



# Native vegetation insectaries

## – permanent habitat for beneficial insects



### Key messages

- Planting an insectary of flowering native vegetation for beneficial insects is a simple farm practice that can be achieved at relatively low cost and without impeding production.
- Diversity and abundance of beneficial insects is key to building farm resilience, particularly against seasonal variations and new pest incursions
- Insectaries are not necessarily regular 'native plantings'; there are much more complex interactions occurring which should be considered when planting an insectary, including species selection
- The best way to decide where to carry out your planting and what to plant is to talk to other growers and advisors who have had experience in setting up an insectary

### What's a native vegetation insectary?

On-farm insectaries are areas of flowering plants that attract and maintain beneficial insect populations by providing shelter from highly disturbed crop areas as well as alternative food sources, namely pollen and nectar.

The goal of on-farm insectaries is to enhance diversity and abundance of beneficial insects on your farm to build resilience, particularly against seasonal variations and pest incursions. Acting as a 'fixed home address' for beneficial insects to interact with your crop, they complement cultural and biological control methods of your integrated pest management (IPM) program.

On-farm insectaries provide 'SNAP'<sup>1</sup> for beneficial insects:

- **S**helter for overwintering and safety from weather and higher order predators
- **N**ectar to provide a source of carbohydrate energy
- **A**lternative prey to maintain beneficial populations until they are needed in the crop
- **P**ollen which provides the protein necessary for egg

<sup>1</sup> Mary Retallack, Viticulture in South Australia titled Vineyard

The advantages of planting native vegetation compared to non-native vegetation are numerous and include reduced likelihood of harbouring pests and diseases that can affect crops, longer flowering windows, lower maintenance and water requirements, and increased habitat and connectivity that better support native biodiversity including native beneficial insects.

In addition to providing better pest management, insectaries can perform multiple functions and provide multiple benefits, as outlined in Table 1.

**Table 1: Pros and cons of native vegetation insectaries**

Pros	Cons
Pollination and other ecosystem services (e.g. carbon sequestration, increased infiltration)	Harbouring of pests and diseases (e.g. rabbits or light brown apple moth)
Habitat and food source for insects and other wildlife (e.g. insect corridors, birds)	Upfront costs
Multipurpose design (e.g. shelterbelts/windbreaks, perennial groundcover)	Maintenance (e.g. bushfire management, occasional irrigation)
Biodiversity values & environmental stewardship (consider offsets in planning applications)	Potential competition for resources with crop
Meet obligations of Environmental Assurance Programs	
Income diversification (e.g. bush food production)	
Long-term cost savings	
Aesthetics	

### Developing an insectary

There are a couple of easy steps to consider when developing an insectary:

1. Locate areas on your property that you can plant an area of flowering plants. You can be creative with what you classify as your insectary, refer to some examples in Table 2.
2. Establish the insectary by selecting the appropriate plant species and location to best achieve your goal(s). Refer to Table 3 for a list of plant species suitable to the Greater Melbourne area developed by the Port Phillip and Westernport CMA. Some plants have been referred to as “hero” plants for their remarkable ability to host beneficial insects, for example:
  - *Bursaria spinosa* (sweet bursaria) – hosts lacewings, ladybeetles, assassin bugs, spiders
  - *Austrodanthonia sp.* (wallaby grass) – hosts brown lacewings, assassin bugs, spiders
  - *Leptospermum continentale* (prickly tea-tree) – hosts ladybeetles, lacewings, spiders
3. Consider monitoring the activity of beneficials and possibly pests in and near the insectary using sticky traps, sweep nets or observation

**Table 2: Ideas for insectaries with multiple purposes**

#### Examples of multi-purpose design for insectaries

- Container (or banker) plantings at various locations around each block
- Grassy drainage lines – native grasses provide excellent low maintenance groundcover and habitat for beneficial insects
- Embankments – flowering shrubs and native grasses provide good erosion control
- Surrounding a dam for erosion control and water filtration (grasses, sedges)
- Land classes zoned unsuitable for production
- Garden beds
- Existing headlands, buffers, shelterbelts (create understory) and hedgerows

### Native vegetation insectary FAQs

#### Where should I plant my insectary?

- Within 50 m of crop areas (more likely to impact on pests)
- Grass plantings under vines/trees, inter-row or end of row
- Land unsuitable for cropping
- Headlands, buffers or shelterbelts – new plantings or create an understory
- Container plantings at various locations around each block
- Grassy drainage lines – native grasses provide excellent low maintenance groundcover and habitat for beneficial insects

#### Which species should I plant? (see Table 3)

- Choose low, middle and upper storey species for diverse habitat
- Maximise flowering time – aim for ‘year-round’ flowering for a permanently available nectar source
- Select plant species that host beneficials and not pest species – e.g. *Leptospermum continentale* hosts several beneficial insects, but can also host the pest light brown apple moth

#### How much will it cost?

- An insectary can be established for as little as \$200, and can be developed over time
- The main costs are making land available, tube stock or seeds, planting and maintenance (e.g. irrigation and weed control). In some areas fencing may be necessary to protect young plants from browsing animals

#### Other tips:

- Think about the long-term goals you want to achieve
- Talk to others who have set up insectaries
- Consider planting a small ‘test’ area before embarking on a large insectary planting – see what grows well and monitor flowering activity and capacity to attract beneficial species

#### Additional resources

**Australian Native Plants Selector APS Query** – a program that enables the selection of Australian native plants to suit specific requirements (search for nectar and insects).

<http://anpsa.org.au/download.html>

**Growing Australian Plants** – An Australia Government Initiative in partnership with the Australian National Herbarium and the Australian National Botanic Gardens to provide Australians with information on how to grow Australian native plants as well as where to buy them.

<https://www.anbg.gov.au/growing-plants/index.html>

**Landscape diversity and field margin management** – a vegetable levy-funded project (VG14047) investigating the role of field margins and landscapes surrounding crop fields in providing resources to beneficial organisms and reducing arthropod pest pressure in vegetable and other crops.

<https://ausveg.com.au/app/data/technical-insights/docs/VG14047.PDF>

**NatureKit** – a tool to map Victoria’s biodiversity that can allow you to determine what flora (and fauna) are native to your property and local area.

<https://www.environment.vic.gov.au/biodiversity/naturekit>

**Port Phillip & Westernport CMA** – have undertaken substantial work in the trials and establishment of native insectaries within the greater Melbourne area. Several Victoria specific resources are available on their website.

<https://www.ppwcm.vic.gov.au/what-we-do/sustainable-agriculture/native-insectarium-trial/>

## Native vegetation insectaries

**Table 3: Native plants suitable for insectaries in Werribee (Port Philip & Westernport CMA, 2019).**

Strata	Species	Common name	Insectary benefit
Upper storey	Eucalyptus sp.	Manna, peppermint, messmate, swamp gum	Food source for beneficials
Middle storey trees	Acacia dealbata	Silver wattle	
Middle storey shrubs	Bursaria spinosa	Sweet bursaria	Highly beneficial nectar producing plant
	Leptospermum continentale	Prickly tea-tree	Highly beneficial nectar producing plant
	Leptospermum lanigerum	Woolly tea-tree	Food source for beneficials
	Melaleuca squarrosa	Scented paperbark, or swamp paperbark	Food source for beneficials (in wet areas)
	Acacia suevoelens	Sweet wattle	Nectar producing
Lower storey shrubs	Epacris gunnii	Heath	Food source for small beneficials
	Mentha australis	River mint	Small nectar-producing flowers, prolific habit, edible
	Helichrysum scorpiodes	Everlastings	Food source for beneficials
	Brachyscome multifida	Cut leaf daisy	Food source for beneficials
	Correa reflexa	Common correa	Food source for beneficials
	Epacris impressa	Common heath	Food source for beneficials
	Stylidium armeria	Common trigger plant	Food source for small beneficials
	Grevillea rosmanifolia	Rosemary grevillea	Food source for beneficials
	Grevillea alpina	Alpine grevillea	Food source for beneficials
	Prostanthera rotundifolia	Round leaf mint bush	Food source for beneficials
	Thryptomene calycina	Victorian laceflower	Food source for beneficials
	Westringia fruticosa	Coastal rosemary	Food source for beneficials
Groundcovers	Dichondra repens	Kidney weed	Food source for beneficials and groundcover habitat
	Kenedia prostrata	Running postman	Food source for beneficials and groundcover habitat
	Acacia brownii	Heath wattle	Food source for beneficials and groundcover habitat, prostrate
Grasses	Austrodanthonia caespitosa	Common wallaby grass	Shelter, breeding habitat for brown lacewing
	Austrodanthonia setacea	Bristly wallaby grass	Habitat
	Microlaena stipoides	Weeping grass	Habitat
	Themeda triandra	Kangaroo grass	Habitat
	Austrostipa	Speargrass	Habitat
Lilies – hard to establish	Arthropodium milleflorum	Pale vanilla lily	Generalist insect attracting
	Arthropodium strictum	Chocolate lily	Generalist insect attracting
	Bulbine bulbosa	Bulbine lily	Generalist insect attracting
Semi-aquatic/aquatic	Amphibromus archeri	Pointed swamp wallaby grass	Riparian insect habitat
	Melaleuca ericifolia	Swamp paperbark	Nectar flowers
	Juncus sp.	Rushes, sedges	Riparian insect habitat
	Ranunculus amphitrichus	River buttercup	Food source for beneficials