Implementation of an Environmental Management System for the Eden Valley

Project RT03/32-5

Final Report

Prepared by:
Gayle Grieger
Government of South Australia tafeSA

Executive Summary

The Eden Valley Wine Group (EVWG) identified the need to formalise environmental management systems (EMS) in response to regional strategic planning activities. A training day held in October 2002 introduced participants to the concepts of EMS and initial assessments were carried out with the aid of the Viticare Environmental Risk Assessment tool and committed to further development of a regional Environmental Management System.

The development of a draft regional EMS progressed through four half day workshops held over a six month period from the end of 2005 to May 2006, while the results of the initial EMS training day held in October 2002 formed the basis of a code of practice for the Eden Valley Wine Group.

Recommendations for further work to build on the progress so far include;

1. Continued development of a regional EMS for Eden Valley
2. Further development and acceptance of the Code of Practice for Environmental Management in Eden Valley
3. Development of Irrigation Best Practice for Eden Valley
4. Other training session on vineyard management practices to support the continued development and implementation of the above recommendations

A copy of the draft Code of Practice and suggested framework for the Irrigation Best Practice are included as Appendix 1 and 2.

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Introduction

The Eden Valley Wine Group (EVWG) is a collection of growers from a premium wine growing region in South Australia. This group identified the need to formalise environmental management systems (EMS) in response to regional strategic planning activities.

Initial activity to progress the development of a regional EMS occurred as a training day held in October 2002. During this day, participants were introduced to the concepts of EMS and initial assessments were carried out with the aid of the Viticare Environmental Risk Assessment tool. To ensure momentum continued funding was sought to continue the implementation process.

Project Aims

Identify and manage environmental risk with respect to

- Prescription of the Marne Catchment (of which Eden Valley is part of) and the subsequent impact on available water for irrigation
- Documentation of best practice irrigation strategies and catchment stewardship
- Monitoring environmental and biological influences on fruit production, quality and sustainability

Project Outputs

- Meetings to discuss environmental issues and establish links with others in the industry who are progressing EMS and benchmarking
- Formal workshop series to improve grower education through demonstration of emerging techniques and collection of data to develop environmental strategies
- Establish a local technical reference group
- Email communication to group members
- Use of selected sites for observations and demonstrations of best practice/latest technology transfer
- Engagement of consultants to assist with vineyard inspections focusing on specific environmental applications
- Involvement of growers in the information exchange through the writing of an article for publication in local industry journals
- Production of a best practice booklet outlining best practice guidelines for Eden Valley
- Identification of any rare or protected flora and fauna within the region
- Sustainable irrigation practices through the reduction of water usage

Project Methodology

The results of the initial EMS training day held in October 2002 formed the basis of a code of practice for the Eden Valley Wine Group.

The development of a draft regional EMS progressed through four half day workshops held over a six month period from the end of 2005 to May 2006. The format of the workshop sessions involved time to develop each component of an EMS, then presentations and activities from technical specialists on a range of topics

identified from the initial EMS training day and refined by the EVWG reference committee.

The workshop schedule was developed and delivered by Tafe SA Barossa Valley Campus, specialist viticulture lecturers and technical experts from Adelaide University, South Australian Research and Development Institute (SARDI) and Goolwa to Wellington Local Action Plan Board. The schedule is contained in table 1.

Table 1: Workshop schedule for Eden Valley Wine Group EMS development

Date	Workshop	Information
16th November 2005	10am Introduction 10.15am EMS – risk assessment and action plans 11.15am Spray Calibration 12.30pm Lunch 1.30pm EMS – developing environmental policy and emergency response plans 2.30pm Spray Application 3.30pm Afternoon tea 3.45pm Developing Spray Program 5.00pm Sausage Sizzle 6.00pm Developments in Chemicals	Presenter: Gayle Grieger (Tafe SA) Presenter: Malcolm Parish (Tafe SA) Presenter: Gayle Grieger (Tafe SA) Presenter: Malcolm Parish (Tafe SA) Presenter: Barbara Hall (SARDI)
7th December 2005	1 – 2pm EMS Documentation (incident, communication, training and document control registers) 2 – 5pm Irrigation workshop	Presenter: Gayle Grieger (Tafe SA) Presenter: Mark Dale (Goolwa to Wellington LAP)
June 2006	1 – 2pm Audit processes and Management Review for your EMS 2 – 5pm Soil management	Presenter: Gayle Grieger (Tafe SA) Presenter: Chris Penfold (University of Adelaide)

Project Outcomes and Performance Targets

1. Attendance at Workshops

While attendance at workshops was small, there were a number of participants who attended all four workshops. The number of attendance at each workshop is listed in table 2.

Table 2: Attendance at workshops

Workshop 1	10
Workshop 2	7
Workshop 3	5

Feedback from each workshop was collected and this information is disseminated in the discussion.

2 Development of an EMS for Eden Valley

During the workshop sessions, aspects of an EMS were investigated, developed and distributed to all participants. The tools used to develop the EMS used were produced by Tafe SA, with components based on the CRC for Viticulture, Getting Started in Environmental Management Workshop. A manual was developed by Tafe SA that contains step by step instructions and checklists for developing the components of an EMS. The manual also contains templates for developing action plans, standard operating procedures, communication registers, non-conformance forms and audit checklists.

Information on best management practices and standard operating procedures were also sourced from the Langhorne Creek Environmental Management System Project and from the Western Australian Department of Agriculture, Developing an EMS for Viticulture – a practical guide for winegrape producers.

3 Production of an EMS booklet for Eden Valley

This booklet, presented as a draft code of practice for the region, was developed based on the information presented at each workshop. This code of practice requires further development and consultation with the region. Information for this could be accessed from other regional Environmental Management Systems and Codes of Practice where relevant, including;

- Sunraysia Code of Practice
- Langhorne Creek EMS
- Mclaren Vale Codes of Practice for Chemical Use
- Winemakers Federation Policy

Accessing existing policies and best practice documents and adapting them to Eden Valley will only speed up the process of developing a Code of Practice, but will also ensure a level of consistency within the industry regarding the type of information that is contained in these documents.

The Langhorne Creek and McLaren Vale documents will be of particular value as they are written specifically for grapegrowers.

Once draft content is developed in consultation with the Eden Valley Wine Group, the wider Eden Valley Grape Growing Community will be consulted on the content of the draft and all growers will be asked to voluntarily adhere to the code.

The framework for the draft code of practice is included with this report (Appendix 1).

4 Sustainable irrigation practices

A framework for best practice irrigation management was developed from the workshop session conducted by Mark Dale. Initial information for the best practice is included, however further development of this document is required and future project applications will be submitted to complete this document. The irrigation best management practice is a critical component of the Eden Valley code of practice.

A copy of the possible framework Irrigation Best Practice for Eden Valley Wine Growers is attached (Appendix 2).

5. Article for local media

The article written for local media is attached as appendix 3. This article was submitted to local newspapers.

Discussion

From the first workshop where spray application and spray calibration were discussed, the feedback from that session indicated that participants found this session extremely valuable. In particular the information and practical session on spray calibration was extremely valuable. One participant indicated they learnt a lot about their sprayer that they never knew before. The importance of understanding spray droplet with respect to fungicide application was also mentioned. The information about the Environmental Management System development activities also received positive response with comments indicating that the simplification of the process and templates was welcome and the session regenerated interest in the concept of EMS.

Participants indicated at the first session that they would like to spend time in the workshops developing aspects of the EMS that were then collated and copies sent to all participants. This enabled them to build up the content of their EMS using collective knowledge of the group. The response regarding the information presented on soil types and impact on irrigation was very positive. Many participants found the information about readily available water contents (RAW) and the subsequent impact on irrigation practices very useful. Matching irrigation practice to soil type (Soil RAW) is critical to efficient irrigation scheduling and ensuring irrigation practices minimise environmental impacts. Another aspect of irrigation management participants found useful was the installation of soil moisture monitoring equipment and the impact this has on irrigation schedules. Its important to understand when developing irrigation guidelines for the region that conventional scheduling practices are not as relevant due to the lack of water available for irrigation. Therefore further work to develop an irrigation best practice guide and an environmental code of practice for the region are critical aspects of the continued development of a regional EMS for Eden Valley.

The final session focussed on soil management and built on the EMS being developed by participants. This session covered some of the options of mid row management that are currently utilised in the Eden Valley region. Options focussed on low input systems where less machinery use and no soil tillage were key components of the management strategies.

Conclusions

This project has resulted in a successful dialogue within the Eden Valley regarding developing a regional EMS and implementing environmentally sustainable vineyard practices. Participants have developed key components of an EMS for their business, by using the collective knowledge of all participants and therefore collective knowledge of the region. Participants also indicated the value of the practical vineyard sessions and how the information discussed will change various practices and methods in the vineyard.

A second output from this project is the development of a draft Code of Practice for the Eden Valley. This document requires further work and input by all members of the region; however a robust framework with considerable content has been developed from the project activities.

Recommendations

1. Continued development of a regional EMS for Eden Valley
2. Further development and acceptance of the Code of Practice for Environmental Management in Eden Valley
3. Development of Irrigation Best Practice for Eden Valley
4. Other training session on vineyard management practices to support the continued development and implementation of the above recommendations

Appendix 1: Draft Code of Practice for Eden Valley Wine Growers

Title Page
Draft Code of Practice for Sustainable Management of the Environment.
Eden Valley Wine Group

Page 1
Introduction

- Information about Eden Valley and its assets.
- Map of the area (GI)

The Environmental Stewardship Journey
In 2004 the Eden Valley Wine Group identified environmental management of the regions natural resources was critical to the continued sustainability of the region agriculturally, economically and socially. To start the journey the Eden Valley Wine Group Committee developed a project to identify the critical issues of vineyard management that may have the biggest environmental impact.

In late 2004 a regional workshop was held and priority environmental issues for the region were identified. Once these issues were identified a series of training days were developed in 2005 to enable growers in the region to further develop skills and to start producing a regional environmental management system.

The outcomes from this project activity have been compiled into this draft code of practice, it contains;

- The priority environmental issues for the region
- Best management practices for the priority issues
- Future direction and activity

Page 2
Eden Valley Environmental Priorities

Soil Management
Water Use Efficiency
Pest Management and Control

Environmental Policy for the region ?

Page 3
Pest/Chemical Management Best Practices

Page 4
Soil Management Best Practice

Page 5
Irrigation Management Best Practice

Page 6
Future directions and actions

Appendix 2: Irrigation Best Management Practice Framework for Eden Valley Wine Growers

Assess Soil Capability

Identify soil type and soil Readily Available Water (RAW)

How to identify soil type

1. Hire a consultant

or

2. Take core samples from site and assess soil texture of each layer using method A

How to calculate RAW

Use texture from method A and the colour and depth of each soil layer. From method B determine the RAW of your site.

Remember to take into account any root barriers you identify from the core sample when calculation RAW.

Best Practice – Match soil RAW to irrigation shift

Understand soil variability

Determine refill point

Identify soil moisture monitoring sites

Choose sites where rootzone depth equals refill point for irrigation

Method A – Identify soil type

Texture	Ribbon	Description
Loamy sand	5	Ball only just holds together
Sandy loam	15-25	Ball holds together, feels sandy and spongy
Loam	25	Ball holds together, feels smooth and spongy
Sandy clay loam	25-40	Ball holds together firmly, feels sandy and plastic
Clay loam	40-50	Ball holds together firmly, feels smooth and plastic
Light clay	50-75	Ball holds together strongly, feels plastic
Medium clay	75+	Ball holds together very strongly, feels like plasticine

Method B – Calculating RAW

Top soil Depth	Red Loam	Yellow Clay	Black/Grey Sandy loam
30 cm			
40 cm			
50 cm			
60 cm			

Method ? – Installing moisture sensors

Do's

- Disturb soil profile as little as possible
- Get sensors in contact with undisturbed soil and live roots
- Add a little water in the hole at installation and drench it after installation
- Used sharpened tube to excavate for access tubes, use only a screw auger shrouded by tube to extract soil

	Don't's • Install sensors when soil is very wet or you will compress soil (worse with clays and screw augers compress soil on edge of hole) • Have any air gaps next to capacitance sensors. If in doubt use as slurry at installation

Irrigation Scheduling How much to apply and when	

System Maintenance Pumps Pressures Wear clogging	

Auditing – records, measuring performance	

Appendix 3: Article for local media

The Eden Valley Wine Group has been working through a process to improve and document the environmental practices of growers in the region. This project is funded by the Grape and Wine Research and Development Corporation's RITA Program and supported by the growers of Eden Valley.

At an initial workshop participants conducted an environmental review, identified the environmental assets of the region and developed a list of environmental issues for the region. This information was used to develop a series of training workshops where participants started documenting various activities and practise for their Environmental Management System and learnt more about improving practices relating to the environmental issues identified. The workshop series was developed by TafeSA Viticulture Lecturers at Barossa Valley with industry experts such as Barbara Hall (SARDI), Chris Penfold (University of Adelaide) and Mark Dale (Goolwa to Wellington LAP) contributing to the training. The workshops covered Soil Management, Irrigation Management and Developing a Spray Program and Spray Calibration.

The Eden Valley Wine Group has on-going plans to develop irrigation best practice information as part of producing an environmental code of practice for the region. This code of practice will also include best practice for chemical use and soil management, plus information on the environmental assets and priorities of the region.

For further information please contact Terry Riley ph 85641029