

Winery Wastewater Management & Recycling

Key principles for vineyards



Australian Government

Grape and Wine Research and
Development Corporation



Introduction

The management of winery wastewater is important to the business and environmental performance of a winery, and it can have ramifications for vineyards and grape production. A sound approach to wastewater management will involve:

- ▲ cleaner production, less waste and more profit within the winery
- ▲ easier and cheaper 'fit for purpose' treatment of winery wastewaters
- ▲ more options for secure water supplies to the vineyard
- ▲ more options to reduce any environmental risks from wastewater discharges.

Improved wastewater management does not have to cost a lot. It may be as simple as beginning with better operations to reduce the wastage of grapes, juice and wine within the winery.

The Winery Wastewater Management and Recycling (Communications) project of the Grape and Wine Research and Development Corporation (GWRDC) has drawn together the results of several years of research and industry knowledge so practitioners may have easy access to the latest information on this important topic.

Key points

There will be ongoing management problems if the issues of source, treatment and discharge or recycling of winery wastewaters are not integrated. Holistic management is essential.

Adopting an integrated approach to winery wastewater management will generate solutions that encompass:

- ▲ Winery operations: 'cleaner production' in the winery – reducing the volume and enhancing the quality of winery effluent or wastewater streams, and lowering treatment costs.
- ▲ Wastewater treatment: 'fit for purpose' wastewater treatment – treating winery wastewater to the standard required for planned discharge or recycling.
- ▲ Water recycling or discharge: recycling reclaimed water for productive irrigation (or other uses) will improve water use efficiency and reduce the risk of environmental impact.



Key messages

Efficient wastewater management involves sound planning and good operating procedures.

Planning and evaluation

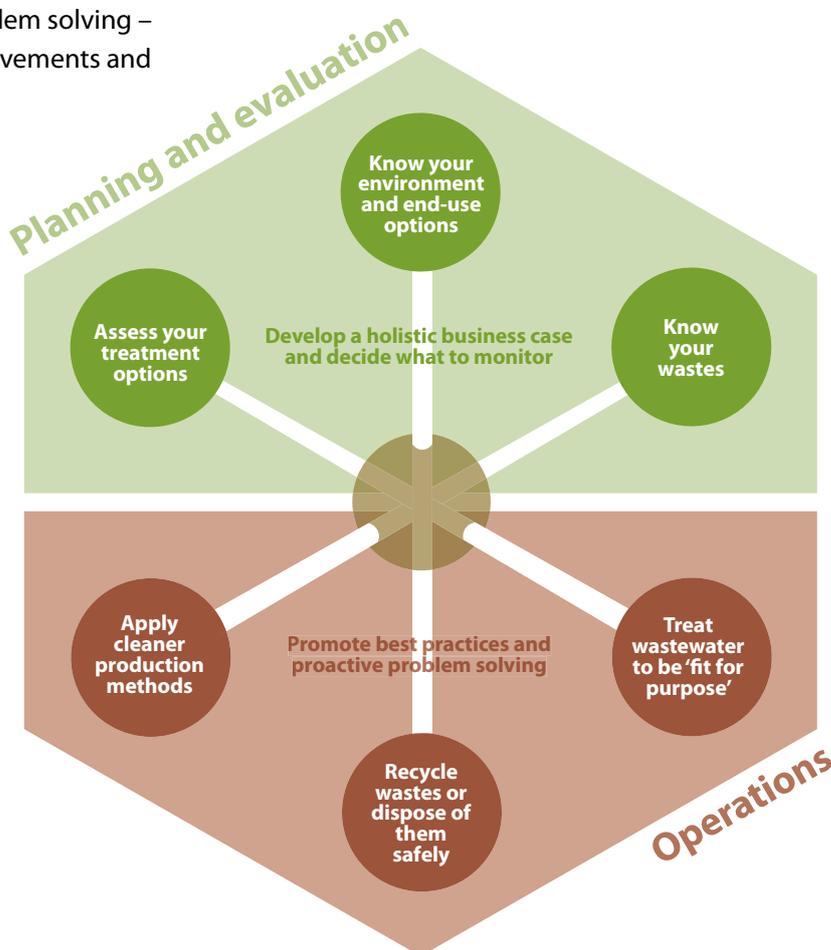
- Know your wastes – where they come from and how variable they are.
- Know your environment and end-use options - fit in with your environment.
- Assess your treatment options – choose a system that matches your wastes and their end-use.
- Develop a holistic business case and decide what to monitor – in the winery, treatment plant and vineyard.

Operations

- Apply cleaner production methods – reduce, recycle and segregate wastewater at its source for easier treatment, more efficient wine making and greater profit.
- Treat wastewater to be 'fit for purpose' – get it to the standard required for its next-use.
- Recycle wastes or dispose of them safely – get value from wastes and reduce the risk of environmental harm by recycling, e.g. recycled water can be a valuable asset for irrigation or industrial use.
- Promote best practices and proactive problem solving – train and empower staff for low-cost improvements and solve problems early. Diagnose the specific causes of individual problems but seek integrated solutions. If in doubt, consult an expert.



These key messages and supporting questions are explained in the Winery Wastewater Management and Recycling Operational Guidelines, which is available with other communication products from www.gwrdc.com.au/www



Key principles for vineyards

Irrigating with recycled water is fundamentally the same as irrigating with any water, but special attention is needed to several aspects of management.

Irrigation planning

- It is critical to match the site (soils and slope), crop type (e.g. annual or perennial, such as vines), irrigation and drainage methods (e.g. drip or sprinkler irrigation and the need for any additional filters), and water supply (quality, quantity and security).
- Recycled water may be quite variable in quality. If it is not possible to specify quality parameters with suppliers (e.g. the operators of treatment plants) then it is even more critical to regularly monitor water quality, especially prior to irrigation.
- Budgets should be prepared for salts and nutrients as well as for water. A first step is often a stock-take of all available water supplies so mixes of different quality water, from alternative sources, may be shandied for use at different times of the year.
- Depending on the source of the recycled water and its characteristics, environmental and health regulations should be checked to ensure no additional measures have to be accommodated during irrigation or regarding the use of produce.

Monitoring

- Besides a focus on incoming water, it is important to monitor soil chemistry (salts, nutrients and pH), soil structure (infiltration rates), plant health and crops (yield and quality, e.g. potassium and sodium levels).
- Salinity and sodicity are the key risks to focus on. They can result in fruit that is high in sodium (Na) or potassium (K), as well as affecting the soil and vine vigour.
- Every irrigation with recycled water will apply some nutrients as well. Monitoring will help predict any impact on crops (and the environment) and provide data for budgets and for use in setting irrigation and fertiliser schedules.

Irrigation and soil management

- Strategic irrigations (such as an additional watering to leach salts from the root zone) or the application of soil ameliorants (such as gypsum to deal with sodicity) may be needed in response to trends or exceptions detected by monitoring water, soils and plants.
- Nutrient management should consider inputs (as fertilisers and in recycled water), current soil levels and likely outputs (removal in crops). Pastures or cover crops may be useful in 'mopping up' excess nutrients.
- As a general guide, it may be beneficial to apply recycled water as 'widely and thinly' as possible.

More information

For hard copies of any of the communications products or any queries about related seminars and training workshops, contact GWRDC (gwrdc@gwrdc.com.au).

The Australian Wine Research Institute (AWRI) has developed a training package based on the Operational Guidelines. For more detail and information about training options, contact AWRI (rtp@awri.com.au).

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