

Grower insights

Ground covers



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"Ground cover holds immense significance for us, offering a myriad of advantages such as facilitating access and water absorption during the wet season, providing cooling in summer, fostering biodiversity for both flora and fauna, enhancing soil structure, promoting nitrogen fixation, and contributing to aesthetic appeal!"



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Dichondra repens, tom thumb, Hunter Valley (Photo: Brent Hutton)

Practical insights

What works well?

In the Hunter Valley region, determining the most suitable undervine cover crop for your specific site is crucial.

While much of the research has been conducted in South Australia, we've discovered that the findings may not be directly applicable to our location.

Our experience with own rooted Semillon vines has revealed challenges due to their shallow root systems, where any competition from cover crops significantly impacted vine growth and crop yield, except in the case of *Trifolium pratense*, red clover.

Transitioning our undervine trials to blocks on rootstock (Paulson 1103) has proven successful so far, as we've managed to establish undervine cover crops with minimal impact on vine health, and grape yield two years in, this has eliminated the need for herbicides.

When to sow?

We've achieved optimal success with *Dichondra repens*, tom thumb by sowing it in early spring, near budburst.

Although red clover has shown promising results, cost and time constraints have hindered further experimentation.

Based on our experience, it is advisable to sow red clover in early spring, as sowing during early winter resulted in significant growth reaching into the canopy during budburst increasing risk of damage resulting from early season frost.

Finding a balance between the benefits of red clover and the associated costs and time investment is a consideration for future endeavours.

Tips

- Clearly define your goals before implementing cover crops - whether it's increasing organic matter, reducing herbicide use, or enhancing water retention. Understand that not every cover crop suits every block.
- Avoid overwhelming yourself and start small, then scale up. The initial labour intensity, especially manual weeding, can be challenging. Begin with a small area, establish the cover crop, and gradually expand to new sections to prevent things from getting out of control.
- Begin with a clean slate by using a systemic herbicide a week prior to sowing. Remove any remaining weeds by chipping and pulling at their roots. Early efforts make subsequent tasks easier.
- Conduct trials on your target block for a few years before committing. Learn from experiences like we did with our first planting a significant portion of a Semillon block with white clover, which initially thrived but caused a significant reduction in growth and yield by the third year due to nitrogen nitrate tie-up. Trial on smaller scales first to avoid unforeseen issues. What looks good initially and on paper may not always be the case in a practical setting.
- Regularly monitor vine health through annual petiole testing and weed growth through the cover crops. It's not a sow and forget situation; ongoing attention is crucial.
- Co-sow a fast-growing grass with your desired cover crop, especially if it's a broadleaf. The grass will outcompete weeds, and a selective grass spray can be used to control it later, exposing your cover crop. This method worked effectively with dichondra planting but again will be site specific.
- While hydroseeding would be ideal, if it's not an option, be prepared for labour-intensive efforts in establishing cover crops.



Clockwise from top left:

Initial planting bare soils essential we have found by putting in lines of the dichondra and letting it sprawl out was the most successful.

Seeds put in a long the line that has been ripped in.

Raked over and irrigation applied to really wet the soil for weeks post planting.

Year 1- Initial pictures of dichondra coming up lots of weeds coming up through it (Photos: Brent Hutton)



Clockwise from top left:

Year one- lots of weeds mixed in with dichondra, grasses were killed off a few weeks after this photo with h Haloxyfop, manual chipping and hand weeding were then the main source of weed control.

Year one vine row growth.

Year two growth of dichondra.

Second years growth of dichondra little to no impact on vine vigour or yield.



Dichondra repens, tom thumb, Hunter Valley 4 April 2023 (Photo: Mary Retallack)

Management

Starting with a clean slate is essential by manually chipping and hand-pulling weeds as the primary method and keep a selective grass spray in your toolbox for added effectiveness.

Once the cover crop is established, periodic whipper snipping may be necessary.

Conduct an initial petiole test to establish a baseline, followed by seasonal petiole testing to monitor vine health. The introduction of undervine cover crops can impact plant available nutrient this may require potential adjustments in macro and micronutrient supplementation. Soil test will not tell you the full story you need to look at what the vine is taking up.

I believe irrigation is essential for both the cover crop and vines. Having a living mulch and ground cover under vine will inherently require more water. In sandy soil where dichondra has been established, there's been a notable difference in our scheduling where we used to pulse irrigate, we have found the cover crop has made infiltration slower however it retains water for longer so where we used to pulse irrigate, we now irrigate for longer periods less frequently.

Recognise that the introduction of cover crops may alter the irrigation needs of the vineyard. Regularly reassess and adapt irrigation practices to support both the health of the cover crop and the vines.

Consider starting with a monoculture approach, for us this was focusing on dichondra. Once it's confirmed that the chosen cover crop has no adverse effects on the vines, explore the possibility of introducing additional species.

Take one step at a time to carefully assess the impact of each change.

What is the preferred cover crop?

In our trial phase, we experimented with:

- fescue,
- white clover,
- red clover, and
- dichondra as potential cover crops.

Fescue and white clover proved unsuccessful, as their impact on the vines was too significant for them to be viable in our specific situation. While these may find a place in other scenarios, they were not suitable for our needs.

Red clover showed promising results, but being an annual cover crop it led us to move away from it. With the right tools, red clover could potentially be the ideal choice.

However, we opted for dichondra in our rootstock blocks, primarily because it successfully eliminated the need for herbicides and exhibited continuous growth, meeting our main goal.

The implementation of dichondra has brought additional benefits, including improved water retention, increased biodiversity among insects and it is also a native, locally adapted species to the area.

Creating an environment conducive to harbouring and overwintering predatory insects has allowed us to eliminate insecticide usage since the dichondra has been established we are still regularly introducing predatory bugs into the trial blocks.

While we have conducted limited soil testing, making it challenging to comment on the soil's complete health, visual observations suggest a definite increase in organic matter and improved soil structure. However, more information is needed to assess macro and micro-nutrient levels accurately.

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Acknowledgement of country

The EcoVineyards program acknowledges Aboriginal people as the First Peoples and Nations of the lands and waters we live and work upon and we pay our respects to their Elders past, present, and emerging. We acknowledge and respect the deep spiritual connection and the relationship that Aboriginal and Torres Strait Islander people have to Country.

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Collated by Dr Mary Retallack

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