compost for soils

Viticulture

Compost and Straw Mulches

Advantages of mulches

Short-term

Immediate and substantial water savings

Long-term

Increase soil capacity to capture and store water

Increased yields

Moderation of soil moisture and temperature fluctuations

Reduced farm management costs

Improved soil structure and decreased erosion

Advantages of Mulches

Mulches can provide significant benefits when used in your vineyard. Mulch can provide 20 - 30% irrigation savings by conserving soil moisture, while at the same time maintaining or even increasing yield. Even a shallow layer of organic matter on top of the soil can prevent evaporation of moisture, saving you water and also money! Straw and compost mulches are commonly used for soil moisture conservation.

Mulches moderate soil temperatures by insulating the soil – this means that plants are exposed to less stress caused by extremes in soil temperature and moisture. This is especially beneficial in young vines, which may be more susceptible to decreased growth or even plant death when under stress.

Over time, mulches can significantly increase soil biological activity and improve soil structure. This can be achieved on a range of soil types from sandy to clay soil. Erosion of valuable top soil can also be decreased, and infiltration and storage of rainfall and irrigation increased.

Compost mulches may supply additional nutrients to the soil, which can decrease the need for fertiliser. Nitrogen and phosphorous become available slowly from the mulch over a period of years, but some nutrients like potassium move readily from the compost into the soil. As up to 85% of potassium can move into the soil from mulch it is important that fertiliser programs are adjusted to account for this.

Saving water, increasing yield, improving soil quality and reducing plant stress are all great reasons to be using mulches in your vineyards.

Things to consider….

Compost and straw mulch can give great benefits in your vineyard, but there are some other factors to consider when using mulch. In areas which are prone to frost or water-logging, neither compost nor straw mulch should be applied. Whilst mulch has not been proven to increase the risk of frost, caution is advised until further research is undertaken.

Straw mulch

Growers have raised concerns about using straw mulch. Some of these concerns include:

- An increased risk of fire
- Providing a refuge for insect pests, mice and snakes
- Pruning of shoots can be difficult and straw becomes slippery causing potential OHWS problems
- Introduction of weed seeds
- Straw spreading requires specialised machinery and straw also takes more time to 'bed down'
- Increased difficulty in checking irrigation drippers
- Straw may contaminate harvest or compromise quality assurance certification
- Lack of availability or expense during drought conditions
- Risk of nitrogen drawdown.

Compost mulch

It is important to check that any compost you use meets the Australian Standard AS4454-2003 -your compost processor should be able to provide you with a recent analysis of the material indicating how it meets this standard.

Compost should be free from visual contamination and bad odours. It's also a good idea to arrange a tour of the processing site to make sure you are satisfied with the composting materials and methods used by your processor.

In general, coarse mulch grades with woody particles are the best to use. These encourage the transmission of moisture and air to the soil. Current recommended application rates for coarse mulches are between 50-75mm deep, and 40cm wide under vine. This type of compost application (at 50mm) can be expected to be effective for two to four years.

High rates of fine composts should be avoided as they can hold moisture and prevent water from moving into the soil. This will impact on your water savings. A deep layer of fine particle compost can also encourage root growth in the mulch. An application rate of 25mm for fine compost mulches may be appropriate, but never apply at rates > 50mm.

Compost mulch may not be appropriate for use in blocks where increased vine growth is specifically unwanted. Compost mulch may increase canopy growth in vigorous areas. Using a course mulch with a high Carbon to Nitrogen ratio (C:N) will ensure minimal addition of nitrogen if you are concerned about excess vine growth.

Making the most of your mulch

In order to make the most of your mulch, it's important that you monitor your soil moisture and adjust your irrigation schedules accordingly. Mulch can delay the need for irrigation at the start of the season as well as decrease the level of irrigation needed overall. Good irrigation management will enable you to make the most of these benefits. Similarly monitoring vine nutrition is also important when using mulch.

Even where mulches do not supply additional nutrients, by keeping the topsoil moist and cool, they can encourage nutrient turnover and availability.

Monitoring of soil and petiole nutrient status will assist in getting the best value from the mulch, enabling adjustment of fertiliser programs.

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