



CASE STUDY

ESTABLISHING NATIVE INSECTARY GROUND COVERS UNDER-VINE AND IN THE MID-ROW AT MORELLA VINEYARDS, CLARE VALLEY, SA

By Ben Castine, Morella Vineyards, Emma McInerney, Ag Excellence Alliance and
Dr Mary Retallack, Retallack Viticulture Pty Ltd



ESTABLISHING NATIVE INSECTARY PLANTS

Background

Morella Farm is a fourth generation viticulture, pasture and broad acre business located close to the town of Watervale, Clare Valley, South Australia. It consists of 37 hectares of grape vines, 239 hectares of grazing and 143 hectares of cropping land. We planted our first grapes in 1997, and have occasionally had challenges with pest insects such as light brown apple moth (LBAM).

We have a passion for sustainable agriculture including viticulture, as we feel that the changing climate will greatly affect those properties that are not addressing these threats now. Adapting to these changes, together with reducing our chemical impact (e.g. pesticide, herbicide and fungicides) and environmental impact (i.e. efficient water usage), were our main goals of the EcoVineyards project and to ensure that our property is viable and sustainable for future generations.

What were you hoping to achieve and why?

We were hoping that the project would also be a great opportunity to gain knowledge in integrated pest management and sustainable viticulture practices from experts in the field such as Dr Mary Retallack and her team and to establish practices that could be implemented and easily adapted by other growers around the region.

“The EcoVineyards project has been valuable in allowing us to develop a long term plan to build biodiversity in the vineyard, while simultaneously improving our natural resilience to species detrimental to grape production.”

Ben Castine, Morella Vineyards



Figure 1: EcoGrowers Rose and Ben Castine, Morella Vineyards [Photo: Mary Retallack].

What did you do and when?

We wanted to see two sites on our property sown to native species:

- one site with low-growing under-vine plants into mulching, and
- the other site with grasses in the mid-row.

Previous under-vine planting suffered significant weed pressure, so we wanted to test the use of mulching for weed suppression at planting and with ongoing future applications to improve water holding capacity of the soil and subsequent quality of the Shiraz.

The intention of mid-row seeding is to gain a permanent wallaby grass sward for year-round cover in the Grenache, as part of a longer term aim to convert the entirety of the vineyard and improve biocontrol of LBAM.

We started planning for the project beginning with a biodiversity action plan, followed by ordering of plants. Under-vine planting was done in mid-2023 into straw mulch and the mid-row was sown by Seeding Natives in August 2023. Both sites required some weed preparation by hand and with a knockdown herbicide.

We also trialled the use of specialised pheromone and lure application technology (SPLAT) to manage LBAM pressure, a pheromone mating disruptor applied using a caulking gun. For more information please see [SPLAT control of LBAM](#).

What worked well?

Straw mulching under vine in Site A to prevent weed competition worked well, with very little weed pressure as compared to non-mulched rows. Having a team of three planting - one on the shovel, one planting and one installing tree guards - also worked well for the under-vine stem planting. Wallaby grass did well under vine.

We had a microbat survey done a Chorus recorder for three nights in mid-March 2024, which detected an endangered species in our vineyard.

Microbat species detected on the property include:

- *Chalinolobus morio*, chocolate wattled bat
- *Vespadelus darlingtoni*, large forest bat
- *Myotis macropus*, large-footed myotis is listed as Endangered under South Australia's National Parks and Wildlife Act 1972.



Figure 2: Demonstration sites located at the Morella Vineyard [Photo: Google Earth 10/10/2023].



Figure 3: Location of the Chorus microbat recorder March 2024 [Photo: Ben Castine].



Figure 4: Sowing native grasses and forbs by Seeding Natives 'blue devil' specialised seeder (August 2023)[Photo: Ben



Figure 5: Prior to planting native grasses and seeds in Site B (June 2023) [Photo: Ben Castine].

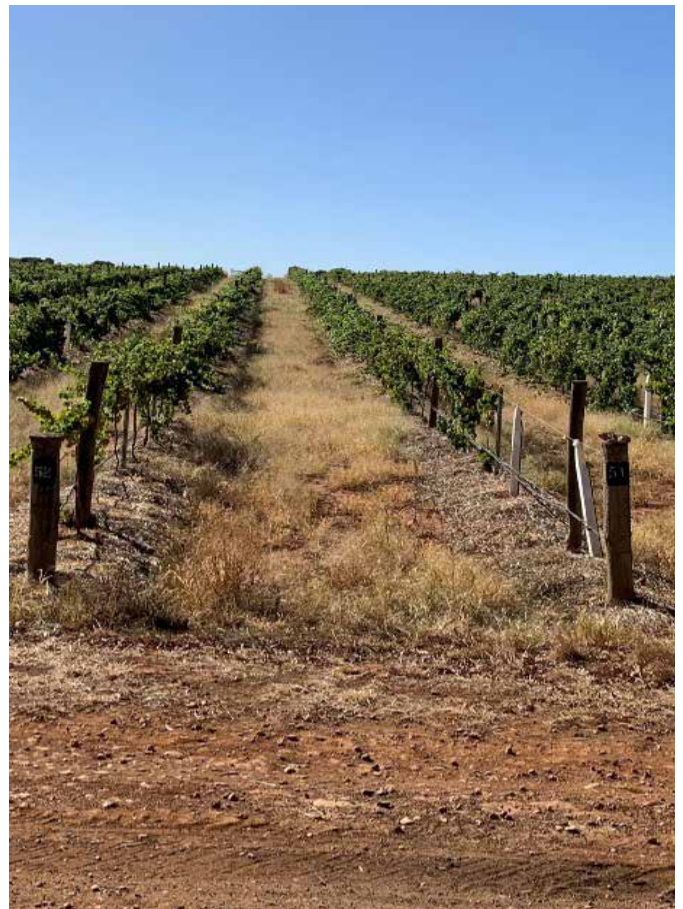


Figure 6: Native grasses and forbs in Site B (March 2024) [Photo: Ben Castine].

Any pitfalls to avoid?

The last two years have been very dry in the Clare Valley and as a result our midrow native grasses struggled to establish. Better soil preparation to remove weed competition would have been beneficial.

What are you more aware of now?

We now understand which varieties grow well in and around our vineyard. We have a core of about 10 plant varieties which have grown well, and we'll favour planting a good mix of these in the future. To increase biodiversity, we'll also trial other suggested native species that we didn't plant during the EcoVineyards project.

Where to from here?

We plan to continue planting insectary plants and expand on the sites outlined in our initial biodiversity action plan, under-vine and mid-row.

We are ambitious with our plans to move towards a vineyard with high biodiversity and native plant cover.

We recently started another related but separately funded project aimed at increasing biodiversity in the vineyard by setting up a native seed production area and are excited to continue the work started with the EcoVineyards project.



Any outstanding knowledge gaps you would like filled?

As part of the project, we planted some natives under vine so it would be great to learn from other EcoGrowers about their experiences establishing and maintaining under vine plantings. It would be especially interesting to hear how they dealt with weeds whilst the natives were establishing, and whether they think that under vine planting could be done on a large scale.

Growers may be interested in reading more about [hydroseeding native ground cover species](#).

What has been the most valuable aspect of the program for you personally?

Understanding more about [native species in the Clare Valley](#) and how they can be integrated in vineyards to increase biodiversity. The [pre-European species list](#) and other resources provided by Mary will form a great basis for future plantings.

Has your level of knowledge increased significantly since you became an EcoGrower?

Yes, my native species knowledge has increased a lot, together with my knowledge of beneficial insects and soil and plant health indicators.

We'd like to thank Mary and the EcoVineyards team for the opportunity to participate in this wonderful project, along with the support they have given us.



Figure 7: *Bursaria spinosa*, sweet bursaria planted adjacent to the strainer post [Photo: Ben Castine].

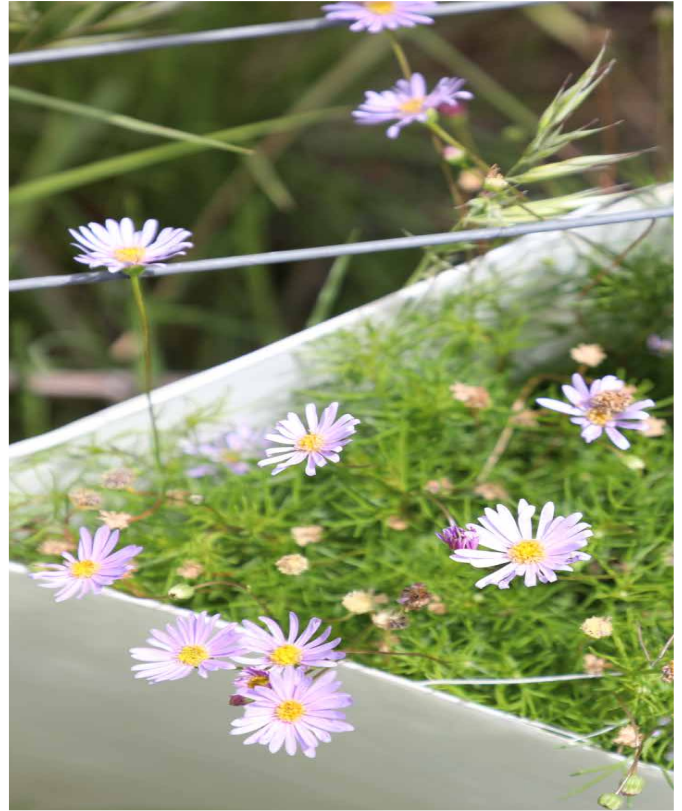


Figure 8: *Vittadinia megacephala*, giant New Holland daisy planted under-vine [Photo: Ben Castine].



Figure 9: A willie wagtail, a native insectary bird [Photo: Mary Retallack].

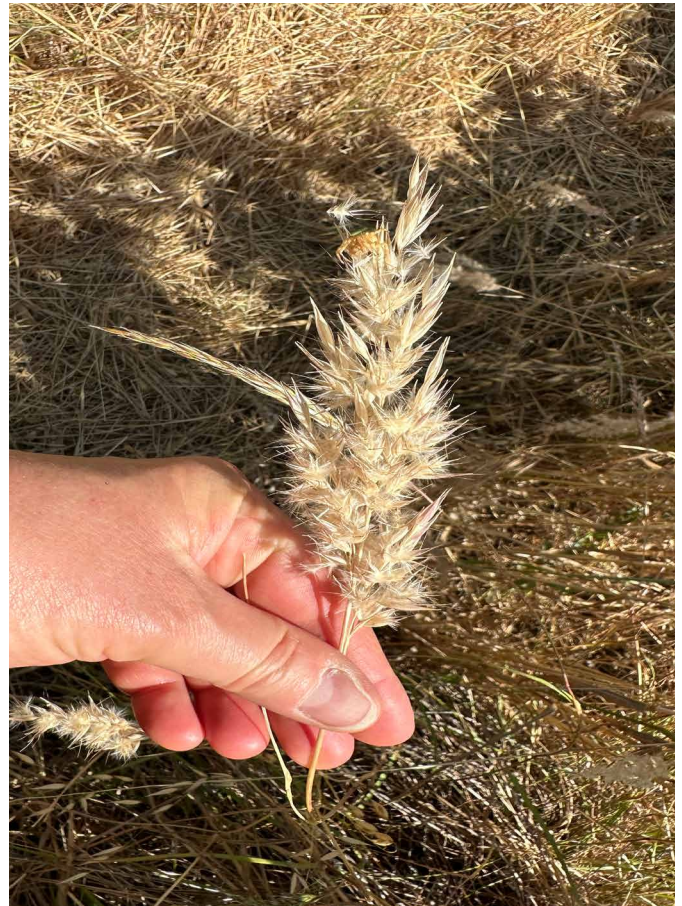


Figure 10: Wallaby grass in full flower with mature seeds [Photo: Mary Retallack].



Figure 11: LBAM monitoring [Photo: Ben Castine].



Figure 12: Application of SPLAT paste [Photo: Ben Castine].



Figure 13: Monitoring for the presence of LBAM post SPLAT application [Photo: Mary Retallack].

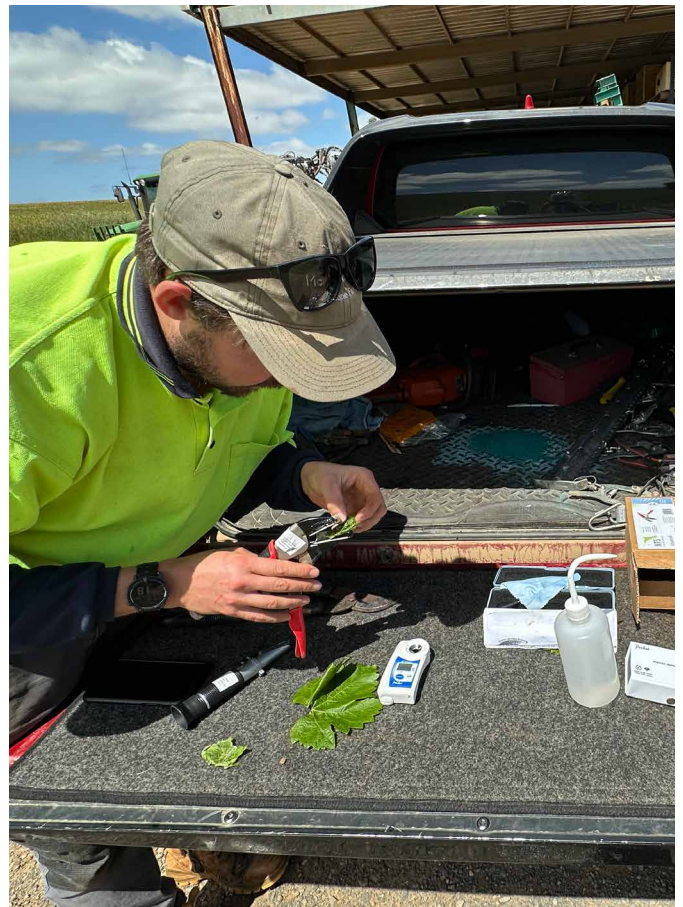


Figure 14: Leaf blade sap analysis [Photo: Mary Retallack].



Figure 15: Related native seed propagation area project funded separately (October 2024) [Photo: Mary Retallack].



Figure 16: *Vittadinia* sp., New Holland daisy with lots of transverse ladybird beetles and larvae present (October 2024) [Photo: Mary Retallack].



Figure 17: Native seed propagation area (October 2024) [Photo: Mary Retallack].

Plant lists

Site A: native insectary ground covers - undervine			Site B: native grasses and forbs - midrow		
#	Botanical name	Common name	#	Botanical name	Common name
1	<i>Brachyscome multifida</i>	cut leaf daisy	1	<i>Anthosachne scabra</i>	common wheat-grass
2	<i>Brunonia australis</i>	blue pin cushion	2	<i>Austrostipa nodosa</i>	knotty spear grass.
3	<i>Bursaria spinosa</i>	sweet bursaria	3	<i>Austrostipa scabra</i>	rough spear grass
4	<i>Chrysocephalum baxteri</i>	white everlasting	4	<i>Bothriochloa macra</i>	red grass
5	<i>Coronidium scorpioides</i>	button everlasting	5	<i>Chloris truncata</i>	windmill grass
4	<i>Craspedia variabilis</i>	billy buttons	4	<i>Dichanthium sericeum</i>	silky blue grass
5	<i>Lomandra micrantha</i>	iron grass	5	<i>Digitaria brownii</i>	cotton grass
6	<i>Olearia ramulosa</i>	twiggy daisy bush	6	<i>Enneapogon nigricans</i>	black head grass
7	<i>Pultenaea acerosa</i>	bristly bush pea	7	<i>Rytidosperma caespitosum</i>	common wallaby grass
8	<i>Pultenaea largiflorens</i>	twiggy bush pea	8	<i>Rytidosperma geniculatum</i>	kneed wallaby grass
9	<i>Scaevola aemula</i>	fairy fan flower	9	<i>Rytidosperma pilosum</i>	velvet wallaby grass
10	<i>Rytidosperma</i> sp.	wallaby grasses	10	<i>Rytidosperma setaceum</i>	bristly wallaby grass
11	<i>Vittadinia megacephala</i>	giant New Holland daisy			

Costs

Date	Item	Number of plants	EcoVineyards costs (ex GST)	Co-contribution (landholder contribution)	In-kind contribution (time)
12/05/2023	Herbicide direct seeding area			\$100	2 hrs
17/06/2023	Purchase tube stock (387 plants @ \$1.70 ea, 163 plants @ \$3.30 ea)	550		\$1,196	12 hrs
4/07/2023	Pottiputki planter		\$352		
10/07/2023	Herbicide direct seeding area			\$100	2 hrs
24/07/2023	Herbicide direct seeding area			\$100	2 hrs
21/08/2023	Direct seeding by Seeding Natives 30 kg		\$3,648	\$2,652	3 hrs
11/10/2024	Purchase and apply 3.6 Ha of SPLAT			\$1,566	8 hrs
EcoGrower contribution				\$3,000	
Total		550	\$4,000	\$8,714	29 hrs



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ACKNOWLEDGEMENT OF COUNTRY

EcoVineyards proudly acknowledges the Aboriginal and Torres Strait Islander Peoples, and their ongoing cultural and spiritual connection to this ancient land on which we work and live.

As the Traditional Custodians of this land, we recognise their wealth of ecological knowledge and the importance of caring for Country.

We pay our respects to elders past and present and extend this respect to all Aboriginal and Torres Strait Islander Peoples.



