Practical examples of ways to establish native insectary plants in and around vineyards

For her third article on the practicalities of enhancing biodiversity in vineyards, **Mary Retallack,** from The University of Adelaide, highlights some of the ways native insectary plants are being incorporated in and around Australian vineyards.

Introduction

In last month's article, I outlined the preferred attributes of insectary plants and compelling reasons for choosing native species. They are favoured as they are naturally adapted to Australian conditions and provide food, shelter and alternative prey/hosts for natural enemies throughout the year. In this article, I will highlight some of the ways growers are currently incorporating Christmas bush (*Bursaria spinose*), prickly tea-tree (*Leptospermum continentale*), wallaby grass (*Rytidosperma* ssp.) and other native plants in and around vineyards and give examples of ways growers may access a local community plant species list relevant to their area.

Pioneers in their field

I began investigating the importance of biodiversity and the role of insectaries 15 years ago as a vineyard manager and subsequently gained valuable background on the plantings I revisit here during the preparation of extension publications (Retallack 2010, Retallack 2011). One of the people I caught up with in 2010 was Prue Henschke, viticulturist at C.A Henschke and Co., who has pioneered the use of native insectary plants in the Barossa and Adelaide Hills. Prue's mantra is "living within the landscape, not on it". I met with both Prue and Craig Markby, vineyard manager at the Lenswood Vineyard, recently to find out what they have been up to and their approach to incorporating native insectary plantings in and around vineyards. Another Barossa viticulturist, Dan Falkenberg, has a wealth of knowledge regarding wallaby grass and attributes of subspecies. He has been growing a mix of wallaby grasses in his vineyard at Nuriootpa over the last decade and in that time hasn't needed to spray any insecticide to control light brown

AT A GLANCE

- Native insectary plants are resilient, versatile and naturally adapted to Australian conditions.
- They can be incorporated in and around vineyards to enhance biocontrol benefits by providing food, shelter and alternative prey for predators and hosts for parasitoid wasps.
- Growers have reported lower pest problems and less intervention when native insectary plants are incorporated in and around production landscapes.

Figure 1. Prickly tea-tree, *L. continentale* (a) Prue Henschke and Craig Markby tending the shrubs during establishment in 2010 (b) dense growth in 2018 and (c) pollen and nectar producing flowers.

Figure 2. Christmas bush, *B. spinosa* (a) natural sprawling habit (b) flowers and (c) distinctive seed pods.

Figure 3. Christmas bush, *B. spinosa* (a) planted adjacent to strainer posts (b) adjacent to the vineyard, and (c) close planting staggered 30 cm apart to prevent dust drifting into the vineyard.

apple moth (LBAM). This has saved both time and money while enhancing biodiversity. Previously his Grenache was sprayed once or twice a season.

Examples of ways to incorporate native insectary plants

Prickly tea-tree, *Leptospermum continentale*

The prickly tea-tree shrubs at Lenswood are now mature, approximately two metres high and have filled out to create a functional shelterbelt. The large number of seed capsules indicates the abundance of flowers this species is able to produce. Prickly tea-tree provides fantastic habitat for natural enemies that are attracted to sources of nectar and pollen, such as parasitoid wasps, brown lacewings, spiders and other predators. At least 65 different types of predatory arthropods, or 'good bugs', were found in association with prickly tea-trees during a recent study (Retallack *et al.* 2018).

Christmas bush, *Bursaria spinosa*

Prue has taken a revolutionary approach to incorporating native insectary plants in and around her vineyards. Christmas bush was planted at the ends of strainers. Cylindrical steel mesh guards were required to stop the sheep from eating the plants during establishment. This worked well to support the upward growth of the plants. In addition, the sheep 'trimmed' the sides through the guards resulting an upright and dense growth habit. The machine harvester can pass over the tops of the shrubs without causing damage. Pruning of the shoots results in a greater abundance of flowers which provide both nectar and pollen to brown and green lacewings, spiders,

Figure 4. Wallaby grass, *Rytidosperma* ssp. (a) seed head (b) Dan Falkenberg digging up wallaby grass, and (c) underground biomass of wallaby grass.

Figure 5. Iron grass, *Lomandra* ssp. (a) in a natural habitat (b) planted undervine and (c) developing fruiting bodies.

parasitoid wasps, predatory shield bugs, and many other 'good bugs'. Sixty nine different types of predatory arthropods, or 'good bugs', were recently found in association with Christmas bush (Retallack *et al.* 2018).

As with prickly tea-tree, Christmas bush can provide dual benefits, both as insectary and shelterbelt. Prue and Craig installed a dripline to water new plants but found that they received better results when they hand watered plants in the first season due to the dry conditions, they subsequently established well with a >90% success rate.

Wallaby grass, *Rytidosperma* ssp.

Dan Falkenberg used a mixture of four species during establishment of wallaby grass. These were common wallaby grass (*R. caespitosum*), brown-back wallaby grass (*R. duttonianum*), copper-awned wallaby grass (*R. fulvum*), and slender wallaby grass (*R. racemosum*), at a rate of 10kg per planted hectare. Subsequently Jaguar herbicide was used to selectively kill broad-leaved weeds and reduce competition. Dan observed that wallaby grass is well adapted to dry conditions. In a dry season the wallaby grass will die back along with volunteer weeds, but the wallaby grass will 'bounce back' when there is sufficient soil moisture, whereas the weeds do not rebound as quickly. As with any seeding, pre-planting weed control is paramount.

Wallaby grass is a perennial, tussock grass which grows actively during spring and enters dormancy when conditions dry out in summer (Penfold and McCarthy 2010). On a recent visit to the vineyard Dan and I dug up a tussock. The dense, fibrous root system grows to a depth of approximately 15cm, provides a source of organic matter, and helps to maintain soil structure and water infiltration.

A team of researchers led by Chris Penfold recently completed a study looking at the use of a low growing kneed wallaby grass (*R. geniculatum*) which grows to 30cm undervine and found that the dormancy trigger normally present is overridden when moisture is available via the dripline. This may render wallaby grass unsuitable when planted undervine on water-limited sites as it may have a detrimental effect on vine vigour. However,

on high vigour sites it may provide a good option to compete with vines to reduce vine vigour. Dan suggested that slashing the grass undervine or 'knocking it back' using a contact weedicide may be an alternative way to control the vigour. It is not anticipated wallaby grass will present a vigour problem when it is planted in the mid-row area. Dan has recently trialled a 20-species native grass mix in the mid-row. Wallaby grasses provide a fantastic habitat for a diversity of predators, with wolf spiders, brown lacewings, earwigs, glossy shield bugs, wasps and carabid beetles found abundantly in South Australian vineyards (Retallack *et al*. 2018).

Iron grass (*Lomandra* ssp.) is a hardy, perennial, rhizomatous herb which is commonly propagated by clump division. The plants can grow up to 40cm tall and provide a food source for natural enemies. Prue has planted iron grass adjacent to intermediate strainers undervine and reported that this works well.

Where to source information about appropriate native plants

Local plant community species lists can be sourced by contacting Natural Resources, or the catchment management authority in your local area. There are some fantastic resources available including the Backyards 4 Wildlife website which has a list of native plant community species in South Australia (www.naturalresources.sa.gov.au/adelaidemtloftyranges/plants-and-animals/native-plants-animals-and-biodiversity/urban-biodiversity/b4w-native-species). In Victoria, information on Ecological Vegetation Class can be found at www.spiffa.org/evcs

If you are interested in planting native perennials, I suggest talking to your local nursery. They can provide tube stock or plants in small pots. Contact them a year prior to ensure they have time to propagate sufficient material. Native grasses can be sourced via Seeding Natives Inc. (www.seedingnatives.org.au) in SA or Native Seeds (www.nativeseeds.com.au) in Victoria. Always seek advice from a qualified professional prior to planning your project.

For more information on this article contact Mary Retallack: mary@viti.com.au

Acknowledgement

The author wishes to thank Emeritus Prof. Michael Keller for his comments and review of this article.

References

Penfold, C.M. and McCarthy, M. (2010) Soil Management for Yield and Quality - Sub-project 'Pursuing Sustainability – the role of native ground cover species, Grape and Wine Research and Development Corporation, Adelaide.

Retallack, M.J. (2010) Enhancing Biodiversity in the Vineyard Workshop Notes - Information for McLaren Vale and Barossa Winegrape Growers, Adelaide and Mount Lofty Natural Resources Management Board, Adelaide.

Retallack, M.J. (2011) Vineyard Biodiversity and Insect Interactions: Establishing and monitoring insectariums, Grape and Wine Research and Development Corporation, Adelaide..

Retallack, M.J.; Keller, M.A.and Thomson, L.J. (2018) Predatory arthropods associated with potential insectary plants for Australian vineyards (unpublished), The University of Adelaide. GW