Compost for Wine-Grape Growers

Fact Sheet 5: Using Compost

The type of product you choose and the method of application depends on your production goals and your specific performance requirements (see Sheet 3, Getting started). Your compost supplier should match your needs with a particular product, giving specific advice on method and rates of application. This fact sheet provides you with some general guidelines about quality criteria for compost and how it can be used in viticulture.

Compost quality

The Australian Standard (AS 4454) provides a framework for the production of quality compost and for quality assurance (see Sheet 4, Selecting the supplier). However, an Australian Standard compost also needs to be 'fit for purpose'. In general composts should be:

- Compliant with AS 4454 specifications
- Free of rocks, glass and plastic.
- Moist, but not wet or dusty
- Neutral or pleasant smelling

More specific compost quality specifications are included below depending on how the compost is used.

Mulching with compost

Composted mulches should have the following characteristics:

- They should be relatively coarse
- They should be of low nutrient content (e.g. total N 0.6%, total P 0.3%, total K 0.4%)
- A stable product is preferred but not essential (see 'Compost stability and maturity' below)

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Follow these guidelines for safe, effective mulching:

- Mulches should not hold onto large amounts of water. If the mulch is very wet and odorous after irrigation or rainfall, it may be too deep to allow water and air to flow through the mulch into the soil.
- Depending on the location of the vineyard, aesthetics may be a very important consideration. In this case, consider how good the product will look on the ground.
- A composted mulch should last at least 3 years on the ground before topping up is required. For this reason and for effective weed control, composted mulches contain mainly coarse, woody particles. Coarse particles are a more effective barrier against weeds emerging from the soil and they last longer than fine particles.
- Weeds should be controlled by chemical or mechanical means prior to laying down a mulch.
- Composted mulches are not known to exacerbate the risk of frosts occurring in the vineyard. Nevertheless, it would be prudent to avoid using mulch in high frost risk areas of the vineyard.
- Mulches should not be used in areas subject to waterlogging.

A coarse green organics compost is ideal for mulching. Apply composted mulches at up to 7.5 cm thick in a 50 cm band under the vine.

Mulching with compost

Other suggested uses for compost

Banding is an economical way of applying compost directly to vines when a mulching effect is not required or desired. A finely screened, stable product is recommended to encourage rapid incorporation of the compost into the soil by irrigation water, rainfall or soil animals.

Banding under vine

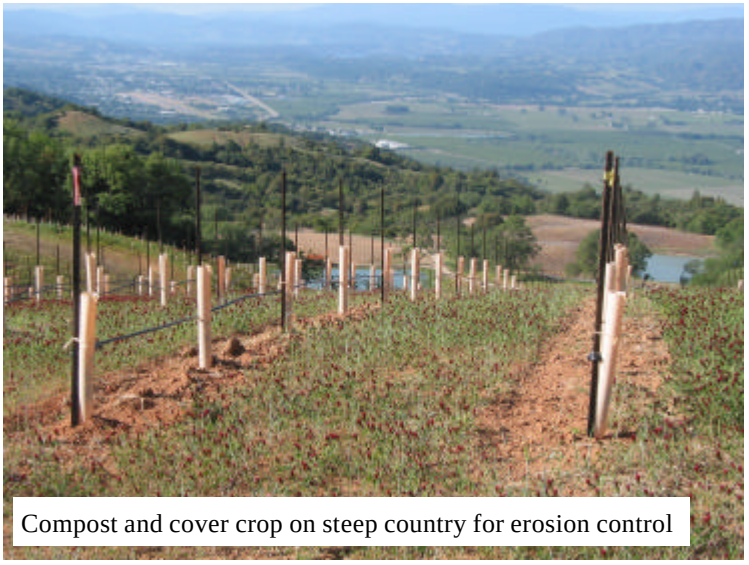
In contrast to compost used for mulching, a higher nutrient compost can be used because the rate of application is much lower. Apply compost up to 5 cm thick in a 10-20 cm band under the irrigation dripper (if present).

Compost can also be banded when establishing a vineyard. Prior to planting, apply compost up to 5 cm thick and incorporate it to 20 cm deep in sandy soil or 10 cm in heavy soil. Alternatively, and even more economically, blend compost with soil (30:70) directly in the planting hole.

Compost should be finely screened, stable and mature for this purpose.

Banding prior to planting

Compost can be used successfully in combination with cover crops in the inter-row. The combination of compost and cover crop is an effective means of encouraging nutrient cycling and building soil organic matter levels. In the example shown, a compost and strawberry clover combination was chosen in steep country to help prevent soil erosion.



Compost and cover crop on steep country for erosion control

Apply compost in the inter-row at 2 to 10 t/ha. Work this into the soil and sow the cover crop into it. Alternate inter-rows can be treated in this manner every few years, leaving them fallow in-between. If a cover-crop is required in every inter-row, top-dress with compost every year or two. Compost should be finely screened, stable and mature for this purpose.

Compost stability and maturity

Stability is the level of biological activity in moist, aerated compost. Stable composts are unlikely to compete with crops for available nitrogen or cause oxygen deficiency in soil. Compost maturity is related to stability, but reflects the level of further composting that has occurred. These attributes are more important for compost that is incorporated in the soil, rather than for mulches. However, stable composted mulches should also last longer because they break down more slowly than unstable composts. Here are a few signs to look for when predicting the stability and maturity of composts:

- Unstable and immature composts can be odorous and very hot
- Stable composts usually take 6-12 weeks to make. Compost requires a further 4 weeks or so of composting to become 'mature'
- Check the compost specifications - the carbon to nitrogen ratio (C/N) should be under 20:1 and toxicity (a plant growth screening test) should be greater than 60% for stable and mature compost. C/N ratio is more relevant as an indicator of quality for products that are incorporated in soil. Nevertheless, composted mulches with C/N ratios higher than 35:1 should also be treated with caution.

Plan to succeed

Getting the most out of compost is achieved by selecting the right product for the job and monitoring performance. Adjustments may need to be made to compost use, canopy management or fertilizer rates depending on soil and crop performance. Depending on the rate of application, sufficient P, K, Mg, Ca and trace elements can be supplied by compost from day one. Depending on the crop's requirement for N, it may take several years to build up soil organic matter to high enough levels before sufficient N is supplied by compost.

Rules of Thumb

In some cases it may be necessary to monitor soil and petiole N levels to keep vigour in check.

Use these 'rules of thumb' to predict how much N is supplied by compost:

- In the 1st year N availability in stable compost is about 10-15%
- In the 2nd & 3rd years, an additional 10-15% (in total) becomes available
- Woody, green organics mulches are unlikely to contribute any N until soil organic matter levels rise significantly.

Further information is available from:

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