



Know-how for Horticulture™

**How to demonstrate
good environmental
performance: a
practical mechanism
for vegetable
growers**

Patrick Ulloa
Vegetable Growers
Association of Victoria Inc

Project Number: VG00016

VG00016

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Project VG00016
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**How to demonstrate good environmental performance: a practical
mechanism for vegetable growers**

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Purpose of the Report

In recent years, community expectations of environmental management on farms have increased. Growers have felt increasing pressures towards improving environmental management on the farm. However it needed to be defined what being an environmentally responsible vegetable grower actually meant. As such, a set of guidelines by which growers could demonstrate and improve environmental performance on the farm, in a practical way were required.

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June 2003

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Media Summary

The public is becoming increasingly aware of the importance and value of a clean environment for current and future generations. As members of the community, vegetable growers are also aware of their dependence on the environment as they produce safe and sustainable crops for consumers. This dependency has historically motivated growers to adopt practices that protect the environment.

Unfortunately, the technology available for vegetable production does not always meet the broader communities environmental expectations. For example, in some areas around Melbourne it was suggested that fertilisers applied to market gardens were becoming a source of contamination for local creeks. Growers understood they needed to respond to these concerns or risk the imposition of impractical requirements set by other organisations outside the industry.

To respond to public concerns about the use of fertilisers for vegetable production a group of vegetable growers approached the Vegetable Growers Association of Victoria (VGA) to identify a workable solution. It was decided that the only acceptable strategy was to develop an industry owned environmental management program that would allow growers to meet public expectations and to obtain the necessary recognition for the efforts made.

Enviroveg was the title selected for the industry's environmental management program. One of the main objectives of the program was to clearly define what it meant to be an environmentally responsible vegetable grower. A set of guidelines were developed which included all those good agricultural practices that had a direct positive impact on the environment. To develop the guidelines the project team researched the most relevant environmental programs and guidelines currently operating around the world. Particular attention was paid to environmental best practices and codes developed for Australian farmers.

The Enviroveg program was developed as a simple self-assessment tool to minimise environmental impacts and promote effective environmental management within the vegetable industry. The good agricultural practices included in the guidelines were given a simple score to help growers measure their progress and demonstrate their level of implementation. An effective environmental program had to include a continuous improvement process as part of the requirements. The score system allows growers to benchmark their current environmental performance and improve on an annual basis.

To take full advantage of Enviroveg, the program will need to become available to all growers in Australia. A scope of the specific environmental requirements in each state will need to be carried out to ensure the Enviroveg program will be flexible enough to have national application. A plan for independent verification will need to be established for those growers that will need formal certification as required by their customers.

A mature and progressive industry should be able to properly respond to reasonable community expectations. Enviroveg must remain industry owned and administered to ensure its goals and objectives are in line with community expectations and take into account the ability of growers to implement its requirements.

Section 1. Introduction

The project: *'How to demonstrate good environmental performance: a practical mechanism for vegetable growers'* began in 2000 as a result of increasing environmental awareness within the community. A study investigating the health of some of the creeks around Melbourne had been released to the public suggesting that market gardens were a likely source of contamination of some creeks surrounding Melbourne. This focussed much attention on the practices of outdoor vegetable growers and some community concern was expressed.

The vegetable growers recognised they needed to respond to these community concerns. Growers wanted to meet community expectations regarding the environment and at the same time manage their natural resources efficiently. As such they wanted to identify a way they could demonstrate good environmental management to others and in the future prevent the imposition of environmental requirements being set by other organisations outside the industry.

Other industries had already taken steps to demonstrate a commitment to environmental protection and it was felt the vegetable industry needed to also take a proactive approach to environmental issues. A group of growers approached the VGA to discuss possible options. It was decided that the only acceptable strategy would be to develop an industry owned environmental management program that would allow growers to meet public expectations and to obtain the necessary recognition for the efforts made.

As a result of these discussions a 2 yr project was initiated, funded by the National Vegetable Levy and Horticulture Australia Limited. The project was managed and developed by the VGA.

The main objectives of the project included:

- Development of an environmental practices guide for growers
- Assessment of the real impact of vegetable growers on water quality in some creeks around Melbourne
- Increase growers awareness of environmental responsibilities
- Developing a series of training sessions to demonstrate the application of the guidelines
- Reduce the possibilities of the setting of unfair or unnecessary regulations

Enviroveg was the title selected for the industry's environmental program. One objective of the program was to develop a set of guidelines which included all those good agricultural practices that had a direct positive impact on the environment. These guidelines needed to clearly define what it meant to be an environmentally responsible vegetable grower. To develop the guidelines the project team researched the most relevant environmental programs and guidelines currently operating around the world. Particular attention was paid to environmental best practices and codes developed for Australian farmers.

The Enviroveg program was developed as a simple self-assessment tool to minimise environmental impacts and promote effective environmental management within the vegetable industry. The good agricultural practices included in the guidelines were each given a score to help growers measure their progress and demonstrate their level of implementation. The score system allows growers to benchmark their current environmental performance and improve it on an annual basis.

An effective environmental program had to include a continuous improvement process. To achieve this the Enviroveg self-assessment is completed on an annual basis and each time the grower must improve their score. This process is a key part of demonstrating grower commitment to continual environmental improvement on the farm.

The development of the Enviroveg program has provided the vegetable industry with a tool to demonstrate protection of the environment as a responsible and concerned industry. It is recommended that the Enviroveg program be made to all vegetable growers in Australia. A scope of the specific environmental requirements in each state will need to be carried out to ensure the Enviroveg program will be flexible enough to have national application.

A co-ordinated approach to management of this program will ensure the industry is able to respond to reasonable community environmental expectations. The program must also remain vegetable industry owned and administered to be certain its goals and objectives remain realistic and achievable to growers.

In the future environmental management practices on the farm may need to be independently verified. The future development of the Enviroveg program needs to consider establishing a plan for formal certification as and when required by customers.

Section 2. Technology Transfer

A number of technology transfer activities were undertaken during the life of this project including:

2.1 Grower group information dissemination

Participating growers were provided with feedback on the Enviroveg program's progress on a regular basis. Workshops were held to keep growers aware and informed of Enviroveg in SE Melbourne, Werribee South, Bacchus Marsh and Lindenow.

2.2 Individual grower information dissemination

Mail outs and individual farm visits were undertaken to inform growers about the Enviroveg program.

2.3 Australia wide information dissemination

Brochures and copies of the Enviroveg manuals were sent to IDO's in each state. Grower associations in each state were also sent copies of the Enviroveg brochure and program manual.

2.4 Brochure

An Enviroveg brochure was developed and used to increase awareness of the Enviroveg program amongst growers and the broader community as part of mail outs and handouts at meetings and conferences.

2.5 Posters

Enviroveg posters were developed and used for display purposes at the 3rd National On-Farm Food Safety and Quality Assurance Conference, July 2002 and the VGA Vegetable Expo in Werribee South, May 2003.

2.6 Conferences and Expo

Attended the National Conference on Environmental Management Systems in Agriculture, November, 2001 as part of raising awareness of the Enviroveg program.

The results of the project were presented and displayed at the industry conference the Tasmanian 3rd National On-Farm Food Safety and Quality Assurance Conference, July 2002. The results of the project were also displayed at the VGA Vegetable Expo in Werribee South, May 2003.

3.7 Website

The website presents an overview of the Enviroveg program to growers and the wider community demonstrating why the program was developed, how the program works and access to the latest Enviroveg News and information.

3.8 Advertising

Advertisement developed and published in Good Fruit and Vegetables Magazine May, June and July, 2003.

3.9 Development of stakeholder partnerships

An Enviroveg management committee was formed with 5 grower representatives, 2 Department of Primary Industries representatives, 2 Environmental Protection Authority representatives and 1 Department of Primary Industry, Water and Environment representative. This committee is still active and meets approximately once a month.

3.10 Development of strategic alliances

Provided progress reports to retailers on a regular basis. Developed and maintained links with QA program Freshcare. Involved in the development of the AFFA guidelines for Australian growers to meet EUREPGAP requirements.

3.11 Enviroveg news press releases

The progress of the project were presented to Enviroveg members in a bimonthly newsletter first developed in July/August 2002 (See Appendix One)

Bunbury, R. Enviroveg News – July/August 2002

Bunbury, R. Enviroveg News – September/October 2002

Bunbury, R. Enviroveg News – January / February 2003

Bunbury, R. Enviroveg News – March/April 2003

Bunbury, R. Enviroveg News – May/June 2003

3.12 Press Releases

Bunbury, R. *Articles in Victorian Vege-link*. March and September 2001.

Bunbury, R. *Articles in Victorian Vege-link*. April 2002.

Bunbury, R. (2002). Environmental Program Developed. *Victorian Farmers Federation Members Magazine*, August. p31.

Bunbury, R. (2003). The progress of Enviroveg. *Good Fruit and Vegetables*, June. p15.

Bunbury, R. (2003) Enviroveg: A vegetable industry initiative. *WA Grower Vegelink*, May. p3.

Bunbury, R. *Articles in Victorian Vege-link*. Autumn and Winter Edition 2003.

Fisher, K. (2003). Growers Go Clean Green. *Weekly Times*. May. p64.

Fisher, K. (2002). Vegetables to Sustain the Land. *Weekly Times*. July. p28.

Harrison, P. (2001) Local Growers Support Vegetable Industry Environmental Program. *Leader Community Newspaper*. June. p7.

Nicholls, A. (2002). Enviroveg Pilot Program Receives Strong Support. *Southern Farmer*. September. p8.

Nicholls, A. (2003) New Website for VGA'S Enviroveg Program. *Southern Farmer*. April. p15.

O'Connor, L. (2001). Launch of Vegie Project. *Southern Farmer*. March. p5.

Ulloa, P. (2001). Launch of Vegetable Project. *Good Fruit and Vegetables*. May. p13.

Section 3. Evaluation and Measurement of Outcomes

3.1 Collated feedback for recommended future improvement of the Enviroveg Program (See Appendix Two).

Growers want the Enviroveg program to remain realistic and achievable to them and to improve their awareness of environmental issues on the farm. At meetings and workshops the Enviroveg program guidelines were discussed. As a result issues within the program and potential solutions to these issues were identified. Growers would demonstrate an increasing grower awareness of environmental issues and willingness to address them in a way that is practical. The collated feedback provides a good starting point to improve the program in the future.

3.2 Enviroveg member annual reports (See Appendix Three).

The Enviroveg reports are based on the outcomes of growers undertaking the annual self-assessment. The report shows growers their scores in relation to each of the Enviroveg areas total scores. It directly demonstrates their level of adoption of good environmental practices on the farm and shows areas where future improvement is possible.

3.3 Enviroveg action plans for continuous improvement (See Appendix Four).

The purpose of developing the Enviroveg Action plan was to:

- Reinforce the continuous improvement process
- Give growers a tool by which they could adopt good environmental practices on the farm in a clear and practical way
- Allow growers to demonstrate a commitment to ongoing environmental improvement on the farm.

Growers using this tool have been able to identify their own areas for future improvement and what they needed to do in order to implement these practices on the farm. This has created a greater awareness of environmental issues and their relationship with vegetable production practices.

3.4 Enviroveg members

The Enviroveg program now has 48 members within the state of Victoria.

Section 4. Discussion

The main objectives of the project included:

4.1 Development of an environmental practices guide for vegetable growers

4.2 Assessment of the real impact of vegetable growers on water quality in some creeks around Melbourne

4.3 Increase growers awareness of environmental responsibilities

4.4 Developing a series of training sessions to demonstrate the application of the guidelines

4.5 Reduce the possibilities of the setting of unfair or unnecessary regulations

Each of these project objectives will be reviewed and industry and broader community impacts discussed.

4.1 Development of an environmental practices guide for vegetable growers

The environmental practice guidelines define what is meant by good environmental performance on the farm. The development of this set of guidelines has given the vegetable industry and growers a tool by which they can demonstrate environmental credibility. Furthermore the program can be used as an environmental report card from the vegetable industry to the consumer. This is an important part of promoting the industry as sustainable and environmentally responsible.

The Enviroveg guidelines have given growers a new perspective to everyday farm management practices. It asks growers to think about their land, the buildings, the products used and many other issues from a new point of view. More specifically it assists the farm business in meeting environmental legal obligations, avoid unintended environmental effects and identifies opportunities to use resources more effectively in a simple step-by-step approach.

The use of the environmental guidelines should be integrated into part of the overall management system on the farm. However the Enviroveg program itself does not require the grower to know all the aspects of environmental sustainability on the farm, the simple self-assessment is easy to use and therefore leaves more time for growers to focus on what they do best, producing vegetables.

4.2 Assessment of the real impacts of vegetable growers on water quality in some creeks around Melbourne.

Due to suggestions that the application of fertilisers on market gardens were a likely source of contamination of some of the creeks surrounding Melbourne the project set out to undertake an assessment of the real impacts of vegetable production on water quality.

Unfortunately it became clear that this part of the project could not be met with the existing resources. However once research was initiated into development of the Enviroveg Water Management area guidelines, it was felt the issue of vegetable production impacts on water quality would be well addressed. Growers would have access to those good agricultural practices used to minimise or avoid any potential impacts on water quality. If required, growers could implement these practices and demonstrate to others a commitment to protecting the surrounding environment and watercourses.

As an alternative to assessing the impacts of vegetable production on water quality, the project management team found it would be useful to increase the awareness of the Enviroveg program by promoting the good agricultural practices identified within the guidelines. As a result the project purchased 12 wetting front detectors (WFD). WFD are an irrigation-scheduling tool used by growers to fine tune irrigation, preventing under and over watering of crops (See Appendix Five for summary).

The use of irrigation scheduling techniques and of monitoring tools has been identified within the program as an area that growers do not use as a regular part of farm management practices. However because the WFD is such a simple tool it was identified to be an excellent first step to introducing the concept of scheduling irrigation on the farm. Growers have been keen to discuss the potential of the WFD on the farm. Further investigation and grower education would be beneficial in this area to look to improve the implementation and continued use of this technology on the farm.

4.3 Increased growers awareness of environmental responsibilities

At the time the Enviroveg program was started the gap between consumers and vegetable growers was getting wider and the need to meet and understand both sides of the environmental debate was essential. Growers wanted to increase their awareness of environmental issues and find out what would be required in the future for on farm management if they wanted to improve their environmental performance. It also became clear that consumers needed to gain a better understanding of what was involved in environmental farm management.

The Enviroveg self-assessments are a voluntarily process undertaken by vegetable growers to increase their awareness of the environment on the farm. Throughout the process farmers highlight environmental strengths on their farm, identify areas of environmental concern, and set realistic goals and timetables to improve environmental conditions. As the Enviroveg program encourages growers to adopt these good environmental practices, it also encourages growers and the vegetable industry as a whole to promote these benefits to consumers to raise awareness of the way many growers respond to current environmental issues.

The Enviroveg self-assessment has proved to be a valuable tool to increasing grower awareness of environmental farm management practices. Based on research of other relevant environmental programs the self-assessment tool was identified as the most effective and simple way to demonstrate on farm environmental performance. Where farming and the environment had previously been perceived as separate issues, the Enviroveg program has managed to present these issues to be linked in a practical and commonsense way that is easily understood and used by the grower.

The self-assessment is also recognised as playing an important role in developing a grower sense of on farm environmental responsibility. This represents an important shift in the perception of the environment on the farm. The environment is now not just an issue that maybe enforced by other organisations, rather the environment has become an issue that growers' have gained more control over and have a greater understanding of. The Enviroveg program has demonstrated to growers how the environment is linked to farming and has given growers a practical way of improving their environmental farm management and provided a venue by which this can be demonstrated to others to raise their awareness.

4.4 Developing a series of training sessions to demonstrate the application of the guidelines

The holding of a series of training sessions to demonstrate application of the guidelines, was felt by the project team, to be an essential part in facilitating the adoption of the Enviroveg program within the industry.

The training sessions were generally held as informal workshops where growers were able to comment on the Enviroveg program guidelines and undertake the self-assessment checklist. The workshops provided an excellent forum for environmental issues to be discussed and grower environmental priorities to be identified. When undertaking the self-assessments growers would assess the guidelines to how practical and realistic they were to implement on the farm. Issues with the guidelines were frequently discussed and potential solutions identified (See Appendix 5).

Conducting the sessions in this manner created a strong sense of grower ownership of the program. Growers feel that they have a voice to reflect the solutions and concerns about their environmental problems and that the program would continue to do so in the future.

4.5 Reduced possibilities of setting unfair or unnecessary regulations

One of the main concerns of growers throughout the process of developing the Enviroveg program has been the setting of environmental guidelines by other organisations (e.g. retailers and environmental agencies). Several meetings were held with potential regulators. As a part of the meetings, growers were given a forum where they could express the concern they felt in being increasingly targeted by regulators who were concerned with their on farm environmental performance and potential offsite environmental impacts. The regulators in turn were able to view the program and the benefits involved, and in general gain a better understanding of what is involved in the vegetable production process. Enviroveg has provided the vegetable industry with a forum in which all parties are able to discuss environmental issues and find solutions that meet the requirements of both growers and other industry stakeholders.

Section 5. Recommendations

It is recommended that vegetable growers across Australia use the Enviroveg program self-assessment to demonstrate their current on farm environmental performance and improve on an annual basis. Their environmental performance each year should be benchmarked to show progress over time. As a part of the national application of Enviroveg state specific environmental requirements should be identified in order to adapt the program where needed.

The Enviroveg program needs to remain vegetable industry owned and administered. This will give the industry a tool to properly respond to environmental issues and reduce the development of many other environmental programs for the vegetable industry by other organisations. A vegetable industry owned and administered program will also ensure greater grower support and maintain its practical application on the farm.

For future improvement of the Enviroveg program, the collated feedback (See Appendix Two) needs to be considered and discussed with grower groups and other industry stakeholders. This information also needs to be considered as part of the exercise to ensure the program has national application.

It is recommended the scoring system be used in the future to develop regional comparisons of the overall implementation of good environmental practices. Where there are low scores in certain areas of the program, possibly relating to certain regions, these could be identified for future research and development, education and training for that particular area.

The Enviroveg website provides growers and the wider community with a source of information about Enviroveg and the progress of the program. In the future it is recommended the website be further developed to provide more information about environmental issues that affect the vegetable industry and provide links of where to go to receive information about certain issues. The website should be developed to provide more background information on the good practices listed in the Enviroveg manual.

For the future development of the program links with quality assurance programs and EUREPGAP should be investigated further in order to benchmark the Enviroveg program's flexibility to be integrated with other programs. A plan for independent verification also needs to be established for those growers that will need formal certification as required by their customers. These two tasks will need to include key industry stakeholders to ensure objectives and outcomes are in line with requirements of customers and growers.

These recommendations should be made available to key industry stakeholders.

Section 6. Acknowledgements

AUSVEG and Horticulture Australia Limited are gratefully acknowledged for their financial support of this project. The Vegetable Growers Association of Victoria are gratefully acknowledged for the management, support and promotion of the Enviroveg program. Significant contributions from former Enviroveg project manager Patrick Ulloa are also gratefully acknowledged. All industry stakeholders involved in the development of the Enviroveg guidelines and manual are gratefully acknowledged. Thanks go to the Enviroveg Management Committee for all the feedback and ideas for future development of the program. Thanks go to all growers who have become members of the program. Thanks also to Deborah Corrigan and Patrick Ulloa for helpful discussions and reviewing of this report.

Appendix One. Example of Enviroveg News



MEETING WITH COLES

Recently we met with representatives from Coles to give an update on the progress of the Enviroveg Program. Alec Berias (President of Vegetable Growers Association of Victoria), Frank Ruffo (VGA Executive Committee), Patrick Ulloa (Industry Development Officer) and Richelle Bunbury (Enviroveg Program Manager) attended the meeting. It was demonstrated to Coles that the vegetable industry is proactive and at the forefront of implementing best environmental management practices on farms. The Coles representatives mentioned they felt that the development of environmental programs needed to be industry driven and were supportive of the fact that the vegetable industry has taken the initiative and set their own industry environmental guidelines.

WATER MANAGEMENT



Irrigation scheduling is a process where an irrigator determines the time and amount of water that is applied to a crop. Scheduling irrigation according to crop water needs reduces the chances of over and under watering. It is important to develop these techniques to meet the growth stages of the crops and the local climatic conditions. The Glenormiston College in Werribee is currently developing an irrigation management course due to commence in July. This course is aimed at using water more efficiently on the farm. For further information please contact David Milburn on (03) 9217 5246

OTHER INFORMATION

It was great to meet some of our Enviroveg members at the Werribee Expo. It was an informative couple of days with a good level of interest being shown in the Enviroveg program. If you are attending the Profiting from Agricultural Change Conference on May 22-23 here in Melbourne we will see you there.

On another note the Victorian Farmers Federation Rural Zone Forums will be held soon. Topics of interest include: agricultural permits, subdivision restrictions and green wedges. The forums will be of particular interest to landholders in areas where there is development pressure on agricultural land for rural lifestyle or residential living. Meetings will be held at:

Warragul – May 12 at McMillan College, commencing at 8pm.

Benalla – May 22 at the Benalla Rural City Council Chambers, commencing at 7.30.

Don't forget to visit the Enviroveg website at www.enviroveg.org



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Appendix Two. Collated feedback for recommended future improvement of the Enviroveg Program.

Water management area			
<u>GOOD PRACTICES</u>	<u>ACTIVITIES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Slope Ver 1 Water - i	<ul style="list-style-type: none"> ▪ We have modified the slope to match the soil type and irrigation system OR ▪ We have modified the irrigation system to best use the existing slope 	<ul style="list-style-type: none"> ▪ Growers without slopes feel that this issue is not applicable to them, however they do change the grade of the land 	<ul style="list-style-type: none"> ▪ Insert the word 'grade' into the guideline as an alternative to slope to meet the needs of other growers
Have an efficient irrigation system Ver 1 Water - i	<ul style="list-style-type: none"> ▪ We have properly designed and installed our irrigation system 	<ul style="list-style-type: none"> ▪ According to what criteria do growers satisfy having properly designed and installed their irrigation system. Also if audited in the future how will it be defined that they have done this? 	<ul style="list-style-type: none"> ▪ Further grower and technical consultation required to define some criteria
	<ul style="list-style-type: none"> ▪ We test the irrigation system from time to time to make sure water is spread evenly throughout the paddock 	<ul style="list-style-type: none"> ▪ Apart from visual observation growers seem to be unsure of other techniques that can be used to do this. There is no background information provided 	<ul style="list-style-type: none"> ▪ Add some background information of possible techniques into manual. Provide information sources on website for growers to access further information. Could possibly be used as part of a field day activity.
Scientific methods Ver 1 Water - i	<ul style="list-style-type: none"> ▪ We know when to schedule irrigation by using 'weather based' (e.g. account balance) or soil moisture based methods (e.g. tensiometers, neutron probes) 	<ul style="list-style-type: none"> ▪ General lack of knowledge of scheduling irrigation according to weather based or soil moisture based methods. 	<ul style="list-style-type: none"> ▪ Need to provide more information regarding using these tools for irrigation scheduling. Can be delivered in background of manual / on the website. Could possibly be developed as part of a field day or case study
	<ul style="list-style-type: none"> ▪ We keep records of irrigation water usage 	<ul style="list-style-type: none"> ▪ No background information provided on this, growers are unsure to exactly what this activity requires. When should this activity take place and how often? 	<ul style="list-style-type: none"> ▪ Provide background information in manual. Grower and technical expertise needed to define this issue. Could potentially design a recording worksheet to allow growers to meet these requirements
Risk Assessment Ver 1 Water - ii	<ul style="list-style-type: none"> ▪ Our risk assessment shows: ▪ All the places we get water from ▪ Whether we will have this water in the future ▪ Whether using this water will harm the environment 	<ul style="list-style-type: none"> ▪ There is a general lack of understanding of the purpose of this concept and how meet the requirement of this guideline 	<ul style="list-style-type: none"> ▪ Make up a simple chart using examples of how you meet each required point so growers can follow it and use it for their own farms. Possibly provide a little more background information in background. Activity could take place as part of training session.

Check Water Quality Ver 1 Water - ii	<ul style="list-style-type: none"> We measure the quality of water used for irrigation from time to time 	<ul style="list-style-type: none"> Growers find the term from 'time to time' ambiguous 	<ul style="list-style-type: none"> Investigate further – is it possible to define further?
Protect water courses Ver 1 Water - ii	<ul style="list-style-type: none"> We have placed grassed or buffer zones between watercourses and cropping areas We have maintained buffer zones along water courses and gullies including council drains 	<ul style="list-style-type: none"> What is an acceptable buffer zone to be placed in between a watercourse and a cropping area? 	<ul style="list-style-type: none"> Investigate potential to define this a little bit more in background. Provide growers with more information on buffer zones and where to access more information on this issue.
	<ul style="list-style-type: none"> Drainage points have enough capacity and are designed to stop sediment runoff during high rainfall or over irrigation 	<ul style="list-style-type: none"> There is a lack of background information provided in the manual about this issue. Need to define enough capacity and in what way are they designed to reduce sediment runoff? 	<ul style="list-style-type: none"> Add background information into manual.

Soil management area

<u>GOOD PRACTICES</u>	<u>ACTIVITIES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Maintaining good soil structure Ver 1 Soil - i	<ul style="list-style-type: none"> We follow a crop rotation program. Written records are kept to show the results. The program includes the use of grasses and legumes 	<ul style="list-style-type: none"> Growers are unsure of what written results are required. 	<ul style="list-style-type: none"> Include in background information what is required (eg are the records of what is planted and harvested in a crop diary enough). Also potential to expand in background the benefits of a crop rotation program.
	<ul style="list-style-type: none"> Organic carbon levels are kept above 2% 	<ul style="list-style-type: none"> No background information is provided on what organic carbon is and why organic carbon levels should be kept above 2% 	<ul style="list-style-type: none"> Provide information in manual background
	<ul style="list-style-type: none"> We use minimum tillage and / or semi permanent beds in at least 30% of the cultivated (growing) area. 	<ul style="list-style-type: none"> The terms of minimum tillage and semi-permanent beds are not clearly understood or known. Reader could misconstrue the background definition of minimum tillage as conventional growers follow these principles also. 	<ul style="list-style-type: none"> Background information to give a more defined version of what minimum tillage and semi permanent beds are and further highlight differences between conventional and these alternative methods

Nutrient management area

<u>GOOD PRACTICES</u>	<u>ACTIVITES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Decide how much fertiliser is needed Ver 1 Nutrient - i	<ul style="list-style-type: none"> We keep records of calculations we have used to decide the amounts of N P K that will be applied 	<ul style="list-style-type: none"> Growers feel this is asking for too much documentation. How often is the program asking for this to be documented? 	<ul style="list-style-type: none"> Need to define on what occasions this should be done. Need to develop an example of this to use for educational purposes. Could be delivered as a activity as part of training program.
Store fertiliser correctly Ver 1 Nutrient - ii	<ul style="list-style-type: none"> Manure stockpiles are covered and seepage to groundwater is minimised 	<ul style="list-style-type: none"> Covering manure stockpiles is considered impractical and a possible fire hazard on the farm. 	<ul style="list-style-type: none"> This issue needs to be investigated further. Focus more on good storage of manure to stop leaks or runoff into ground water or surface water through the use of bunding. Provide more information in background.

Pest and disease management area

<u>GOOD PRACTICES</u>	<u>ACTIVITES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Store chemicals safely Ver 1 Pest & Disease - i		<ul style="list-style-type: none"> Never store pesticides near hormones Store pesticides and fertilisers separately 	<ul style="list-style-type: none"> Incorporate these issues into the store chemicals safely guidelines.
Keep good records Ver 1 Pest & Disease - iii	<ul style="list-style-type: none"> We also keep records of the following information: <ul style="list-style-type: none"> The person who decided which pesticide to use Equipment used for application Time it took to apply the pesticide Growing conditions when the pesticide was used Soil moisture when the pesticide was used Batch number of the product 	<ul style="list-style-type: none"> Growers feel that some of the record keeping activities listed are unnecessary (in bold). Also the term 'growing conditions' is not well understood. 	<ul style="list-style-type: none"> Further investigation and review is required to see if necessary. Possible change the term 'growing conditions' into stage of growth / time until harvest.
Use IPM methods Ver 1 Pest & Disease - iv	<ul style="list-style-type: none"> We only spray when economic damage is higher than the cost of the pesticide application rate. We can show how this decision was made. 	<ul style="list-style-type: none"> There is a general lack of understanding to what is meant by this. 	<ul style="list-style-type: none"> Clarify what this means and simplify wording to make more user-friendly.

	<ul style="list-style-type: none"> We only apply pesticides when the pest is there. We also choose 'softer' (less toxic) pesticides if they are available. 	<ul style="list-style-type: none"> It is felt these could be separate points instead of the one point. 	<ul style="list-style-type: none"> Review this issue.
Air quality			
<u>GOOD PRACTICES</u>	<u>ACTIVITIES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Sensitive areas Ver 1 Air - i	<ul style="list-style-type: none"> We have a written plan or diagram showing sensitive areas outside the farm and the measures taken to minimise potential problems. 	<ul style="list-style-type: none"> The guidelines ask for a plan / diagram showing sensitive areas and measures taken to minimise potential problems. The background information relating to this (Air – 1) asks for a diagram with notes about potential problems. We are asking for two different things here. 	<ul style="list-style-type: none"> This needs to be clarified. Drawing should include the identification of sensitive areas, potential problems and solutions to problems. Need to incorporate into guidelines and background all 3 issues to be covered in the diagram. Facilitators could develop an example of this for growers to use as a template.
Handling complaints Ver 1 Air - i	<ul style="list-style-type: none"> We have records to write down all complaints and the resolution of the complaint. 	<ul style="list-style-type: none"> No procedure available for growers to use to help them meet this requirement 	<ul style="list-style-type: none"> Possibility to develop formatted worksheet as a step-by-step process to serve this purpose.
Replacement of raw manure Ver 1 Air - i	<ul style="list-style-type: none"> At least 50% of manure we put on during the year has been properly composted before use. 	<ul style="list-style-type: none"> Seems to be some discrepancy to exactly what defines composted manure used on the farm. 	<ul style="list-style-type: none"> Requires further investigation to define this issue.
	<ul style="list-style-type: none"> We do not use manure at all. 	<ul style="list-style-type: none"> Is using properly 100% properly composted manure not using raw manure at all? 	<ul style="list-style-type: none"> Further investigation and consultation required.
Manure storage Ver 1 Air - i	<ul style="list-style-type: none"> We store manure as far as possible downwind from neighbours We have a barrier/screen (if needed) to block neighbours seeing stored manure 	<ul style="list-style-type: none"> Growers are not comfortable with the way that this is worded as they feel they do there best as far as practicable in this issue. 	<ul style="list-style-type: none"> Could change this into – we store manure in an area that will least affect others.
Manure application Ver 1 Air - i	<ul style="list-style-type: none"> We tell neighbours who may be affected when manure is going to be used 	<ul style="list-style-type: none"> Felt by growers that this is setting the bar too high especially those with 10 or more neighbours. It is seen to be impractical and unrealistic for growers to meet this requirement. 	<ul style="list-style-type: none"> Further investigate issue with growers and other technical experts. The right to farm issue needs to be considered.
	<ul style="list-style-type: none"> We only put manure on when the wind is blowing away from neighbours We only use enough manure to get best nutrient use 	<ul style="list-style-type: none"> These practices are not always achievable due to the 'only' in the statement. Growers endeavour to meet these practices however there are occasions when needs must. 	<ul style="list-style-type: none"> Growers would like to see the only part of the guidelines removed to make it more realistic to on farm practices.
	<ul style="list-style-type: none"> We only use enough manure to get the best nutrient use. Extra unneeded manure is not used. 	<ul style="list-style-type: none"> Ties in closely with nutrient management area 	<ul style="list-style-type: none"> Add comments to refer to nutrient management section to find out why this is important.

Reducing noise pollution Ver 1 Air - ii	<ul style="list-style-type: none"> Specific steps are taken to reduce noise nuisance to neighbours. These steps have been recorded and carried out. 	<ul style="list-style-type: none"> Grower workshops have indicated this is not a well-documented procedure. 	<ul style="list-style-type: none"> Possibility to design a worksheet for growers to use.
Energy conservation			
<u>GOOD PRACTICES</u>	<u>ACTIVITIES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Use green power Ver 1 Energy - i	<ul style="list-style-type: none"> At least 50% of electricity we use is “green power” 	<ul style="list-style-type: none"> Because it costs more growers view this negatively. 	<ul style="list-style-type: none"> Provide an example of extra costs involved. Investigate further real practicality for growers.
Improve energy use Ver 1 Energy - i	<ul style="list-style-type: none"> We have conducted an energy audit to check how much energy we are using 	<ul style="list-style-type: none"> In the Energy background (Energy – 2) it has been written keep a logbook to find out where you are using energy on the farm and a step-by-step energy saving plan for your farm as part of the energy audit. Received lots of questions of costs involved in getting this done. 	<ul style="list-style-type: none"> Potential to do an on farm energy audit as a case study of an energy audit meeting the suggested Enviroveg requirements.
Use efficient irrigation equipment Ver 1 Energy - i	<ul style="list-style-type: none"> Pump has been selected specifically for the application where flow, pressure and operating range is more efficient 	<ul style="list-style-type: none"> Growers are able to identify that they have done this but how would any other person? How would an auditor know if this has been met or not? 	<ul style="list-style-type: none"> Need further grower consultation and investigation to define what this would entail.
	<ul style="list-style-type: none"> Irrigation pumps runs at 65% efficiency 	<ul style="list-style-type: none"> Growers are able to identify that they have done this but how would any other person? How would an auditor know if this has been met or not? 	<ul style="list-style-type: none"> Need further grower consultation and investigation to define this. Potentially regular service records could show that this has been achieved.
Maintain farm equipment and machinery Ver 1 Energy - i	<ul style="list-style-type: none"> At least 30% of our cropping area is under minimum tillage practices 	<ul style="list-style-type: none"> No background information provided on what this means for energy conservation 	<ul style="list-style-type: none"> Include some information in background / on website to what this means for energy conservation
Use energy efficient lighting Ver 1 Energy - ii	<ul style="list-style-type: none"> All lighting suggestions 	<ul style="list-style-type: none"> There is a lack of information provided on this issue. Growers are unsure of the different types of lighting and associated cost savings with using energy efficient lighting. 	<ul style="list-style-type: none"> Provide pictures of lights and examples of cost saving associated with using those lights.
Use properly designed cool rooms Ver 1 Energy - ii	<ul style="list-style-type: none"> Our cool rooms have been designed and built to make sure energy is used efficiently. 	<ul style="list-style-type: none"> Growers are able to identify that they have done this but how would any other person? How would an auditor know if this has been met or not? 	<ul style="list-style-type: none"> Need further grower consultation and investigation to define some sort of guide to what this means on the farm.

Waste management

<u>GOOD PRACTICES</u>	<u>ACTIVITES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Ways to minimise waste Ver 1 Waste - i	<ul style="list-style-type: none"> We have a plan that..... 	<ul style="list-style-type: none"> Growers seem to have procedures in place to minimise their waste, however they do not have a documented plan. Waste management seems to be a issue that is not high on the agenda 	<ul style="list-style-type: none"> Develop a case study to identify cost benefits of waste management using the reduce, reuse and recycle principles on the farm. Use results as part of promotional sessions to demonstrate benefits to growers.
Dispose of waste properly Ver 1 Waste - i	<ul style="list-style-type: none"> We know and follow the government regulations for getting rid of our waste 	<ul style="list-style-type: none"> General lack of awareness of what these are. 	<ul style="list-style-type: none"> Provide information (on website / newsletters) to where to go to get this information.
Recycled products Ver 1 Waste – ii	<ul style="list-style-type: none"> We keep a list of recycled products that we can use on our farm 	<ul style="list-style-type: none"> Identified as not rating as a high priority for growers. 	<ul style="list-style-type: none"> Use to provide further information about this issue.
	<ul style="list-style-type: none"> We have a policy to use recycled products whenever cost is now a lot higher 	<ul style="list-style-type: none"> Growers are unsure of what is meant by having a policy. 	<ul style="list-style-type: none"> It needs to be defined what having a policy means.

Biodiversity

<u>GOOD PRACTICES</u>	<u>ACTIVITES TO IMPROVE ENVIRONMENTAL PERFORMANCE</u>	<u>IDENTIFIED ISSUES</u>	<u>POTENTIAL SOLUTIONS</u>
Protect biodiversity areas Ver – 1 Biodiversity - ii	<ul style="list-style-type: none"> We make sure that any dead trees in the biodiversity areas are kept as homes for birds and other native animals 	<ul style="list-style-type: none"> Dead trees are considered dangerous on the farm 	<ul style="list-style-type: none"> Investigate this issue further with grower consultation
	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Overall the biodiversity area has been considered by growers not to be practical enough and has not been received well. 	<ul style="list-style-type: none"> Investigate this issue further to make area more practical with grower and technical consultation

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Date

Company Name

Enviroveg Membership Number: 00000

Address

Address

Dear Company Representative,

Thankyou for completing your annual self-assessment checklist. Completing the Enviroveg self-assessment has demonstrated areas where **Company Name** have implemented good environmental management into farm practices and where **Company Name** may consider improving environmental performance in the future.

This report is based on the results of the annual self-assessment checklist. The purpose of this report is to:

- Provide **Company Name** with their total Enviroveg score
- Give **Company Name** an overall view of environmental performance in each of the Enviroveg areas

Company Name total score is **108**. This score will provide a useful benchmark in which the company can look to improve on annually. The score received is not a pass or fail. The Enviroveg program is focussed on continual improvement over time not on current performance.

Company Name scores for each area are as follows:

Water Management: **13**

Nutrient Management: **9**

Air Quality: **11**

Waste Management: **9**

Soil Management: **13**

Pest and Disease Management: **18**

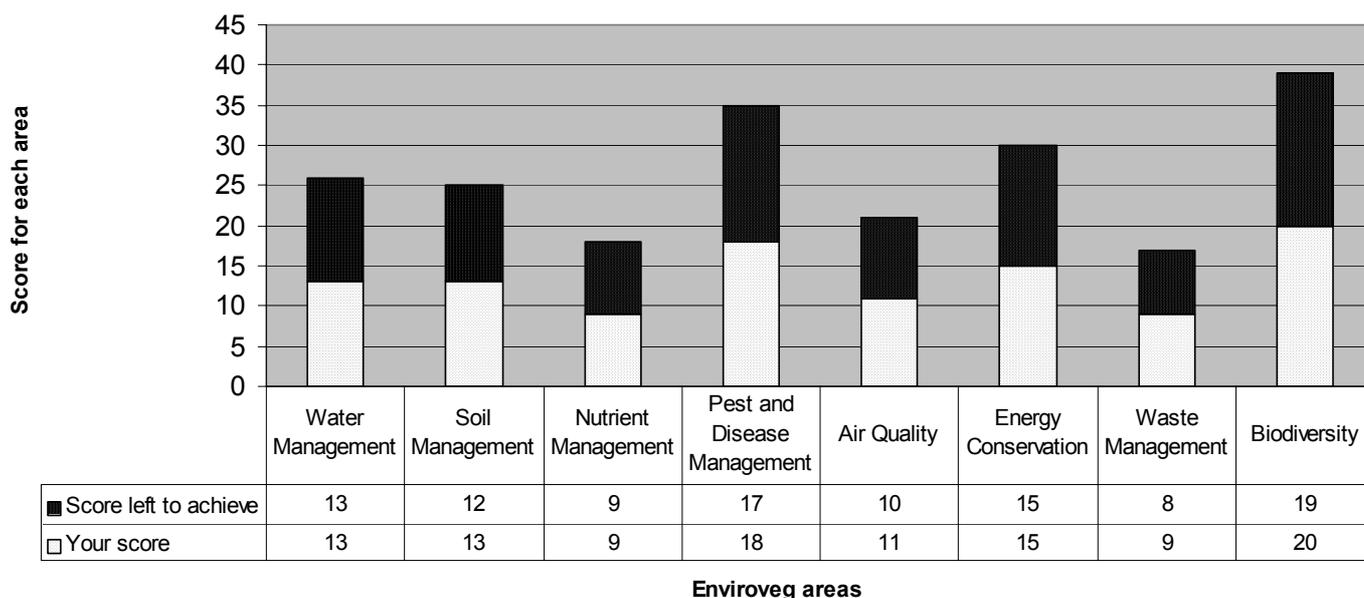
Energy Conservation: **15**

Biodiversity: **20**

The performance outline shown in the graph below demonstrates the score the company has achieved in each of the eight Enviroveg areas out of the total that it possible to score.



Company Name Enviroveg Score



Company Name have implemented activities to improve environmental performance in all eight areas of the Enviroveg program. We have highlighted several examples of **Company Name** good environmental management practices including:

- Identified good practice implemented on the farm.
- Identified good practice implemented on the farm.
- Identified good practice implemented on the farm.

Several good environmental management practices **Company Name** may wish to consider implementing over the next year include:

- Identified area for possible future improvement.
- Identified area for possible future improvement.

Finally undertaking the self-assessment on an annual basis is the key to ensuring that the practices you have chosen to implement on your property are meeting the environmental goals of **Company Name**.

Kind Regards

Enviroveg Program Manager



Appendix Four. Enviroveg Action Plan for Continuous Improvement

ENVIROVEG ACTION PLAN FOR CONTINUAL IMPROVEMENT

Date:

Company Name:

Enviroveg Membership Number:

Which area do you want to improve?	What activity to improve environmental performance do you want to do?	What do you need to find out to put the activity into place?	Who will do it?	How long will it take?
				<input type="checkbox"/> Currently working on it <input type="checkbox"/> Within 1 year <input type="checkbox"/> Other:
				<input type="checkbox"/> Currently working on it <input type="checkbox"/> Within 1 year <input type="checkbox"/> Other:
Comments / Barriers Identified (eg information and services not available, financial barriers, legal barriers):				

Appendix Four. Enviroveg Action Plan for Continuous Improvement

ENVIROVEG ACTION PLAN FOR CONTINUAL IMPROVEMENT

Date:

Company Name:

Enviroveg Membership Number:

Appendix Five. Summary of Mechanical Fullstop Wetting Front Detector

Summary of the Mechanical Fullstop Wetting Front Detector.

The mechanical Fullstop Wetting Front Detector is a simple, reusable device that helps irrigators improve water management.

Installation.

Two detectors are buried close together but at different depths. One is placed about half way down the active root zone. The second detector is buried near the bottom of the active root zone. To install the detectors the easiest way is to use augers, minimising soil disturbance. A spade can also be used keeping the different soil layers separate.

How it works.

As water infiltrates into the soil during irrigation or rain a wetting front moves down into the soil. The wetting front moves deeper into the soil with more irrigation or rain.

When the wetting front meets the detectors funnel the water becomes trapped. The wetting front moves through the funnel and as the diameter of the funnel gets smaller the soil becomes wetter and wetter. The soil at the base of the funnel becomes so wet that water seeps out and flows through a mesh screen (the mesh screen is found near the base of the funnel). The water then flows into the central pipe, which causes the float to pop up. This is an indication that water has reached that depth in the soil.

The Fullstop Wetting Front Detector can be used as a part of irrigation scheduling to find out whether too little or too much water has been applied.

