The good bugs of Reschke

One viticulturist's secret to growing the best quality fruit is to get a little help from her friends. A group of 'local residents' has banded together to fight disease and pests in the vineyards owned by Reschke, of Coonawarra

Chris Herden

RESCHKE WINES VITICULTURIST Mary Kennedy believes carefully timed, formulated and naturally-applied vineyard practices translate to having a healthy vineyard.

At the heart of Reschke's well-being is a menagerie of predatory mites and insects. The larvae of these cannibalistic insects are attracted to the vines by using known companion plantings and by tolerating beneficial weeds. This enables Kennedy to nurture an army of biological control agents, which voraciously devour destructive aphids, caterpillars, other insect larvae and eggs.

"Balanced vines produce balanced fruit and, consequently, a balanced wine," said Kennedy, head viticulturist at Reschke since 2001. "All aspects of our vineyard management are geared towards creating a sustainable environment for the natural predators."

The use of natural and non-chemical practices in vineyards has flourished in many countries. During the 1950s, Swiss and German pioneers made great advances in organic viticulture and, by the end of 2006, almost 100,000 hectares of European vineyards were being managed organically.

Many Australian grapegrowers are also keenly aware of the environmental problems associated with conventional agriculture and are keen to overcome them with alternative practices.

Pests and diseases can acquire a greater resistance to agricultural chemicals. Soil erosion, land degradation, spray drift and poor wastewater management has encouraged some regions to develop and apply environmentally-sound strategies. As more consumers demand what they perceive to be a cleaner and greener product, more growers are exploring eco-friendly farming techniques. For some winemakers, the adaptation of organic practices is already old news.

"Reschke has always had an organic philosophy behind its viticulture practices and achieving vine balance has always been a strong objective," Kennedy said.

Good bugs versus bad bugs

The Reschke management team has always been mindful of the vineyard's high levels of spiders, ladybugs, green and brown lacewings and earthworms. However, it wasn't until its involvement in a Grape and Wine Research and Development Corporation-funded project that Reschke learned of the abundance of the microscopic predatory mites and of the important role these creatures play in the prevention of rust mite, bud mite and other pest mite outbreaks.

Some under-vine weed growth is encouraged in the Reschke vineyards because its main underground ally is the earthworm – it feeds on the weed's roots and its castings provide a natural fertiliser to the vines.

"Originally, we were an intended 'release site' for predatory mites, but it was found that naturally-occurring populations of predatory mites in the Reschke vineyards were so high that we became a 'control site'," Kennedy said.

"We were then asked to adhere to strict protocols in spray applications to ensure the lowest toxicity to the predatory mites. We discovered that we were already practising this and had been since the vineyard was planted in 1998."

The three-year study and subsequent report was titled, *The use of predatory mites in vineyards for the long-term prevention of rust mite and bud mite outbreaks* (Ref: MU05-01) and was headed by Dr Martina Bernard of The University of Melbourne's Department of Zoology. It found that of the 21 vineyards participating across the Riverland, Limestone Coast and McLaren Vale regions, Reschke emerged as the highest achiever based on its count of 'good bugs' – an average of 20.8 predatory mites per 25 leaves.

Mary Kennedy, head viticulturist at Reschke since 2001, testing sugar levels of the fruit.

The most conclusive findings from Dr Bernard's research concerned the toxicity of certain chemicals to the 'beneficials' of the ecosystem and these have proven useful in determining the adjustments needed in Reschke's vine management.

"It certainly remains front-of-mind when designing the annual spray program each year," she said.

"Practices such as alternate row mowing have also been useful in encouraging beneficials into the vineyards."

Proudly organic

Pre-emergent herbicides are never used and weed growth is only controlled when it threatens vine health. Indeed, some under-vine weed growth is encouraged because Reschke's main underground ally is the earthworm – it feeds on the weed's roots and its castings provide a natural fertiliser to the vines.

There is no use of non-organic fertilisers or trace elements made from nitrates or chlorides. Soil and plant tissue is regularly tested to assess macro- and micro-nutrient balancing requirements. Humates and sea minerals are used regularly to support the biological life in the soil and to facilitate the effective breakdown and use of nutrients.

"We can proudly say that a synthetic insecticide has never been sprayed on any of the vineyards," Kennedy said.

"Reschke's philosophy has always been to produce low yields from small, balanced canopies and so the need for synthetic fertilisers has never become apparent. I believe that following this philosophy helps us to produce better quality and healthier fruit."

Allowing manageable populations of pests to inhabit the Reschke vines means the predatory 'good bugs' have plenty to eat. Alternative food sources, such as nectar and ryegrass pollens, are readily available for whenever the pest supply is depleted. The use of 'harsh agrochemicals' occurs only on the very rare occasion when Kennedy's army of predators and beneficials are not keeping the caterpillar population in check.

"Even then it is ensured that the chosen chemical has a low toxicity to beneficials," she said.

Sustainable viticulture practices are the norm at Reschke, such as the use of organic or 'soft' chemicals. Copper and sulfur sprays are used as preventative measures against mildew, though these are used only sparingly as high doses can prove toxic to good bugs.

A naturally-occurring organic bacterium (*Bacillus thuringiensis*) proves a worthy combatant, when needed, against moth caterpillars.

"I monitor the Reschke vineyards for pest and disease presence every week and a preventative program of copper and low rates of sulfur is employed according to my findings. This is combined with the phenology, levels of predatory bugs and current and forecasted weather," she said.

The vineyard emerged relatively unscathed from the torrential rain of the 2011 season. A highly tailored organic spraying program and rigorous hand-pruning decreased the risk of infection by allowing greater sunlight penetration of the canopies. Consequently, fruit was harvested from all the blocks and there was only minor evidence of downy mildew.

"Burke Reschke, our managing director, is a perfectionist and so those of us involved in the growing of the fruit have high expectations placed on us but, luckily we all have self-imposed high expectations," she said.

"Part of this is also caused by selfishness as I am an avid consumer of Reschke wines and I don't want to expose myself to unnecessary levels of toxicity." GW

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