ECO VINEYARDS
GROWING RESILIENCE NATURALLY

FACT SHEET

VINEYARD HYDROSEEDING Q&A

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Wine Australia

retallack viticulture

HYDROSEEDING IN AND AROUND VINEYARDS

A new solution for the vineyard

As wine growers transition to a mix of ground covers undervine, one of the biggest challenges is how to sow seed of all shapes and sizes given the lack of traditional seeding equipment available to service this area.

Hydroseeding provides a flexible and cost-effective solution when breaking the cycle of intervention and establishing self-seeding annual or perennial ground covers.

What is hydroseeding?

Hydroseeding is a planting process where seed is combined into a slurry comprising mulch, water, and other additions including fertiliser, tackifying agents, wood fiber mulch, and dye in a tank to carry the seed to its desired location.

- **Tackifying** or binding agents are often used to ensure the mulch remains in place (especially on steep slopes) until the plants have established in the desired area.
- Different colours of **dye** can be included so the area that has been hydroseeded is clearly delineated.
- Other **additions** including fertiliser, biostimulants (seaweed extract, humic acid), biochar, arbuscular mycorrhizal fungi and other beneficial constituents can also be included in the mix if desired.

Why is hydroseeding used?

Hydroseeding is a useful technique to apply seed on hard to access places like the undervine area, steep areas including dam walls and any other bare areas where conventional seeding equipment can't be easily used.

The benefits of hydroseeding

Hydroseeding provides a way to position seed in places that are difficult to reach with conventional seeding equipment.

The sowing of seed in a slurry of wood fibre can vastly improve moisture retention and the slurry forms an intimate bond with the soil surface to create a permeable blanket that assists germination and establishment of seedlings while protecting against erosion.

Wood fibre mulch may accelerate the seed growing process by maintaining moisture around the seeds thereby increasing the rate of germination and overall success.

The hydroseeding mix doesn't offer weed suppression but it can aid in erosion control on steep slopes.

Site preparation

The seed bed should be weed free and cultivated to a reasonable tilth to ensure there is good contact between the seed and soil.

Preparation is particularly important for the establishment of native grasses and forbs. Native ground covers may take longer to germinate and establish than commercial ground cover blends but will outcompete most weeds and be resilient once established.

If you have a history of bare earth, you may have already mined out many of the weed seeds and this is good preparation for transitioning to functional ground cover in the undervine area. To find out more about ways to cover bare earth and why this is important please see the EcoVineyards best practice management guide on ground covers.

It is recommended that you carry out a soil test to determine if any soil amelioration is required prior to seeding and/or amendments need to be included in the hydroseeding pass as the seed is sown. Carefully select the species of ground cover plants you wish to plant to ensure they are suitable for the site including growing height and vigour if planting in the undervine area. Preferably use untreated seed and sow with an application of arbuscular mycorrhizal fungi (except for brassicas).

Mulch selection

There are a multitude of wood fibre options available on the market and we used DuraVeg® Fibre Matrix™ as it is specially formulated for revegetation purposes and is an 'all in one' so does not require additional tacking agents or dyes.

DuraVeg® Fibre Matrix™ **is a fully biodegradable, fibre matrix (FM) composed of 100% recycled thermally refined® virgin wood fibres and tackifier. The FM is phytosanitised, contains no plastic components, and upon application forms an intimate bond with the soil surface to create a porous, absorbent, and flexible erosion resistant blanket that allows for rapid germination and accelerated plant growth. The FM is weed, seed and pathogen free. This mulch is ideal for use in the under-row area.**

There are many wood fibre products available on the market:

- **Profile wood** is a fully biodegradable, thermally refined wood fibre mulch like DuraVeg but with no tacker.
- **Promatix** is a fully biodegradable thermally refined wood fibre mulch that is engineered to hold onto steeper slopes and can last on the ground for up to 12 months. It's a wood fibre product with added tackifiers which has been engineered to include wetting agents, micropore granules and BioCrimped interlocking fibres.
- **Flexterra** is fully biodegradable thermally refined wood fibre mulch that is the highest performing hydraulic erosion control mulch. It can be applied on steeper slopes, up to 1:1 and very long shallow slopes. Flexterra last longer on the ground up to 18 to 24 months, holds more water than ProMatrix and FM.

Which products work best for different seed types?

Wood mulches are compatible with all kinds of soils, environments and are designed to be used with exotic seed and natives seed, it provides the opportunity for seed to germinate and thrive within some harsh environments.

How is the wood fibre supplied and prepared for hydroseeding?

The mulch comes in 22.7 kg bales. It must be mixed in a specialised hydroseeding machine to break the bales up and mix with seed, fertiliser and any other amendments that are required so they do not need to be subsequently applied.

Does the material leave any residual chemicals when it breaks down?

The base material is wood from trees, and it is made from virgin woodchip, the waste from the floor after chopping trees down for the furniture industry. This is a renewable product that would normally go to landfill. There are no chemical residues in the mulch as it has been thermally refined and tested under American Society for Testing and Materials (ASTM) testing. These results are shown on the data sheets.

Is it safe to use on dam banks and won't harm aquatic invertebrates?

Yes, it is safe to use wood fibre products on dam banks. ASTM ecotoxicity testing results are included on each product data sheet.

How long does wood fibre last in situ?

Duraveg FM lasts up to six months on the ground and some of the high preforming mulches can last up to 18 months.

Is there data available on seed germination in Australia?

Thermally refined wood fibre products have been used throughout the world in many varying climates with a vast array of species over the past 30 years or more. In Australia, both native and exotic species have been used in hydroseeding mixes to great success.

Native seeds may not be able to break through a thick wood fibre layer and this needs to be considered when sowing.

As a part of the EcoVineyards program we are trialling the use of a wide range of low growing native ground covers planted in May 2024 in each participating region and we will present these insights in case studies in 2025.

You may also wish to read the case study which included hydroseeding of subterranean clover at EcoGrower Susie Harris' Grindstone Vineyard, Wrattonbully SA in the 2021.

What hydroseeding equipment is required

A specialised hydroseeding machine is required to mix and apply the slurry. Contact your nearest service supplier to find out more about contracting services. Hydroseeding contractors are professionally trained in this area and have a wealth of knowledge to share.

Alternatively, there are a range of hydroseeding equipment sellers including Vortec who have designed a hydroviner machine which is especially designed for use in and around vineyards.

The hydroviner has the capacity to carry between 400 and 1,900 m^2 per load depending on the mulch and/or polymer used. This is sufficient to cover 1,000 to 4,750 linear metres based on an application of 400 mm wide in the undervine area.

How much mulch is required to cover the vine row per hectare?

The volume of product required will depend on the row width and desired spray width undervine of each management unit or block.

For example, 10,000 square metres = 1 hectare

- **A:** Vine row spacing (metres) 2.5
- **B:** Linear metres of vine row per hectare 4,000
- **C:** Width of under vine (metres) 0.5
- **D:** m^2 2,000
- **E:** Wood fibre cost per m^2 $ 0.50
- **F:** Wood fibre cost per hectare $ 1,000 (plus seed, additives, and labour)

Step 1: Divide 10,000 by the row width t (10,000 / A) to determine linear metres per hectare.

For example, 10,000 divide by 2.5 m (row width) = 4,000 linear metres

Step 2: Determine the area to be sprayed undervine (B x C).

For example, (B) 4,000 linear metres x (C) 1 metre wide = (D) 4,000 m^2

For example, (B) 4,000 linear metres x (C) 0.5 metre wide = (D) 2,000 m^2

Step 3: Seek a cost for the supply of wood fibre (on a case-by-case basis).

For example, 2,000 m^2 x price per m^2 = wood fibre cost per hectare (plus seed, additives, and labour)

Variables

The hydroseeding cost will depend on the wood fibre product used, any additions to the mix, cost of seed and seeding rate and labour costs. Seek a quote from a hydroseeding contractor and use the calculator above to work out a cost per hectare based on the area to be hydroseeded including management unit size, row width, and hydroseeding strip width. Remember, if you are planting perennial species this may only need to be done once!

How much does it cost to hydroseed the undervine area per planted hectare?

Application costs will vary for each hydroseeding contractor, seek a quote before commencing the job. Labour and material costs are normally tied together as wood fibre application must be carried out with specialised machinery.

The cost will depend on the products used, contractor's hourly rates, travel time, machinery set up, refilling time and capacity to cover vineyard rows with ease.

For example, assuming a high efficiency application rate of approx. 6,000 linear metres per day and 1 hour travel each way to and from site, it may cost approx. $0.70 to 0.75 per linear metre to apply wood fibre excluding the cost of seed.

Cost and benefit example (based on manual application)

If bare earth is maintained undervine it may require an average of 8 herbicide sprays in some regions to maintain at a cost of approximately $630 per hectare per year (chemical and labour).

The cost to convert to subterranean clover would be approximately $1,525 per hectare to hydroseed in the undervine area resulting in a break-even point in year three, with annual savings of $630 per year if the subterranean clover self-seeded each year.

Similarly, if native perennial grasses were sown instead this may cost approximately $1,900 per hectare to hydroseed in the undervine area resulting in a break-even point in year three with annual savings of $630 per year.

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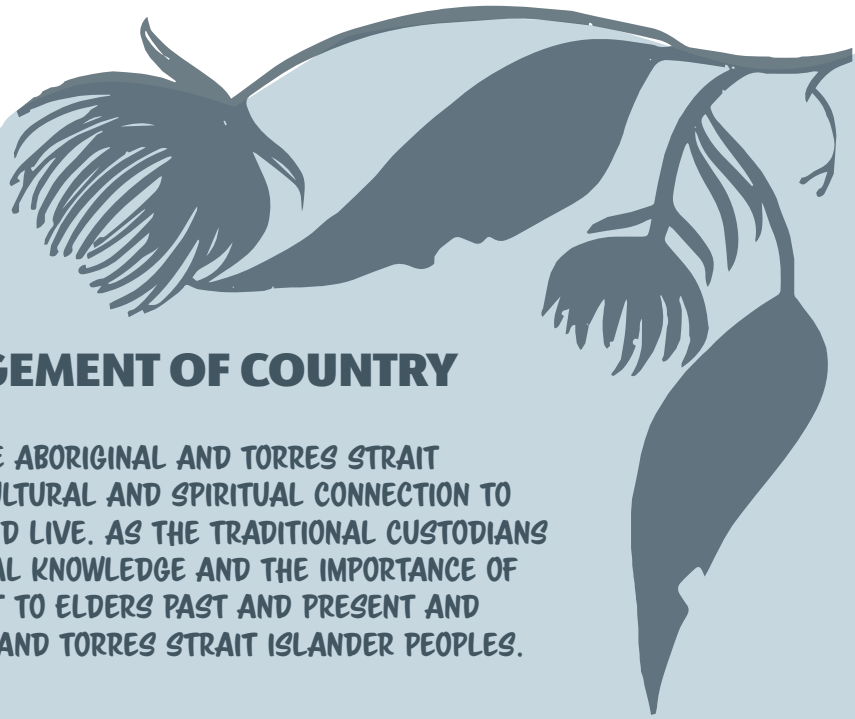

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