

Reef Rescue

IMPROVING WATER QUALITY OF THE GREAT BARRIER REEF LAGOON



Burnett Mary Regional
Group for NRM

Reef Rescue program for horticulture

The horticulture component of the Federal Government's Reef Rescue program has been designed by the horticulture industry in consultation with the Natural Resource Management (NRM) regional groups to ensure maximum return on investment. It takes into consideration the unique challenges facing the industry with respect to uptake and reporting of improved farm management practice.

Growcom has developed (with assistance from NRM groups) the Farm Management System Water Quality module which integrates existing resources and programs, captures data relating to practices and provides a mechanism for providing targeted extension support across the whole horticulture industry. This approach is fundamental to the horticulture component of the Reef Rescue program and has already delivered positive outcomes.

The 2009-2013 horticulture program is building on these outcomes to ensure that adoption of best practice is accelerated and the Australian government has clear evidence that Reef Rescue investment in the industry has been successful.

Specifically the overall program will deliver:

- Improved practices on horticulture enterprises relating to nutrient, sediment and chemical management sufficient to ensure improved water quality leaving the farm and hence improved reef water quality outcomes.
- Streamlined delivery of incentive funds across regions via a mechanism that links funding levels to water quality improvement outcomes.
- Data capture across the horticulture industry using the Farm Management System to improve the capacity of

the industry to benchmark its performance and ensure continuous improvement.

- Reporting on the uptake of best practice facilitated by all facets of the Reef Rescue program from participation in capacity building activities to works funded through the grants program.
- Capacity building across the multiple commodities that comprise the horticulture industry.
- Effective communication to industry stakeholders and the broader community to ensure widespread adoption of, and support for, the program.

Did you know?

"Farming and processing practices within the horticulture sector can significantly benefit the quality of water that enters the reef lagoon" (Brodie et al, 2007).

Horticulture within the Great Barrier Reef Catchment is worth more than \$800 million per annum produced on around 1000 farm enterprises covering 62 500 hectares.

The region produces most of Australia's banana, tropical fruit, mandarin, macadamia, avocado, fresh tomato and winter vegetable crops.



Growcom's Farm Management System - bringing about change

The Growcom Farm Management System (FMS) is a risk based assessment process undertaken by horticulture growers prior to submitting their application for incentive funding for a Reef Rescue project.

The FMS is a data collection tool currently consisting of three modules: water use efficiency, soil nutrient management and water quality.

For the delivery of Reef Rescue the water quality module is utilised. The module asks the growers a series of questions about their current management practices to identify potential risks and opportunities for improvement.

The program then generates an action plan for the farm providing growers with:

- the level of risk their practices pose
- recommended action to correct the problems
- resources to access assistance with implementation.

In addition to measuring current practices the tool also provides a farm benchmarking tool to measure improvements once a project has been implemented.

Benefits to growers and industry

From a grower's perspective, Growcom FMS can assist in identifying areas of farm management risk previously not considered and pinpoint the potential impact of this weakness on the farm business.

The process assists growers in prioritising where the farm would most benefit from investment to improve practices.

The extension officer can also identify potential sources of funding.

The Growcom FMS also enables growers to complete components of Quality Assurance programs (e.g. Freshcare Food Safety, Globalgap, WQA, SQF2000 and Freshcare Environmental). It can also assist growers to develop their response to regulatory requirements such as Queensland's Land and Water Management Planning.

From the industry perspective, the FMS enables Growcom to benchmark the current practices being undertaken in the horticulture industry, identify the need for new programs and funding sources, improve delivery of ongoing projects and better target on the ground activities to assist growers to meet and exceed established Best Management Practice.

Individual farm data confidentiality is a key principle of the project. Data gathered at the property level is aggregated to protect the grower's privacy while at the same time ensuring regional and commodity data can be analysed and compared.

The Growcom Farm Management System provides a unique data collection and analysis tool for the first time in horticulture. Additional modules are planned.

Growcom's role in Reef Rescue 2009 - 2011

In 2009, Queensland's peak horticulture body Growcom set a target of assessing 400 growers under its Farm Management System (FMS) risk assessment framework as the first step in achieving the adoption of better land management practices aimed at improving water quality reaching the reef lagoon. This target will contribute to the Federal Government's overall Reef Rescue target of 1300 farmers over three years.

As of 1 June 2011, 455 growers covering 44 500 hectares have completed the risk assessment process with 84 per cent receiving financial assistance under the Reef Rescue program to implement practice changes to better manage sediment, nutrient and chemicals on their properties.

This target was achieved with the help of Growcom's regional extension officers who have established good relations with the growers based on trust.

They have been supported by effective communication highlighting the benefits of the FMS process and the proven usefulness of the tool itself.

Workshops, training sessions, field days and bus tours have demonstrated what can be achieved and have generated a great deal of interest from growers. Anecdotal evidence suggests that many growers are now performing practice changes apart from the Reef Rescue program, primarily due to learning about what is happening on farms around them and the benefits that have accrued.

The Growcom Farm Management System will continue to support growers' efforts to identify risks on their farms and the best ways to overcome them. It will also provide the Reef Rescue program with concrete evidence of improvements to farm practices in horticulture and solid returns on the Federal Government's investment in the industry.

Improving horticultural farm practices in the Burnett Mary region

These charts show the progressive shift in horticultural farm practices relating to sediment, nutrient and chemicals within the Burnett Mary region in the past three years (December 2008 – June 2011).

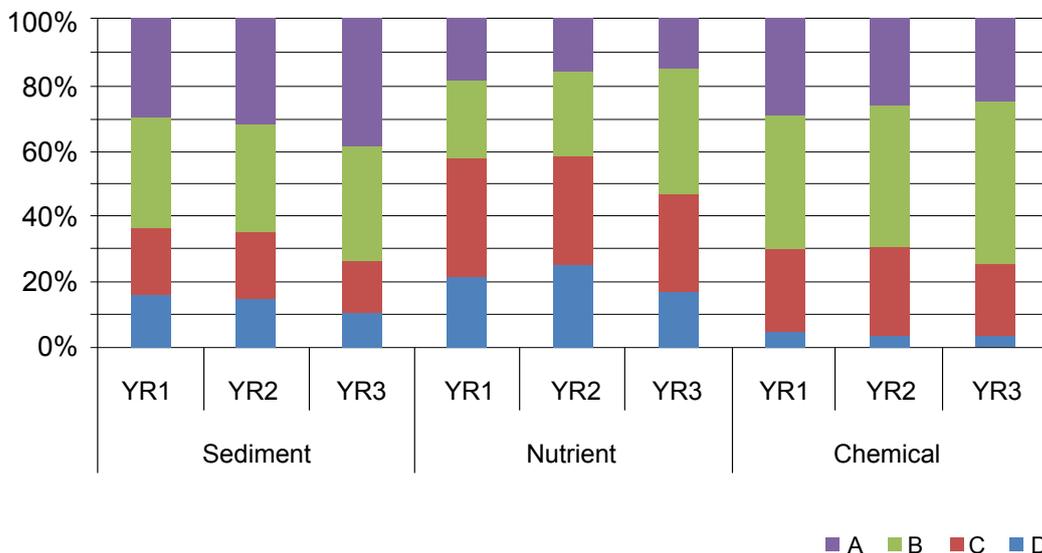
Compiled from Growcom's Farm Management System database the data shows an ever increasing participation level (growers and area) culminating at June 2011 with 167 horticulture growers farming 14 196 hectares.

Graph one: percentage of horticultural growers per practice level / per year

Best practice for **sediment** management (A & B class) adoption has increased by 10 per cent while the number of growers operating at code of practice (C class) has decreased by 4 per cent. Producers utilising sediment management practices considered unacceptable (D class) have decreased by 6 per cent.

Best practice for **nutrient** management (A & B class) adoption has increased by 10 per cent and those growers operating at code of practice (C class) has decreased by 6 per cent. Producers utilising nutrient management practices considered unacceptable (D class) have decreased by 5 per cent.

Best practice for **chemical** management (A & B class) adoption has increased by 5 per cent and those growers operating at code of practice (C class) has decreased by 4 per cent. Producers utilising chemical management practices considered unacceptable (D class) have decreased by 2 per cent.

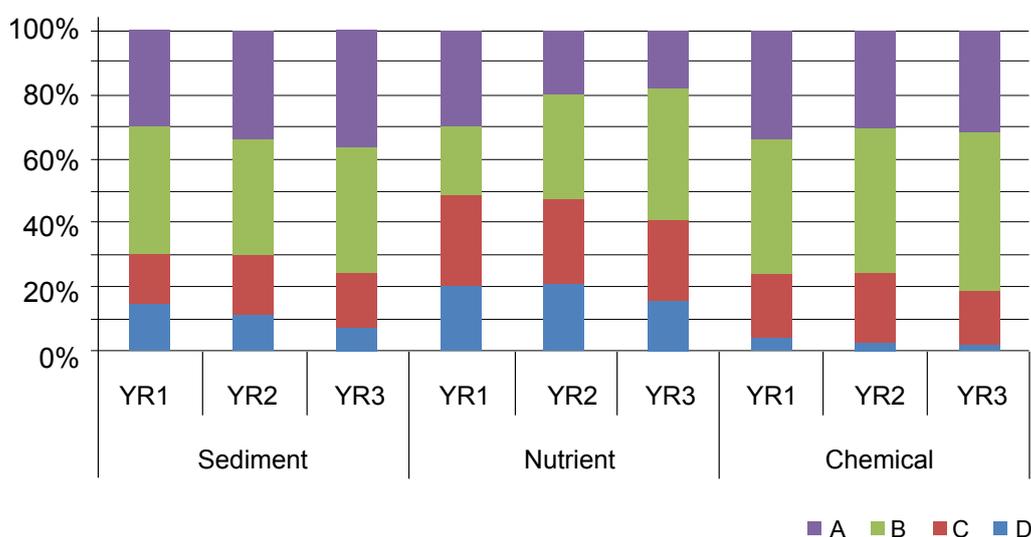


Graph two: percentage of area (ha) managed per practice level / per year

Best practice for **sediment** management (A & B class) area adoption has increased by 7 per cent and the area managed at code of practice (C class management) has not altered. Area managed using practices considered unacceptable has decreased by 6 per cent.

Best practice for **nutrient** management (A & B class) area adoption has increased by 8 per cent and the area managed at code of practice (C class management) has decreased by 4 per cent. Area managed using practices considered unacceptable has decreased by 4 per cent.

Best practice for **chemical** management (A & B class) area adoption has increased by 5 per cent and the area managed at code of practice (C class management) has decreased by 3 per cent. Area managed using practices considered unacceptable has decreased by 2 per cent.



Legend: ABCD management practices

Level	Category	Description
A	Cutting Edge	Likely best management practice but needs more data for validation or further technical development
B	Best Practice	Current best management practice
C	Compliant	Legislative requirement, code of practice or locally agreed duty of care
D	Degrading	Unacceptable and potentially degrading practices

Legend: delivery years

YR1	– 2008 / 2009
YR2	– 2009 / 2010
YR3	– 2010 / 2011

"The constant feed fertigation system cost us approximately \$13 750. Through the Reef Rescue funding program we were successful in gaining a grant of 50%." Joe Sullivan

Case Study 1

Nutrient Management - Fertigation

Joe Sullivan and daughter Carly Farnsfield
Growing avocado, lime and grape fruit - Bundaberg region

What used to be done

Tractor-mounted spinner applied 90 per cent of fertiliser as granular, four times per year.

"I used to apply most of my fertiliser this way," Joe Sullivan said.

"Even with a small acreage the time cost was significant.

"I'm not convinced my trees were getting the full benefit of what I was applying.

"Some may have been washed away in the inter-row, during storm events, while rain was needed to incorporate some as well."

"The labour saving is a big selling point with a system like this.

"We can mix up a brew of fertiliser, set the program to start injecting toward the end of the irrigation cycle and be off doing other farm work."

System features

- mobile (forklift mounts)
- pre-set timer
- delayed start
- capacity for multiple starts
- time efficient

- back-up support supplied by the Queensland manufacturer.

Environmental benefits

- nutrients incorporated
- nutrients delivered directly to active root zone

Nutrient applications estimated forecast

- 90 per cent fertigated
- 10 per cent foliar
- total volume = 450 kg/ha
- An estimated saving of approximately 25 per cent on fertiliser.

How this practice changed

A new nutrient application practice – constant feed fertigation was introduced.

System features:

- 2000 L tank
- Variable agitation
- Variable flow injection

"We had heard about the constant feed fertigation systems and were interested in one for our orchard," said Mr Sullivan.

"We then heard about the Reef Rescue program, through Growcom's local field officer, and discovered that fertigation systems were an eligible activity. This encouraged us to buy one.



"When you consider the savings we will make on labour, fertiliser and improved productivity a system like this will quickly pay for itself." Joe Sullivan

"The system cost us just over \$22 000 to buy and install. Through the Reef Rescue funding program we were successful in gaining a grant to cover 50% of our out of pocket expenses." Scott Gregson-Allcott

Case Study 2

Herbicide Management – Spot Sprayer

Macadamia Farm Management Pty Ltd
Growing macadamias - Bundaberg region

What used to be done

A double sided herbicide boom (4 jets/ side) was used to apply a continuous path of chemical, under the tree line.

"It is crucial to keep the tree floor relatively weed free, so as to harvest mechanically," farm manager Scott Gregson-Allcott said.

"Occasionally there were sections of the tree line with minimal weed pressure and herbicide was being wasted."

How this practice changed

The existing herbicide rig was modified by adapting Weedseeker® sensors to it.

System features

All jets:

- operate independently of each other
- each cover approximately a 400 mm swath.

"The jet next to the treeline applies one type of herbicide and the outer three jets apply a different herbicide," Mr Gregson-Allcott said.

Cab display:

- can override sensors
- can adjust sensitivity.

Environmental benefits:

- reduced risk of herbicide lost
- bare soil particles not receiving pesticides
- Improved soil health
- addressing consumer concerns.

Forecast \$ savings per year

- herbicide \$26 000
- labour \$12 000
- fuel \$2500.

Total in excess of \$40 000 saved per year. Payback period is less than 12 months.

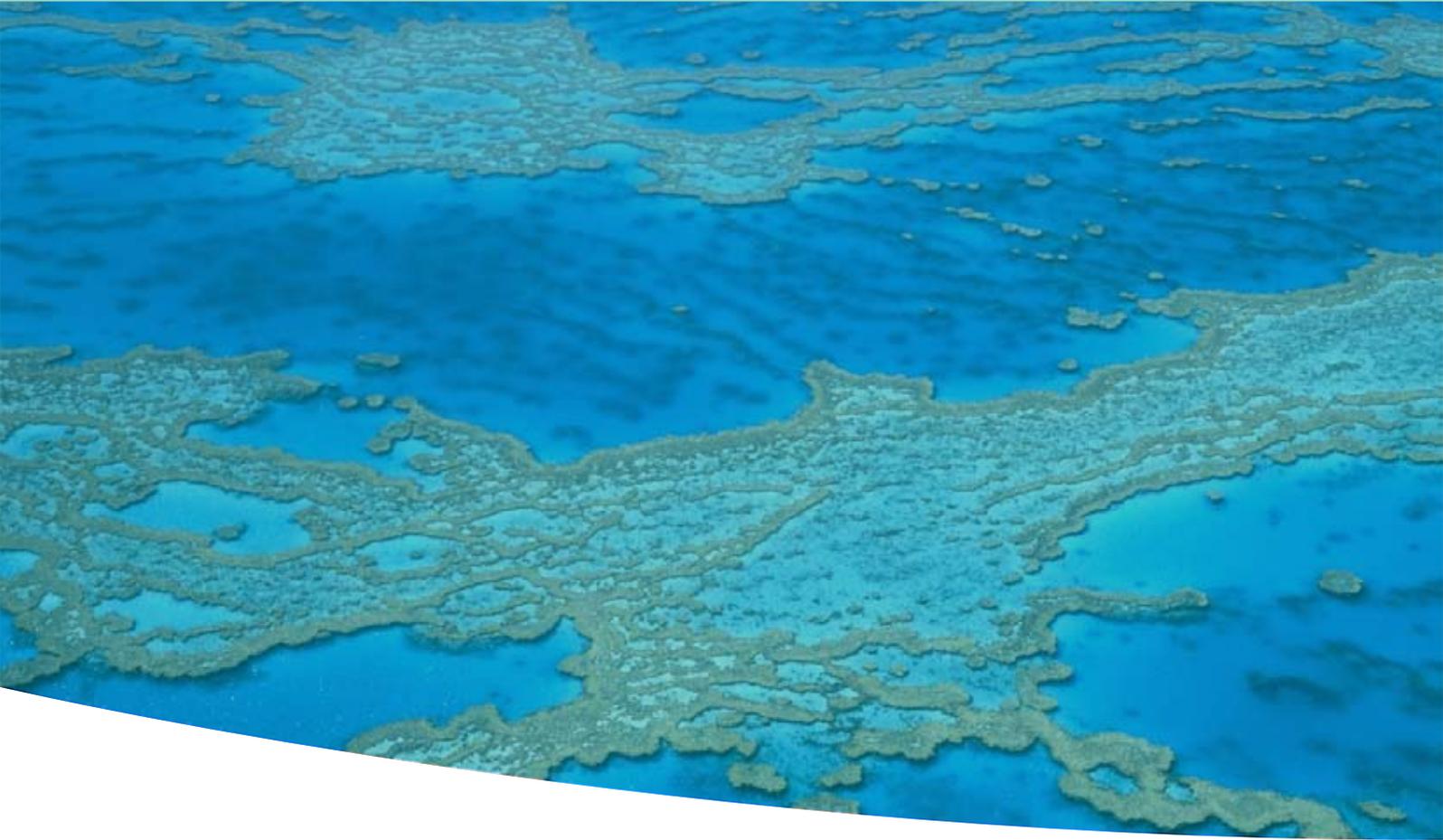
"We trialed the Weedseeker® and quickly saw the dollar savings we would make by having the system full time," Mr Gregson-Allcott said.

"The forecast budget on the Weedseeker® shows it should pay for itself within one year. There are not many agricultural inputs that can do that."



"The macadamia industry is aware of the consumer pressures on our industry and both growers and processors are working to meet the challenges." Scott Gregson-Allcott





Training snapshot

Training needs identified and delivered as a result of the Growcom Farm Management Systems program include:

Implementing infield management

This includes, inter-row management, control traffic / tram tracking, drainage works, buffer zones, sediment traps and soil mapping.

Training topics:

- understanding how infield management practices can reduce losses of nutrients and chemicals via runoff and sediment loss
- what can be implemented to further reduce farm losses via implementation of buffer zones and sediment traps which potentially could become wetland areas.

Soil analysis and nutrient budgeting

Training topics:

- how to take a sample
- interpretation of soil test data
- what is a nutrient budget

- making budgets work for you
- demonstration of a nutrient balance software package.

Fertigation

Training topics:

- which fertigation system is right for your situation?
- identifying fertigation systems and how they operate, their faults and management issues
- the solubility and compatibility of various fertilisers
- determining application timing to ensure fertilisers reach the desired block and determining how long it will take to flush the system.

Integrated Pest Management (IPM)

Training topics:

- using IPM to control weeds requiring residual herbicides
- using IPM to improve efficacy and crop performance
- improved strategies to assist management of Silver Leaf White Fly in crops.



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Reef Rescue is funded by the Australian Government through its Caring for Our Country initiative.

