

## Compost and Nutrients

The role of compost in vine nutrition is very complex and can be influenced by a wide variety of factors.

Compost mulches may enhance the soil nutrient status in your vineyard but this will vary depending on the type of compost applied, soil type, vineyard location, climate and your management practices.

The main benefits of compost are improvements to soil physical and chemical properties, increased water infiltration, decreased need for irrigation and increases in yield, rather than its value as a fertiliser but compost can supply vital nutrients to your crop.



## Key Nutrients

There are three key nutrients which have been the most widely studied with regard to compost application: Potassium, Nitrogen and Phosphorous.

to sufficient (0.061 mg/kg) within a relatively short period of time. Vines suffering from potassium deficiency improve almost immediately with the application of straw and compost mulches.

### Factors that can influence uptake of nutrients from compost:

- Climate
- Season
- Soil type
- Vineyard location
- Compost type
- Current and previous cultural practices
- Irrigation method

### Potassium

Potassium is an extremely important nutrient for vine nutrition and wine quality. Potassium is essential for vine growth and yield, but excess levels of potassium can have negative effects on wine quality. In Australia, high potassium levels are common in most vineyards and most wines tend to have high potassium and pH. Getting the right amount of potassium in your soil, vine and wine is a balancing act and requires regular monitoring in your vineyard.

Compost applied to potassium deficient soils has been shown to increase levels from deficient (0.046 mg/kg)

The application of compost will generally result in a significant contribution of potassium in the short-term and in some cases this may be excessive. Not all of the potassium in the soil is available for uptake, which means that amount of potassium in the soil does not always correlate with the amount that is used by the plant, and this will depend on your soil type and its chemical properties. Again, monitoring plant and soil potassium levels is crucial to achieving a good balance, and fertiliser applications may need to be adjusted to account for an increased nutrient supply.

Potassium is a key nutrient in vineyards

- Essential for good vine growth and yield
- Excess levels can decrease wine quality
- Excess potassium can precipitate free tartaric acid from wine, resulting in an increased pH
- Excess potassium can be a bigger problem in red varieties. Potassium is more concentrated in the skin than the pulp - reds left in contact with skins have a higher possibility for transfer of potassium into the wine

## Nitrogen

The jury is still out on whether compost mulch provides nitrogen to the soil or requires it in Australia. Some studies have shown compost mulch reduced nitrogen in the topsoil but not in the vines, whilst other studies have found compost mulch has had no impact on nitrogen levels. In contrast, studies in New Zealand have shown a large increase in petiole nitrogen (50 – 300%) in three of four vineyards in the first year after compost application. As a general rule of thumb it is thought that about 10-15% of nitrogen becomes available in the first year of application, with up to 40% available after four years. This is based on research from the use of compost all around the world and still needs to be evaluated more specifically for Australian grape growing conditions.

The rate of nutrient release from soil organic matter is highest when soil is wet and warm, and as drip irrigation is commonly used in Australia, it may

be that there is not sufficient moisture to breakdown the compost mulch to the level which would be expected. An increase in nitrogen supplied to the soil by compost may be seen when microsprays or flood irrigation is used.

## Phosphorous

Phosphorous has received less attention than potassium and nitrogen, but some studies have shown that phosphorous levels can double after compost application, but again there are studies which show no changes in soil phosphorous after application. This variability in results is likely to be very site specific and this makes it especially important for you to monitor your nutrient levels closely after compost mulch application. As a general rule, around 40% of phosphorous should become available in the first year, with 100% available after four years.

## Calculating and planning for the nutritional benefits of compost

With so many factors influencing the uptake of nutrients from compost, the importance of nutrient monitoring can not be emphasized enough! Whilst more research is needed into how nutrient uptake from compost is influenced by climate, soil type and so on, don't despair - there are some tools available to help you budget your nutrient allocation!

A nutrient calculator has been developed by the Recycled Organics Unit and give you an idea what to expect from your compost mulch. This calculator can be found at [www.recycledorganics.com/product/agriculture/mulchnutcalc/mulchnutcalc.htm](http://www.recycledorganics.com/product/agriculture/mulchnutcalc/mulchnutcalc.htm).

Take advantage of this tool, and plan to get the most out of your compost.

### "Rules Of Thumb" for Nutrient Supply From Compost

Nutrient supply	First year	After four years
Potassium	65-85%	100%
Nitrogen	10-15%	40%
Phosphorous	30-40%	100%

## More information

[www.compostforsoils.com.au](http://www.compostforsoils.com.au)

### Jeffries Group

Paul Bowden 0400 366 031

### Peats Soil and Garden Supplies

Peter Wadewitz 0418 791 921

### Van Shaik's Bio Gro

Graham Crowder 0412 838 053

