ECO VINEYARDS
GROWING RESILIENCE NATURALLY

CASE STUDY

CREATING A MORE BALANCED AND FUNCTIONAL UNDER-VINE ECOSYSTEM AT DE BORTOLI WINES, YARRA VALLEY, VIC

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NATIVE GROUND COVERS FOR THE UNDER-VINE AREA

Background

De Bortoli is located at Dixons Creek in Victoria. The property is 370 ha in size, with 170 ha planted to Pinot Noir, Blanc and Gris, Chardonnay, Shiraz, Sauvignon Blanc, Cabernet Sauvignon, Riesling, Gamay, Sangiovese, Nebbiolo, Gewurztraminer, and Semillon.

De Bortoli Wines is moving towards sustainable biological farming practices in their vineyards and became a member of Sustainable Winemaking Australia in 2021, completing certification in 2024.

What were you hoping to achieve and why?

The vineyard at Dixons Creek has reoccurring weed burden undervine with weeds such as wild radish, wild rocket, mustard weed and couch grass all competing for soil nutrition in the undervine.

Years of herbicide and wet seasons have resulted in soil conditions that favours these pioneer species and prevents a diverse range of groundcovers from establishing and thus improving soil health and creating a more balanced undervine ecosystem.

De Bortoli set out to trial cover crops in the mid rows to see if this can help with reducing target weed species in the mid rows as well as test areas for native undervine groundcovers to tackle these problem areas as well.

Figure 1: Wild rocket growing under vine [Photo: Melbourne Water].

Figure 2: Cover crops, December 2024 [Photo: Melbourne Water].

What did you do and when?

Midrow cover crop

With wet conditions and vineyard waterlogging preventing ground preparation for cover crops and undervine sowing, this didn't commenced until autumn 2024.

The cover crop recommendation was to use an autumn/winter cover crop containing a blend of grasses and broadleaf species. A blend with oats, ryecorn, purple vetch, annual ryegrass, winter wheat, forage rape, leafy turnip, linseed, crimson clover, peas, tillage radish and chicory was used. Sowing rate was 50kg/ha.

Undervine groundcover plots

The undervine areas were sprayed and lightly cultivated and then hand sown with native grasses and forbs in autumn 2024. With a heavy weed burden, it was challenging to find the native species establishing in spring/summer.

However, several seasons may be needed before they are able to out-compete these weedy species and become prevalent in the under-vine panels.

To date the *Dichondra repens*, tom thumb has been the most evident to establish.

Managing undervine weedy competition has been the most challenging aspect of trialling native grasses and forbs. Mixed sowing (blended species of grasses and broadleaf forbs) makes management even more challenging as targeted herbicides can't be used.

Insights

Transforming vineyard undervine areas may not be best done following extremely wet or dry seasons due to the boost in seed germination with ground preparation (disturbance).

Cover crops established well but the competition as the ground dried and wet following the La Niña conditions made undervine sowing more of a challenge.

Having a plan for weed management in the native groundcover trial site is something that would improve the management as weeds grow faster than the native species. Have a good appreciation for patience and persistence when trialling native species as they don't respond like a weed does.

Pitfalls to avoid

In the early years of switching to native groundcovers under vine, it may be better to have simple sowing regimes under these initial panels- for example grasses only and forbs only so that there is an option for targeted herbicide use.

Over time, it may become easier to add in a more diverse seed mix, but our trials show this doesn't establish well in the initial years of trialling.

Broadcast sowing also proves a challenge as it is hard to identify the native species among the weeds. Sowing in lines would help the natives stand out as a defined row and help with targeted herbicides away from the row of natives.

Having too many panels across multiple blocks was probably too much to manage with resourcing and maintenance. Plants small, less panels and a single trial area would be the best way to get started.

Where to from here?

Alternative undervine management options need to be trialled such as a weed wand to reduce the weed competition during the growing season. This would better combat nutrient competition between the weeds and vines plus allow the native species to establish underneath the growing weeds. The weed wand can target the higher weed vegetation. Slashing is also an option before the weedy species set seed.

The cover crops have been successful in the trial area and more will be sown in 2025. Some of the native groundcover panels will be re-sown with species that are slowly establishing plus the introduction of *Linum marginale*, native flax which has proven to be a highly successful wildflower undervine at other sites.

Are there any outstanding knowledge gaps?

Specific guidelines such as soil moisture content, sowing depth, soil temperature to ensure successful seed germination for each type of species.

What has been the most valuable aspect of the program?

To see other staff members take ownership of the program.

It has reinforced my belief that planning and preparation is the key to positive outcomes.

Plant list

#	Scientific name	Common name
1	*Chrysocephalum apiculatum*	common everlasting
2	*Dichondra repens*	tom thumb
3	*Rytidosperma geniculatum*	kneed wallaby grass
4	*Wahlenbergia gracilis*	Australian bluebell
5	*Vittadinia cuneata*	New Holland daisy

Figure 3: Germinating *Dichondra repens*, tom thumb; July 2024 [Photo: Melbourne Water].

Figure 4: *Dichondra repens*, tom thumb; July 2024 [Photo: Melbourne Water].

Costs

Item	EcoVineyards costs (ex GST)	Co-contribution (grant and landholder contribution)	In-kind time (hours)
Native seed 2024	$2,703		20
Cover crop seed x 2 years	$285		10
Native seed 2025	$814		10
EcoGrower contribution		$3,000	
Total	**$3,803**	**$3,000**	**40 hours**

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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.


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