



Using compost for sustainable viticulture

FACT SHEET

Compost can be used to increase the sustainability of viticultural production systems. Use of compost can reduce irrigation requirements; maintain soil moisture levels; reduce crop stress and stimulate vine growth; supply nutrients; reduce weeds; improve soil structure; and improve water retention, infiltration and drainage. Compost can reduce the risk of crop failure, reduce farm management costs, increase revenue and increase farm capital value.¹

Benefits of composted mulches and soil conditioners

REDUCE RISK OF CROP FAILURE

- Mulching reduces evaporation from the soil surface, increases water conservation and resistance to drought, particularly in non-irrigated areas.²
- Mulching can reduce soil temperature by up to 20C, which increases soil moisture levels, and reduces plant stress.³

REDUCE FARM MANAGEMENT COSTS

- Composted mulches can reduce weed growth by at least 60% and decrease the need for herbicides, thereby reducing production costs.⁴
- Composted mulches reduce evaporation from the soil surface, which results in more efficient water use. This could reduce the irrigation water requirement of grapevines by about 10% (depending on environmental conditions, irrigation systems and management practices).⁵
- Composted mulches slowly release essential macro and micronutrients for plant growth. This reduces the use of mineral fertilisers by at least 30% and makes mineral fertiliser programs more effective.⁶

INCREASED REVENUE

- Composted mulches can potentially increase grape yield by up to 35% (depending on grape variety, environmental conditions and management practices).⁷
- Composted mulches can potentially improve grape fruit quality.⁷

INCREASED FARM CAPITAL VALUE

- Mulching reduces erosion. This can prevent land degradation and improve soil health and productivity.
- Composts add organic matter to the soil improving soil aggregation and soil structure; reduce surface sealing; increase water infiltration and water holding capacity thereby improving overall soil health and land productivity.⁸



Estimated cost savings

EXAMPLE 1

A 100 hectare irrigated viticulture enterprise in NSW uses about 500 million litres of irrigation water per year.

Use of a layer of mulch of up to 10 cm, could reduce irrigation water requirements by 10%. This would reduce the total irrigation water requirement from 500 million litres to 450 million litres, saving 50 million litres of irrigation water per year for a typical viticulture enterprise.



EXAMPLE 2

In NSW, a viticulture enterprise uses about two to six litres of glyphosate per sprayed hectare to control annual and perennial weeds. A 10 cm layer of composted mulch could reduce glyphosate use by 200 to 600 litres for a 100 hectare viticulture enterprise.

EXAMPLE 3

Annual nutrient requirements of grapevine may range from 35 to 80 kg/hectare of nitrogen; 10 to 25 kg/hectare of phosphorus; and 70 to 100 kg/hectare of potassium. Use of mulch and soil conditioner could reduce the use of these mineral fertilisers partially or completely depending on the nutrient contents of composted products, application rate and environmental conditions.

References

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3. Buckerfield, J. C. and Webster, K. A. (1995). *Earthworms, mulching, soil moisture and grape yields: earthworm response to soil management practices in vineyards, Barossa Valley, South Australia*. Australian and New Zealand Wine Industry Journal, no. 11, pp. 47–53.
4. Wilkinson, K. (2001). *Promoting the use of recycled organic material in viticulture, Victoria*, Department of Natural Resources and Environment, IHD, Knoxfield. Report prepared for Natural Heritage Trust, September, 2001.
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6. US EPA (1997). *Innovative uses of compost. Erosion Control, Turf Remediation, and Landscaping*.
7. Buckerfield, J. and Webster, K. (2001). *Managing young vines. Responses to mulch continue—results from five years of field trials*. The Australian Grapegrower and Winemaker, October Issue, pp. 71–78.
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Application guide

- Products should comply with Australian Standard AS4454 (2003) Composts, Soil Conditioners and Mulches.
- Products used in viticulture in NSW need to be supplied by manufacturers holding a NSW Department of primary Industries Compliance Agreement (CA-05) which demonstrates that products are free of Phylloxera.
- Coarser composted mulches are applied on the soil surface around the grape vines after planting.
- A mixture of fine soil conditioner and coarse composted mulch can be applied to improve soil structure, conserve water and prevent erosion.
- Avoid application of fine mulches and/or thick layers of mulch on heavy soil types that can be prone to waterlogging.
- Composted soil conditioners are incorporated into the topsoil, commonly at the time of planting the grapevines, to improve soil structure and water holding capacity.
- Composted mulches are usually applied to established grape vines prior to bud burst to allow for machinery access between rows.

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