

# Reef Rescue

IMPROVING WATER QUALITY OF THE GREAT BARRIER REEF LAGOON



Terrain 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 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.

## 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.



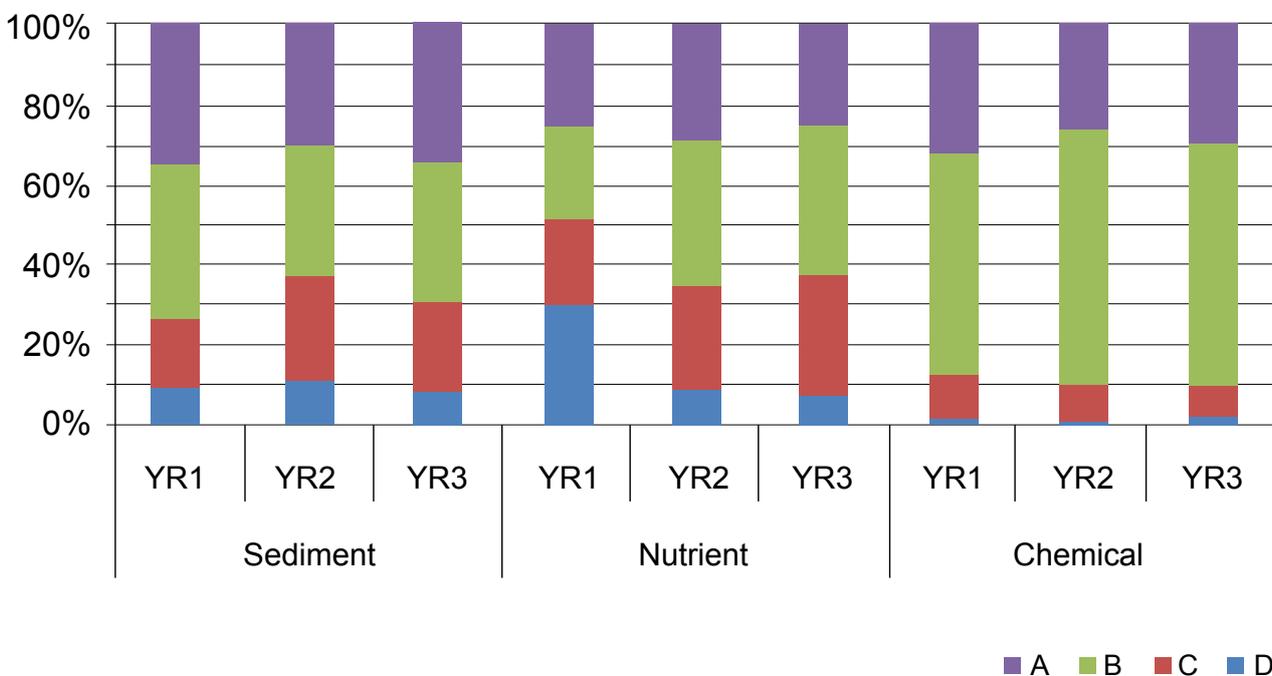
# Improving horticultural farm practices in the Terrain NRM region

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

Compiled from the Growcom Farm Management System database the data shows an ever increasing participation level (growers and area) culminating at June 2011 with 148 horticulture growers farming 11 733 hectares.

In the Terrain region this data represents banana, papaw and multicrop (potato, peanut, maize) producers.

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



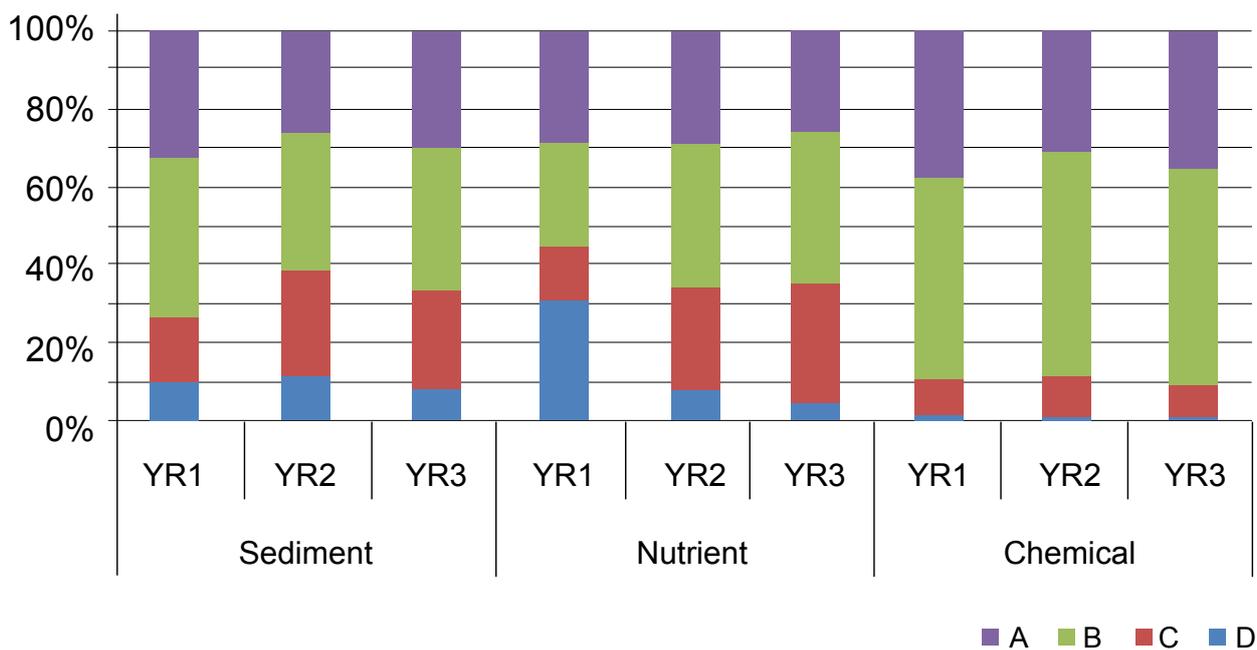
Best practice for **sediment** management (A & B class) adoption has decreased by 5 per cent and those growers operating at code of practice (C class) has increased by 4 per cent. Producers utilising sediment management practices considered unacceptable (D class) have decreased by 1 per cent.

Best practice for **nutrient** management (A & B class) adoption has increased by 13 per cent and those growers operating at code of practice (C class) has increased by 10 per cent. Producers utilising nutrient management practices considered unacceptable (D class) have decreased by 23 per cent.

Best practice for **chemical** management (A & B class) adoption has increased by 2 per cent and those growers operating at code of practice (C class) has decreased by 3 per cent. Producers utilising chemical management practices considered unacceptable (D class) have remained unchanged.



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



Best practice for **sediment** management (A & B class) area adoption has decreased by 8 per cent and the area managed at code of practice (C class management) has increased by 10 per cent. Area managed using practices considered unacceptable has decreased by 2 per cent.

Best practice for **nutrient** management (A & B class) area adoption has increased by 9 per cent and the area managed at code of practice (C class management) has increased by 18 per cent. Area managed using practices considered unacceptable has decreased by 26 per cent.

Best practice for **chemical** management (A & B class) area adoption has increased by 1 per cent and the area managed at code of practice (C class management) has decreased by 1 per cent. Area managed using practices considered unacceptable is unchanged.

**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



## Case Study

### Nutrient budgeting, recording and water quality monitoring

Gavin Mackay – Mackay Estates  
Growing bananas – Tully region

#### What used to be done

We were using a budget tool for decision making and found value in the knowledge it provided, however, the tool required modification.

We had previously used an external service provider for water testing but due to data turnover time and associated costs, sampling was conducted less often.

#### How this practice changed

A whole-of-farm nutrient budgeting, recording and water quality monitoring project has now been employed on farm. The project involved recording nutrients entering the farm (fertiliser applications), nutrients removed from the farm in banana yields and waste, and nutrients in farm run-off from productive areas.

#### System features

- scales weigh and record banana bunches entering the sheds
- bananas packed for retail sale and waste bananas are recorded to estimate nutrient removal rates per production area
- the recording device feeds information back to a central computer
- weight data is collated in a nutrient budgeting and recording tool, along with fertiliser information
- the water sampling equipment is used to measure the quality of run-off water from the farm.

#### Benefits of this system

Through this continuous monitoring and recording of nutrient inputs and outputs it is anticipated that efficiencies can be achieved to minimise nutrient loss from the farm whilst maximising nutrient uptake into crops.

The Reef Rescue funding provided the opportunity to redevelop the software enabling Mackay Estates to track nutrient inputs in direct comparison to production (weight of harvested banana fruit) which the previous tool did not have the capacity to do.

By being self sufficient we have the ability to sample water at any time on any of the farms and have immediate

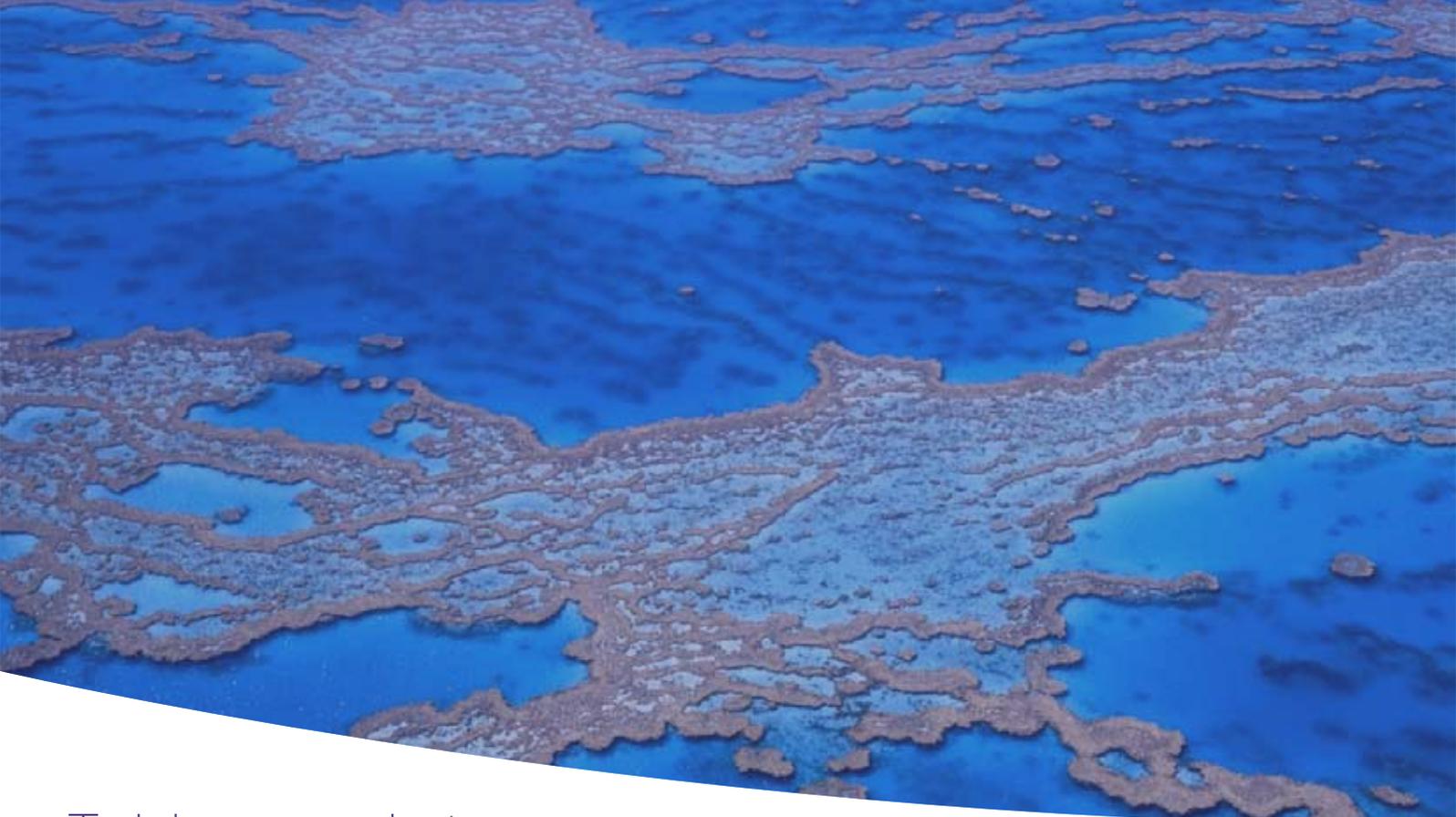
results saving time and money. Due to these savings, sampling will be more frequent and focused when needed.

Management decisions are expected to change where there are adverse or beneficial results found from both the water sampling and nutrient budgeting/recording tools.

*"We expect the benefits to come from knowing in detail our production compared with our inputs will be enormous and without funding from Reef Rescue we would not have this system in place," Gavin Mackay said.*



*"We have become much more self sufficient by having our own water sampling equipment rather than having to wait for transport to a laboratory and for reporting back." Gavin Mackay.*



## 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.

