



Using compost materials for sustainable viticulture

FACT SHEET

Recycled organic material 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. Recycled organic material can reduce the risk of crop failure, reduce farm management costs, increase revenue and increase farm capital value.

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.
- Mulching can reduce soil temperature by up to 2°C, which increases soil moisture levels, and reduces plant stress.

REDUCE FARM MANAGEMENT COSTS

- Composted mulches can reduce weed growth by at least 60% and decrease the need for herbicides, thereby reducing production costs.
- Composted mulches reduce evaporation from the soil surface, and 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).
- 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.

INCREASED REVENUE

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

INCREASED FARM CAPITAL VALUE

- Mulching reduces the direct impact of wind and rain from dislodging the topsoil from the landscape, and can significantly reduce 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 the overall soil health and land productivity.



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. Use of a 10 cm layer of composted mulch could reduce glyphosate requirement 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.

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 Agriculture 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.
- Mulch should not touch the stem of grape vines as this can result in stem rot.
- A mixture of fine soil conditioner and coarse composted mulch can be applied to improve soil structure, water conservation 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 grapevine 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.

REFERENCES

Department of Environment and Conservation (2003). *Life cycle inventory and life cycle assessment of windrow composting systems*. Report prepared by ROU, UNSW, Sydney.

Buckerfield J. (1998). "Composted 'green-organics' for water conservation and weed control". *International Composting Conference, Sept. 1998, Victoria, Australia*.

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.

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*. 11, 47-53.

Recycled Organics Unit (2003). *A review of recycled organics products application field trials in viticulture in Australia*. Report prepared for Department of Environment and Conservation (NSW), Published by ROU, UNSW, Sydney.

US Composting Council (1996). *Benefits of Compost. The Field Guide to Compost Use*.

US EPA (1997). *Innovative uses of compost. Erosion Control, Turf Remediation, and Landscaping*.

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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