CREATING A NATIVE VEGETATION INSECTARIUM

Putting research into practice with an on-farm trial site

This project is supported by the PPWCMA, through funding from the Australian Government’s National Landcare Programme
BUSH FOODS FOR SUSTAINABLE FARMING
What are bush foods? How can you incorporate them into your farm?

Bush foods are creating a buzz among consumers and in the restaurant industry. They are an emerging product of the new "dining boom" with growing interest in some of those traditional supernovas. How can you fit them into your farm planning, and what help is available?

The workshops will provide information on identifying, growing, harvesting, and marketing opportunities for bush foods. Come along to hear more about strategic placement and management of trees and forests to support sustainable agricultural landscapes.

When & Where:
Saturday 1st October - Gembrook Primary School
Time: 10:00am – 3:00pm

Case study from National Horticulture NRM Strategy

CASE STUDY – INTEGRATED PEST AND DISEASE MANAGEMENT

Integrated Pest and Disease Management can involve a variety of measures that are adopted before chemicals are applied to manage pests. It can include putting in plants that attract beneficial insects; releasing and maintaining beneficial insects/parasites in sufficient numbers to bring a pest under control; using pheromones to attract and trap pests; or disrupt mating, putting in wind breaks, erecting netting and removing or incorporating crop waste as soon as possible after harvest (Brad Wells, HAIL Fact Sheet).

IPDM reduces risks of pest resistance, residues, Occupational Health & Safety issues and environmental impact or contamination, as well as containing what can be a significant production cost.

A recent project in the Northern Adelaide Plains horticultural region, ‘Revegetation by Design,’ was supported by Horticulture Australia Ltd along with several other investors under the Australian Government’s ‘Stronger Regions’ program and showed that:

- Key pests of horticultural plants are rarely present on several species of vegetation native to the region, even when planted adjacent to infested plants (Schellhorn and Wood 2004).
- There was a high diversity of beneficial insects on native plants (Stephens et al 2005 in press).
- Insect predators and parasitoids of key horticulture pests were found on a range of native plants and quickly colonised young replanted native vegetation.
- Several of the native plants produced products such as cut flowers, bush Tucker (e.g. Muttons, wattle seeds) and seed for the revegetation industry priced at $40-$240/kg, and thus generated additional income for the farm.
- The native plants replaced weedy communities that were known to harbour pests and diseases of horticulture (the odds of finding pest thrips on weeds was as high as 12:1, but they were rarely found on native vegetation).

- One of the native plants, Atriplex suberecta, harboured a native insect known to vector disease in tomato, lucerne and grapes, and was not recommended for planting. This confirmed that particular species and groups of species will be more appropriate than native vegetation per say.

Source: Personal communication, Nancy Schellhorn, CSIRO Entomology, Indooroopilly.

Horticulturists in some regions are now also testing collaborative approaches where they act together (area wide management) to combat pests and diseases, e.g. removing weeds hosting pests. Some work is also commencing in testing native plants as ground cover within perennial plantings. There is also thought about whether measures associated with IPDM could build the resilience of horticultural districts and assist in biosecurity measures by providing resistance to exotic imports.

Critical weather events can be important to many crops, either to trigger plant responses or as a threat to production (e.g. chilling or frosts). Irrigation is widely used as a buffer against drought but variable stream flows and salinity, coupled with water trading, present grower with additional seasonal factors to manage in their businesses. Predictions of climate change generally include scenarios of increasing variability between years and more intense episodic events (e.g. storms). Climate variability, and change, may become more important to horticultural producers in coming years. Being able to remain in production can also rely upon maintaining a good neighbour policy with nearby residents. Managing noise (e.g. tractors, trucks and gas-guns), dust, wastes and sprays will be important. At a global scale, a good neighbour policy can result in attribution to minimising contributions to greenhouse and striving for energy efficiency.
### Biodiversity

<table>
<thead>
<tr>
<th>Code Element</th>
<th>Compliance Criteria</th>
<th>Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>E7 Biodiversity</td>
<td>- Manage biodiversity on the property.</td>
<td>Form E7 - Biodiversity Management Program</td>
</tr>
</tbody>
</table>

- A Biodiversity Management Program is established using strategies and practices to:
  - protect areas of biodiversity identified on the property map
  - reduce threatening processes
  - manage feral animals, invasive species, pests, environmental weeds and diseases on the property.

- The Biodiversity Management Program is documented and must include:
  - date developed
  - name of the person documenting the Program
  - biodiversity issues or values
  - strategies/practices
  - worker/s responsible.

- The Biodiversity Management Program is reviewed and updated annually. The name of the person completing the review and the date of the review are documented.

<table>
<thead>
<tr>
<th>Freshcare Resources</th>
<th>External Resources</th>
</tr>
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</table>

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**Biodiversity management**

**Chapter 5: Biodiversity management**

The Biodiversity chapter focuses on managing local, native biodiversity on farm. This includes identifying areas of biodiversity, especially those of special importance, on your property and then considering practices that control, manage or minimize any potential impacts on them.

Biodiversity is the variety of all life forms: the different plants, animals, fish, birds, insects and microorganisms, their genes and the ecosystems of which they are a part. Biodiversity is increasingly being recognised for its contribution to farm sustainability and productivity.

Note that within each chapter the guidelines provide information and guidance on the following:

- the priority environmental management issues of concern;
- how a business can assess the associated environmental risks;
- practices that are recommended for addressing the identified risks; and
- suggestions for monitoring and recording to demonstrate that environmental management outcomes are being met.

**Introduction to native vegetation**

Approximately 100,000 hectares of native vegetation remain in the Port Phillip and Western Port region. It covers about 35% of the region's land area.

Mapping shows the region's vegetation is fragmented into more than 33,000 individual patches. Nearly all the large patches are protected in public land such as parks and conservation reserves. They account for about one-third of the region's remnant vegetation.

Vegetation quality is also higher in conservation reserves. Quality is generally poorer on private land because of small patch size, loss of understorey and weed invasion. Fragmented patches are vulnerable to continuing weed invasion and incremental damage.

Population growth and associated development will cause continuing vegetation losses in some parts of the region.

Accordingly, this strategy sets targets that aim to:

- Maintain areas of Permanent Native Vegetation that will make important contributions to the health and resilience of natural systems;
- Achieve no net loss in the quantity/quality of Other Native Vegetation across the landscape - locally wherever possible.

This strategy also identifies Potential Nature Links. These are parts of the landscape considered to offer major, realistic and highly-valuable opportunities for creating large-scale vegetation corridors and improving landscape connectivity.

Invasive weeds and climate change are the main barriers to achieving these targets. Weed invasions drive structural declines in native vegetation and damage their habitat quality. A drier, warmer climate is expected to cause further fragmentation and decline in many vegetation communities and amplify the pressures posed by weeds and increasing fire frequency and intensity.
The multiple benefits of insectariums!

- Shelterbelt
- Habitat and food source for insects
- Biodiversity values (consider offsets in planning applications)
- Meet obligations in Environmental Assurance programs
- Bush Food production

This is how I went about setting up an insectarium at Fielderberry Farm
1. Looked up the relevant Ecological Vegetation Class (EVC) for the property

STEP 2: Select appropriate bioregion, for us this will be either:
Gippsland Plain
Highlands-Southern Fall
Victorian Volcanic Plain

STEP 3: Select 2005 EVC and allow the map to refresh
3.1 Lowland Forests
4.1 Box Ironbark Forests or dry/lower fertility Woodlands
5.1 Lower Slopes or Hills Woodlands - Seasonally inundated and/or shrubby
5.2 Lower Slopes or Hills Woodlands - Grassy
5.3 Lower Slopes or Hills Woodlands - Herb-rich
6.1 Dry Forests - Exposed and/or lower altitude
6.2 Dry Forests - Sheltered and/or higher altitude
7.1 Wet or Damp Forests - Wet
7.2 Wet or Damp Forests - Damp
8.1 Riparian Scrubs or Swampy Scrubs and Woodlands
8.2 Riparian Forests or Woodlands
Look for plants which you have seen featured in the research as appropriate insectarium species.

Quite a few relevant EVC’s have bush foods, you just need to know what you are looking for.

Plant a mix of EVC plants depending on the layout of your insectarium.

The more plant diversity and layers, the better the habitat for diverse beneficial insects.
<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Season</th>
<th>Flowering Characteristics</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostanthera laeucanthos</td>
<td>Victorian Christmas Bush</td>
<td>Late spring/summer</td>
<td>Insect attracting</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
<tr>
<td>Grevillea sp. (Rosemarinitolia)</td>
<td>Rosemary Grevillea “Rosy Posy”</td>
<td>Winter/Spring</td>
<td>Insect and nectar bird attracting</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
<tr>
<td>Dillwynia phyllodes</td>
<td>Parrot pea</td>
<td>July-Nov</td>
<td>Insect and/or bird attracting as shelter, breeding habitat or food source. Also a nitrogen fixing legume</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
<tr>
<td>Kennedia prostrata</td>
<td>Running postman</td>
<td>April-Nov</td>
<td>Insect and/or bird attracting as shelter, breeding habitat or food source</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
<tr>
<td>Ptilotus spathulatus</td>
<td>Pussy tails</td>
<td>Winter-Autumn (almost year round)</td>
<td>Insect and/or bird attracting as shelter, breeding habitat or food source</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
<tr>
<td>Rhodenthe enthennoides</td>
<td>Chamomile sunray (daisy)</td>
<td>Spring-early summer</td>
<td>Insect and/or bird attracting as shelter, breeding habitat or food source</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
<tr>
<td>Baccharis multifida</td>
<td>Cut leaf daisy</td>
<td>Autumn-mid winter</td>
<td>Insect and/or bird attracting as shelter, breeding habitat or food source</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
<tr>
<td>Correa reflexa</td>
<td>Common correa</td>
<td>Winter-early spring</td>
<td>Honey eater bird attracting</td>
<td>Latrobe Uji, Indigenous nursery</td>
</tr>
</tbody>
</table>
• Upper story (shelterbelt)- *E. olida*
• Middle story- (shelterbelt)- *Bursaria spinosa, Prostanthera lasianthos*
• Lower story- grevillea, correa, round leaf mint bush, parrot pea, heath, daisy, honeypots, river mint, lilies etc
• Groundcovers- native violet, running postman, pussytails, muntries etc
Acacia suevolens

Grevillea rosmanifolia

Heath

Kunzea pomifera *

Mentha australis

Themeda triandra

Native grasses
  (Wallaby, Weeping and Spear)

Euc olida
  (strawberry gum) *
• Shelterbelt
• Habitat and food source for insects
• Biodiversity values (consider offsets in planning applications)
• Meet obligations in Environmental Assurance programs
• Bush Food production

Your insectarium layout can be any design you like
• Grasses under vine or inter-row, end of row
• Surrounding a dam
• Land class zone unsuitable for production
• Garden beds
• Headlands, buffers and re-vegetated shelterbelts

It’s about insect corridors and native vegetation connectivity!
# How much did it cost?

<table>
<thead>
<tr>
<th>EXPENSE ITEM</th>
<th>COST</th>
<th>CALCULATION</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>native indigenous plants x380</td>
<td>760</td>
<td>based on tubestock prices averaging $2</td>
<td>60m row x 2m wide, some indigenous nurseries are cheaper, commercial nurseries more expensive</td>
</tr>
<tr>
<td>Eucalypt windbreak (optional) x 10 plants</td>
<td>20</td>
<td>based on tubestock prices averaging $2</td>
<td>some indigenous nurseries are cheaper, commercial nurseries more expensive</td>
</tr>
<tr>
<td>tree guards x 380</td>
<td>342</td>
<td>based on .90c/tree guard and stakes</td>
<td></td>
</tr>
<tr>
<td>bulk buy sticky traps x90</td>
<td>34</td>
<td>optional</td>
<td>for IPM monitoring</td>
</tr>
<tr>
<td>Mulch</td>
<td>2000</td>
<td>50m3</td>
<td>variable depending on product used, amount required, transport distance and hire of a spreader</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5076</td>
<td></td>
<td></td>
</tr>
<tr>
<td>without IPM monitoring</td>
<td>3216</td>
<td></td>
<td></td>
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