCLAIM (Syngenta Australia brochure) but no effect on (surviving) populations exposed to 3 hour aged residues.

[#]Mite suppression only as indicated in the AFFIRM¹ label (Syngenta Australia).

Insecticide safety to beneficial insects

The safety of Avatar® to beneficial insects can be characterised to be of two basic forms.

Firstly, there are those species that for most or all of their life cycle show a high tolerance to Indoxacarb even when exposed to direct spray or wet residues on the leaf surface. These include spiders, many parasitic wasps, predatory mites and predatory flies.

Secondly, there are those species that are sensitive to direct spray contact or wet residues but which are generally unaffected by dried residues on leaf surface. Field and laboratory testing has demonstrated that in these cases the population impact is short-term, with rapid recoveries in insect numbers. These include many species of ladybirds, lacewing and honeybees.

Beneficial Species	Species	Host Pest	Crops	Use Rate	Impact
Predatory Mites	<i>Typhlodromus pyri</i> , <i>T. occidentalis</i> , <i>Typhlodromips</i> <i>montdorensis</i>	TS Mite, E R Mite, Mealybug, Western Flower Thrip	Pome	25 g/100 L	Very Low
Parasitic Wasps	<i>Trichogramma spp.</i>	Lepidoptera Parasite (Heliothis, LBAM)	All	250 g/ha	Low
	<i>Diaeretiella rapae</i>	Cabbage Aphid parasite	Crucifers		Low
	<i>Cotesia glomerata</i>	Lepidoptera parasite	Crucifers	250 g/ha	Low
	<i>Aphelinus mali</i>	Woolly Aphid parasite	Pome	20 g/100 L	Low
Lacewings	–	Scales, Aphids, Heliothis eggs, Mealybug	All	*850 mL/ha 250 g/ha	Moderate to High (Direct Spray) Low (Residual activity)
Spiders	–	General predator	All	*850 mL/ha	Very Low
Predatory Beetles	<i>Coccinellids</i> , <i>Ladybirds</i> <i>Stethorus</i>	Mites, Mealybugs, Scale, Aphids	All	25 g/100 L	Moderate (Direct Spray) Low (Residual activity)
Predatory Flies	–	Mealybug	All	*850 mL/ha	Low
Bees	<i>Apis mellifera</i>	N/A	All	25 g/100 L	Moderate (Direct Spray) Low (Foraging)

Note: The nominal AVATAR® rate is 170 g/ha based on 17 g/100 L at 1000 L/ha application volume

* - Cotton formulation 150 g/L; ≈ 425 g/ha Avatar®

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References:

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Du Pont (Australia) Limited, unpublished data generated by Agrisearch Services, Fruitfed NZ, HortResearch NZ, NSW Agriculture.

Syngenta Australia, Affirm Insecticide Label 2005 – 2006

Syngenta Australia, "Proclaim For Heliothis Control In Lettuce, Capsicums & Tomatoes" Brochure 2004

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