



Winewatch: Fact Sheet 2

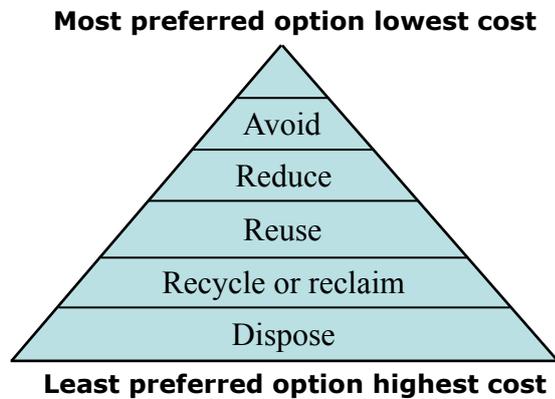
REDUCING WINERY WASTEWATER VOLUMES AND POLLUTION LOADS FROM SMALL WINERIES

Reducing organic, nutrient and salt loadings, and the volume of wastewater is an important measure in minimising the risk of environmental and social impacts associated with wastewater disposal. Benefits include:

- Reduced potential environmental impact.
- Reduced treatment and disposal costs – required capacity of ponds, tanks and irrigation systems is minimised, need for storage and treatment is minimised.
- Reduced likelihood of odour problems.
- Reduced wastage of raw materials and product.
- Water efficiency.

Figure 1 illustrates the principles of cleaner production. Avoiding waste is the most cost effective and often the easiest principle to implement.

Figure 1: Hierachy of cleaner production principles (Source: Chapman *et al.*, 2001)



Developing cleaner production strategies

It is recommended that all relevant staff be involved in developing cleaner production strategies. Successful implementation is reliant on staff putting strategies into operation so understanding and ownership by all staff is integral to success. Small wineries often have an advantage over large wineries in their ability to implement cleaner production measures as with fewer staff less training and on-going management is required.

Most strategies tend to be simple and either cost-neutral or cost-beneficial within 12 to 18 months of implementation (Chapman *et al.*, 2001).

The Victorian EPA and Victorian Wine Industry Association have developed an Environmental Management Kit that provides support in developing cleaner production strategies. It can be accessed online at <http://www.epa.vic.gov.au/bus/EMS/WineEMS/welcome/index.shtml>

Minimising wastewater volume

Sustainable use of water resources is an increasingly important issue in Australia. Water use efficiency makes best use of a valuable resource as well as reducing the volume of wastewater requiring disposal and/or treatment.

Options for reducing water use as outlined in Chapman (1996), the Winemakers Environmental Management Kit, and FSA Consulting (2006) include:

- Use no more water than needed for the job.
- Capture and reuse cleaning water when cleaning tanks and other equipment.
- Minimise transfers. This will reduce cleaning requirements.
- Pre-clean equipment with brooms/brushes before hoses are used.
- Dry-sweep spills where possible using brooms, scrubbers and squeegees. This reduces both water use and organic load of the wastewater.
- Spot mop and clean up spills promptly before they spread over a larger area.
- Install automatic shut off valves on hose outlets. This will reduce water wastage, as hoses will not run when not required.
- For barrels purchase and install low volume-high pressure equipment. The higher water pressure increases the efficiency of solids removed and overall a smaller volume of water is required.



- Do not clean tanks and vessels by overflowing with water for extended periods.
- Reuse the water from barrel leak testing. Significant volumes of water are used during leak testing and recycling can reduce net water use.
- Repair water leaks in a timely manner.

Minimising pollution load

Reducing the loss of juice, wine and lees, and minimising the use of cleaning agents, will significantly decrease organic, salt and nutrient loadings in wastewater. Options for doing so as outlined in Chapman (1996) and the Winemakers Environmental Management Kit include:

Minimising organic matter and nutrients:

- Install mesh sieves over drainage channels and pits to prevent organic material (grapes, skins, stalks, etc) entering the effluent stream.
- Resettle lees during the decanting process.
- Transfer lees and first cleaning rinses to a separate tank and incorporate this material in composting operations rather than allowing it to drain to the wastewater system.
- In-line screening of finer solids will reduce the pollution load.
- Ensure that conveyors, storage bins and tanks are not overfilled. Consider installing high level alarms and interlocks to prevent overfilling.
- For areas where there is a high risk of a spill occurring, have equipment close at hand to divert and collect product spills.
- Collect and recover product from lees using a Rotary Drum Vacuum or lees press/filter; smaller sites may consider hiring this equipment or purchasing laboratory scale equipment which will involve lower capital costs.
- When evaluating different fining agents, select the one that produces the most compact lees for the desired quality improvement.



- Work with growers to ensure canopy and vineyard management practices are used that reduce subsequent winery inputs such as tartaric acid.
- Keep transfer operations to a minimum.



Minimising sodium:

- Reduce use of caustic for cleaning, particularly where amounts of bitartrate and other organic precipitates are low.
- Eliminate single use of caustic in favour of recycled caustic.
- Use non-sodium based cleaning agents.
- Substitute the initial caustic clean with pressurised and/or low volume stream/hot water cleaning.



References and further information

- Chapman, J., Baker, P. and Wills, S. (2001) *Winery Wastewater Handbook*. Winetitles, Adelaide, SA.
- Chapman, J. (1996) *Cleaner Production for the Wine Industry*. South Australian Wine and Brandy Industry Association, Magill, South Australia.
- FSA Consulting (2006) *Best Practice Guide for Water and Waste Management in the Queensland Wine Industry*. Report prepared for the Queensland Environmental Protection Agency and the Queensland Department of Tourist, Fair Trading and wine Industry Development.
- Victorian EPA and Wine Industry Association. *Environmental Management Kit*. (Online) 25 August 2008. <<http://www.epa.vic.gov.au/bus/EMS/WineEMS/welcome/index.shtml>>.

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Other fact sheets in this series include:

- Winewatch fact sheet 1: Winery wastewater composition and potential environmental impacts of wastewater disposal from small wineries
- Winewatch fact sheet 3: Winery wastewater disposal to land from small wineries
- Winewatch fact sheet 4: Subsurface disposal of winery wastewater from small wineries
- Winewatch fact sheet 5: Ponds for percolation/evaporation and storage of winery wastewater from small wineries
- Winewatch fact sheet 6: Disposing of winery wastewater from a small winery using irrigation

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