

June 2014 | Edition 2

## Editor's Welcome

*Belinda Billing*



Welcome to the June edition of Land and Water. This month we bring you a wide range of news - from rainfall simulation research, to the latest reports on regional water quality and how we can learn more from farmers in South America. Land and Water aims to bring landholders in the Mackay, Whitsunday and Isaac regions up-to-date with local research, data and events related to the health of our landscape and waterways. We hope this news is of interest and use to you. If you would like to find out more, provide feedback, or contribute an item, please contact Reef Catchments - [belinda.billing@reefcatchments.com](mailto:belinda.billing@reefcatchments.com) or (07) 4968 4200.

## Report Card shows Mackay Whitsunday landholders raise the bar for improved reef health

*More focus needed on non-rural areas*

**Farmers in Mackay and the Whitsundays have been identified as leaders in the bid to improve water quality to support the health of the Great Barrier Reef.**

The Great Barrier Reef Report Card 2012 and 2013 was released this month by Federal Minister for the Environment, Greg Hunt, and Queensland Minister for the Environment and Heritage Protection, Andrew Powell.

The Report Card indicated Mackay Whitsunday showed the largest reduction of all regions measured in Queensland for two key pollutants, nitrogen and pesticides.

Reef Catchments CEO Robert Cocco commented that the larger than average reductions could be attributed to a shift from C class farm management to B and A class farm management over the past three years.

"There has been an immense effort by

farmers in our region to improve their practices to be more productive and sustainable," Mr Cocco said.

"While there is still plenty of work to be done, I would like to say a big congratulations to our region's cane farmers, graziers and horticulturists. They are the ones driving change on the ground."

The report card measured progress in actions taken to improve water quality in the reef between July 2009 and June 2013. Water quality readings were broken into six geographic zones - the overall Great Barrier Reef, Cape York, Wet Tropics, Burdekin, Mackay Whitsunday and Fitzroy River.

The report also highlighted the percentage of farmers to have adopted better land management practices that directly reduce the amount of pollutants entering the reef.

Mr Cocco said Mackay Whitsunday primary producers ranked highly.

"Mackay Whitsunday set the bar

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**Australian Government**



**Queensland Government**



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highest for improved practices by graziers. Horticulturists also ranked highly with 66 per cent of horticulture producers known to have adopted improved land management practices."

The ongoing work of cane farmers was also recognised.

"This is a major industry and there are a large number of sugar producers in the Mackay Whitsunday region. Change in terms of percentage of adoption might be less rapid, but it is more significant in terms of numbers when it occurs," Mr Cocco said.

From 2009 to 2013, a minimum of 49 per cent of Mackay Whitsunday sugarcane growers are known to have formally adopted improved land management practices. This represents more than 670 individual farmers from the region's total of 1,380 sugarcane growers.

But Mr Cocco said there was a clear need for further funding and support to allow the region to reach its full potential.

"These results are promising, but we still have a long way to go. Our rural producers need dollars, support and resources to improve their practices, as major change comes with a financial cost," he said.

"There is also a need for a collective focus on other non-rural land uses and the impact these are having toward water quality at the end of our catchment.

"We have seen the rural sector continue to do its bit, however water quality is influenced by many factors – urban and coastal development for example.

"There remain other areas our region has under-performed. The condition of our inshore sea grass meadows remained 'very poor', our inshore marine environment was 'poor' and our coral reefs remained in a 'moderate' condition.

"Clearly there is an ongoing need for improved environmental and natural resource works and outcomes in the Mackay Whitsunday region."

To read detailed report results visit [www.reefplan.qld.gov.au](http://www.reefplan.qld.gov.au)

## Farmers remain at the heart of water quality

**Draft Catchment Condition Reports have been launched this month by Reef Catchments, as part of the wider Water Quality Improvement Plan (WQIP).**

**The reports help show the Mackay Whitsunday Isaac (MWI) community is playing its part in improving water quality, with a special congratulations going to the region's farmers.**

The draft Catchment Condition Reports are now open for comment from the entire community. Provide your feedback on Reef Catchments website to help identify where efforts and resources should be focused.

"These draft reports outline the current condition of each of the MWI's 33 sub-catchments, compared to their condition seven years ago," said Sal Gray, Reef Catchments Healthy Waterways senior project officer.

"Though the final updated Water Quality Improvement Plan will not be released until later this year, we can already see that change on the ground is happening."

The Catchment Condition Reports help track the MWI region's progress and showcase the water quality improvements community and industry have made in local waterways that drain to the Great Barrier Reef lagoon.

Ms Gray said to date there had been a particular effort from farmers and landholders.

"In Mackay Whitsunday Isaac, more than 940 farmers have been involved in projects and activities that help improve water quality," she said.

That has produced major benefits – for example, it is estimated the MWI region has decreased pollutants, such as sediments, by 160,000 tonnes annually. Total pesticide loads have also been reduced by over 1200 kilograms per year.



ABOVE: Shielded spray units allow growers to use knockdown herbicides in the inter-row and reduce reliance on residual herbicides.

## Introducing our new Regional Landcare Facilitator



Hi, my name is Johnelle Stevens and I am the new Regional Landcare Facilitator for the Mackay Whitsunday at Reef Catchments.

I will be working with the Sustainable Agriculture team from the Proserpine office on projects around the region. Initiatives will cover a broad range of areas including; ABCD frameworks for the fisheries, forestry and horticulture industries, as well as everything in the soil and grazing realm.

I look forward to working with landholders, including, graziers, cane growers, horticulturists, and other stakeholders across the region.

Keep a lookout on the Reef Catchments Events Calendar for upcoming workshops and opportunities, and on the website to find locally relevant information.

**Contact Johnelle**

E [johnelle.stevens@reefcatchments.com](mailto:johnelle.stevens@reefcatchments.com)

M 0457 306 152

Continued from page 2 - Water Quality Improvement Plan

The results are the outcome of a wide range of programs including the Australian Government Reef Programme (formerly Reef Rescue) which involves cane farmers, graziers and other primary producers. Ms Gray said with the Great Barrier Reef already facing significant pressures, farmers and community members were looking to do their part.

"Thanks to positive action, the Mackay Whitsunday Isaac community is helping lower pollutants from our region by hundreds of thousands of tonnes each year," she said.

"Reef Catchments and the MWI region have set the benchmark for WQIP's across Queensland and will now lead the update process and target setting for 2021. We are taking steps to ensure our reef and waterways are maintained for future generations to utilise and enjoy."

To view an interactive map and comment on the draft Catchment Condition Report for your area, visit [www.reefcatchments.com/wqip](http://www.reefcatchments.com/wqip)

The development of the WQIP is done in collaboration with a wide range of stakeholders from the MWI region. Stakeholders form the Healthy Waterways Alliance and lead the WQIP review and update process by providing science and technical expertise, advice and feedback. **The Alliance membership includes – Mackay Regional Council, Whitsunday Regional Council, Isaac Regional Council, the Great Barrier Reef Marine Park Authority (GBRMPA), Queensland Government, James Cook University, CQUniversity, Canegrowers, Ports Authorities and regional tourism and commerce representatives.**

## New industry groups will help establish best practice frameworks for forestry, horticulture and fisheries

**Best practice frameworks to encourage innovation and efficient production have been taken up strongly by the local sugarcane and grazing industries. Now, three more sectors will build on the success of ABCD frameworks.**

New regional bodies have been established to represent forestry, fisheries and horticulture in the Mackay Whitsunday Region.

The groups will provide landholders across the region with targeted, practical extension, advice and support.

Participating landholders will be assisted to progress from C Class (common practice) to B Class (industry endorsed best management practice) up to A Class – where farmers take part in activities and trials that go one step above what others are doing, known as aspirational or innovative practice.

The groups will be facilitated by Reef Catchments new Regional Landcare Facilitator, Johnelle Stevens. Ms Stevens said a series of extension activities to benefit landholders would be developed.

"In the areas of fisheries and horticulture, these activities will be hands-on and practical, to help our landholders adopt cost effective practices that support more sustainable land management decisions. For example, focus might be on managing erosion or improving soil and landscape health," she said.

"Forestry is slightly different, as there has been a limited focus on the forestry industry in Mackay Whitsunday to date. Initial focus will be on developing a four-tier ABCD management framework to identify practices that go further than the current code of practice."

The three new groups are currently inviting landholders and community members with knowledge in forestry, fisheries and horticulture to step forward.

Group members include landholders, industry members, government representatives and members of regional councils, QDAFF, the Central Queensland Forestry Association, the Queensland Seafood Association, GBRMPA and regional NRM Groups.

Contact Johnelle on 0457 306 152 to learn more.

PROGRAM UPDATES

## Ongoing Pond Apple vigilance essential in Mackay and Whitsundays

### Wetlands Update

Reef Catchments is currently assessing the condition of some of the regions significant wetlands to benchmark their current condition and assess any changes over time.

The assessment is part of the Paddock to Reef (P2R) program and uses a Wetland Field Assessment Tool for Monitoring (WFAT -M) developed by the Queensland Department of Science, Information Technology, Innovation and the Arts (DSITIA). The tool utilises a desktop review of the wetland and also field validation work to provide a score on the overall health of the wetland.

Previously under the Paddock to Reef (P2R) program only an indication of any change of the extent of region wide wetlands was recorded. Under the new P2R program there is greater emphasis on benchmarking important regional wetlands in 2014, and then again assessing them in 2017 to provide greater understanding of the health of the wetlands and the surrounding landscape.

The focus of the P2R wetland assessments is palustrine (i.e flood plains) and lacustrine wetlands (i.e lakes), however Reef Catchments will also look at important riverine wetlands to improve knowledge and understanding and will include wetlands as a component of the updated Water Quality Improvement Plan.

The wetlands that have been selected include: the Goorganga Complex, Keeleys Rd Wetland, De Moleyn's, Cherry Tree or Duff creek wetland, Tedlands complex and Carmilla Wetland.

An infestation of a national weed of significance is being slowly but surely eradicated from the Mackay and Whitsunday region.

'Pond Apple' (Annona Glabra) is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts.

Infestations were first reported in Mackay in 2009, with outbreaks identified in Andergrove and more widely in the Reliance Creek and Pioneer River Catchments.

The first Pond Apple project, which finished in 2013, was a collaborative effort between project partners including Reef Catchments, the Queensland Government, Mackay Regional Council (MRC), Pioneer Catchment & Landcare Group (PCL) and the Mackay Regional Pest Management Group.

Since then, State Government funding has been secured for another three years, in order to ensure that regular surveys are carried out, so that the seeds or plant material left in the area after the original project are not able to re-establish the infestation.

A recent aerial survey showed that there are no large infestations which had previously been missed. Ongoing boat and on-ground monitoring will continue until the seed bank has been

depleted.

This month, a team from PCL, MRC and Biosecurity Queensland carried out a survey on foot and discovered 12 new Pond Apple seedlings. These were removed by hand.

CEO of Reef Catchments, Rob Cocco, said this result demonstrated that ongoing vigilance was essential in order to capitalise on several years of intensive on-ground eradication activity.

"Pond Apple is considered an environmental weed, however it also has potential to significantly impact local cane and grazing industries, given its ability to grow aggressively in creeks, fencelines and farm drains," Mr Cocco said.

"Through continued support and funding from the Queensland Government, the Mackay and Whitsunday region may now be on track to be one of the first areas in Australia to eradicate Pond Apple."

There is also exciting new DNA detection work being undertaken by Biosecurity Queensland on a method which may one day allow water samples to be analysed to detect the presence of Pond Apple (or other significant weeds like Mimosa pigra) in a sub-catchment. This has the potential to reduce the cost, and increase the efficacy of weed monitoring.

RIGHT: Shelley Molloy (Mackay Regional Council) and Lalith Gunasekera (Biosecurity Queensland), survey for Pond Apple on Reliance Creek.

BELOW: Pond Apple flower.



## Reef Catchments rainfall simulation program

Understanding the real water quality implications of management practices in agriculture and urban environments can be costly and time consuming but is important in understanding and prioritising change. To help with this Reef Catchments has acquired a rainfall simulator built by the Department of Natural Resources and Mines in Toowoomba.

The rainfall simulator allows us to simulate a rainfall event of a set magnitude and time in any environment. A plot is created and run off collected and analysed for contaminants of interest.

The rainfall simulator has been used under the direction of Ken Rohde,

Reef Catchments Coordinator of Water Sciences, to gather information from a sugarcane trial site at Marian. The site had previously been set up for permanent monitoring, however persistent flooding had made it difficult to analyse the results. The rainfall simulator allowed Reef Catchments staff to gather results from four treatments in a short amount of time with sound results.

Over the past couple of months Reef Catchments has also run demonstrations, using the rainfall simulator to illustrate the benefits of sugarcane management practices, such as green cane trash blanketing and minimum tillage. These sessions are

fun, interactive and provide a clear message to participants.

Reef Catchments will use the rainfall simulator to work with landholders, researchers and industry partners to improve our understanding of water quality at the paddock scale. We also have plans utilise it to build knowledge around urban water quality issues. If you have a project where you think this equipment could add value, please give us a call.

Reports from all Reef Catchments programs are available from our website or by contacting our offices.

BELOW: Reef Catchments rainfall simulation demonstrations.



### Rainfall simulation Case Study: Nitrogen losses in sugarcane at Marian

**Site description:** Hand harvested cane with green cane trash blanket and no cultivation on a duplex soil (loam over clay). The simulation took place in late March at the end of the Mackay wet season.

#### Key findings

Rainfall simulation on sugarcane treatments for this study reinforced what has been found through paddock monitoring in previous studies.

- Total runoff across cane row plots of 1.8m size was similar, however runoff was reduced in the skip row plots (also 1.8m).
- Sediment concentration in runoff was higher in the skip area than in the cane rows.
- Nitrogen loads in runoff increased with higher nitrogen rates.
- Annual phosphorous applications doubled concentrations and loads of phosphorous in runoff six months after application when compared to no treatments with no application (six easy steps recommendation was for no phosphorous).

Treatments	Soil management	Nutrient management
Treatment 1	1.5 m current practice	197N kg/ha 20P kg/ha
Treatment 2	1.8 m controlled traffic	197N kg/ha 20P kg/ha
Treatment 3	1.8 m controlled traffic	159N kg/ha 0P kg/ha
Treatment 4	1.8 m controlled traffic	159N kg/ha 0P kg/ha
Treatment 5	1.8 m controlled traffic, skip row (plant and skip)	159N kg/ha 0P kg/ha (planted area) 0 N kg/ha 0P kg/ha (skipped area)

Applied as Wilmar BioDunder

## System Repair projects a priority in Mackay and Whitsundays



From bank stabilisation and riparian revegetation to sediment detention basins and wetland restoration - Reef Catchments has been working with landholders in the Mackay and Whitsunday region to deliver a diverse range of System Repair projects, funded through the Australian Government Reef Programme.

Reef Catchments Healthy Waterways project officer, Chris Dench, said the response from landholders a year into the program was excellent.

"As a result, Reef Catchments is undertaking four System Repair projects within the Mackay Whitsunday region. These projects look to build resilience into the landscape to be able to deal with future pressures and ultimately improve the health of the Great Barrier Reef and the surrounding reef catchments."

Three of the projects are river basin improvement projects, with the fourth looking to address issues from urban development in coastal areas.

"The O'Connell and Plane Creek River Basins were both selected for their high ecological value and good relative water quality. The third river basin, the Pioneer, was selected as it is the most intensively developed agricultural area in the Great Barrier Reef landscape," Mr Dench said.

"Our coastal environments have been heavily fragmented and impacted by the growth of the urban footprint, so our urban development centres are also being targeted."

The focus of projects in the O'Connell and Rocky Dam Basins is on improved ecosystem health to deal with future pressures, while further improving water quality and landscape connectivity. A key component is Reef Catchments work with landholders to directly improve bank stabilisation and riparian vegetation along rivers, while also opening up aquatic habitat with the removal of fish barriers.

"High priority sites have been identified and prioritised within the basins, which will provide the greatest reduction in pollutant loads," Mr Dench said.

Work in the Pioneer Basin differs slightly, with the primary aim to significantly improve water quality through a treatment train approach. A series of targeted bio-retention systems and constructed wetlands will protect downstream freshwater, estuarine and marine environments.

"The treatment trains will provide multiple opportunities for water to be treated to reduce nutrient, chemical and sediment loads as it makes its way through the landscape and ultimately out into the Great Barrier Reef lagoon," Mr Dench said.

The system repair work being carried out in urban areas aims to improve condition and restore connectivity through revegetation, strategic weed control, installation of fishways, and the construction of artificial wetlands to improve the quality of water leaving urban development centres.

"Together, these System Repair projects complement the water quality grants projects being undertaken through the Reef Programme, and improve total water discharge from the Mackay and Whitsunday region."

**For more information contact Reef Catchments – [chris.dench@reefcatchments.com](mailto:chris.dench@reefcatchments.com) or (07) 4945 2321**

## New resource for battle against weeds now

A new book is available to help landholders identify and control weeds.

*Weeds of the Mackay Whitsunday Region* and its companion booklet *Control Options for Weeds of the Mackay Whitsunday Region* have been published by The Mackay Regional Pest Management Group (MRPMG).

Chairperson for the MRPMG, Ms Christine Peterson said the book was an invaluable resource for farmers, rural residential owners, contractors

and Landcarers.

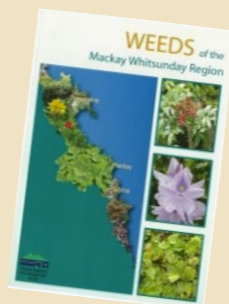
"With nearly 250 weeds detailed, the book is a comprehensive source of information on the prevalent weeds in the region. It will help with the first step in weed control; correctly identifying weeds. To help with the next step – weed control – the companion book has been developed and details control options," she said.

Copies of the books have been given to the town libraries or can be purchased from Reef Catchments, regional Landcare groups,

Canegrowers district offices and Mackay Area Productivity Services.

The book was funded by the Queensland Government via Reef Catchments, Mackay Regional Council and MRPMG.

**To purchase a copy (\$35.00) contact Reef Catchments (07) 4968 4200 or [info@reefcatchments.com](mailto:info@reefcatchments.com)**



## Growers encouraged to access Reef Programme farm

Activities funded through the Australian Government Reef Programme are off to a strong start, with more than 160 growers in the Mackay and Whitsundays taking the opportunity to draw up farm plans to increase their nitrogen, pesticide and nutrient efficiencies.

However Reef Catchments Sustainable Ag manager, Rob Hughes, said there was plenty more time for growers who had not yet applied to be involved.

"We are now entering the second year of the programme, with Australian Government funding available via Reef Catchments for landholders in the Mackay and Whitsunday region," Mr Hughes said.

"Funding is currently available over a three year period for a range of activities, including EC mapping, soil testing, planning and extension support and precision agriculture planning improvements and equipment. We are strongly encouraging growers to contact us and fill out an Expression of Interest to learn more about what is on offer."

Mr Hughes said landholders would also be supported to apply for a second round of water quality grants to potentially fund further activities and resources, for example, machinery.

The Australian Government Reef Programme (formerly Reef Rescue) has a strong history of success in the Mackay and Whitsunday region, with 946 farmers previously involved.

All work is ultimately aimed at encouraging on-ground practice change and improving understanding of practice change on water quality and productivity. The programme also seeks to provide a benchmark for industry by measuring the impact of change across the sugarcane, grazing and horticulture industries in relation to Reef Plan water quality improvement targets.

Involved growers are given the support they need to run their businesses more effectively, productively and sustainably, with a long term focus.

**What's the next step?**

*If you are interested in learning more, contact Reef Catchments to request an Expression of Interest form. Phone (07) 4968 4200 or send an email to: [info@reefcatchments.com](mailto:info@reefcatchments.com)*

BELOW: Australian and South American farmers stand in front of a mixed lettuce farm in Costa Rica, planted out on a Keyline pattern.



## South American growers share their experiences

*"They couldn't speak a common language but they spoke the language of soil"*

**When 17 Australian farmers took a trip to Mexico, Costa Rica and Ecuador they discovered they had plenty to learn from South American farmers who were facing and meeting the same challenges as themselves, including rising costs, water charges and declining soil health.**

Farmers from the Mackay region were invited to learn from and share the experience, brought alive on the screen.

On May 9, RegenAG® hosted a film night focused on agriculture – the RegenAG® MasHumus Farm Study Tour of Latin America. The event was supported by Reef Catchments and Mackay Regional Council.

Organiser and co-founder of RegenAG®, Kym Kruse, said it was an unmissable opportunity for Mackay farmers to learn from growers in another part of the world facing similar conditions and issues.

"In South America, the farmers are facing many of the same pressures our farmers are facing, without protection through tariffs," Mr Kruse said.

"They couldn't speak a common language, but they spoke the language of healthy soil. It was great to see the Australian and Latin farmers all down on their haunches together, touching, feeling and tasting the soil!"

"They showed us how they had been addressing the common pressures, with a biological approach to their production and co-operatives that support their interests. The health of their soil had improved, productivity had increased and their input costs had reduced, as had their water usage. These lessons can now be shared."

Reef Catchments is planning to run demonstrations of the Mashumus system on a sugarcane farm and a grazing property over the next few years.

*To obtain a copy of all 12 films on DVD (AU\$20 + postage) contact [info@regenag.com](mailto:info@regenag.com)*

# Field Day showcases diverse on-ground works



Reef Catchments members and stakeholders Field Day was held in May, bringing together a diverse group of people to learn more about the wide range of natural resource works being undertaken in the Mackay Whitsunday and Isaac regions.

Participants toured Mackay and surrounds by bus, visiting a range of operational sites and on-ground works – from beaches and wetlands, to fish barriers and rainfall simulation.

Reef Catchments CEO, Rob Cocco, said the day allowed people to gain a better understanding of the diverse scope of Reef Catchments.

“All these projects are connected and help link our region by strengthening our natural assets and improving our capacity to manage natural resources in a way that benefits our economy, community and lifestyle,” Mr Cocco said.

“Reef Catchments programs have spanned more than 800,000 hectares in the Mackay, Whitsunday and Isaac region, from a sub-catchment to landholder level.

“With that kind of footprint, it can be difficult for people to be aware of the full range of natural resource works happening. The Field Day aimed to help the community learn more about NRM projects, including those they can be involved in.

“Reef Catchments work is done in collaboration with a wide range of partners, including government, industry, community groups and landholders to name a few.”

First off was a trip to the Northern Beaches, where participants learnt more about the major works being

done on Bucasia Beach to reinstate a functioning dune system and build natural resilience against weather events and erosion.

“The Bucasia Beach project is a key coastal initiative being implemented by Reef Catchments in partnership with the Mackay Regional Council,” coastal coordinator Kerri Woodcock said.

“Reef Catchments works heavily across the Mackay and Whitsunday coast and islands. In 2013, key achievements with our project partners included stabilising dune systems with more than 5,000 native seedlings, the control of invasive weeds in 168 hectares of native vegetation and the installation of over 770 metres of coastal fencing.”

Delegates then headed to the Mackay Regional Botanical Gardens to view fisheries and planned wetland construction work.

“We are working to remove barriers to fish passage across the region, to build up population and diversity of native fish species and to strengthen aquatic ecosystems. In a region like Mackay and the Whitsundays, this is a key focus, with fishing and fish health so important from both an environmental and recreational perspective,” said aquatic systems officer Matt Moore.

“We are also very excited about Stage 2 of the project, which will include the construction of wetlands over a large and currently unutilised area of the Mackay Regional Botanical Gardens.”

Third stop was the property of Rodney Lamb, Eton cane grower and winner of the 2013 Reef Rescue Sugarcane Farmer of the Year award.

“Rodney, Reef Catchments and the

DNRM have been dedicated partners in the delivery of paddock scale water quality monitoring for five years, with commitment to continuing for another two,” said water science coordinator Ken Rohde.

“Thanks to this partnership we are able to monitor and measure the impact of various nutrient and chemical applications on run off, and help use these results to facilitate improved practice and water quality on a wider scale.”

Reef Catchments rainfall simulator was also demonstrated on site.

“This allows us to measure runoff and water quality in a range of rainfall scenarios, which are replicated by the simulator,” Mr Rohde said.

The final stop for the day was a large natural wetland being rehabilitated on the property of Pioneer Valley cane farmer, Shane Cowley.

“Reef Catchments is working with landholders to undertake a range of what are known as ‘System Repair’ projects,” waterways coordinator Adam Folkers said.

“These projects look at improving water quality and ecosystem health, including in the Pioneer River Basin, which covers some of the most intensively farmed agricultural land in the Great Barrier Reef catchments. In this area, works will include the creation and maintenance of artificial wetlands, sediment detention basins and irrigation re-use structures.

“In the Plane Creek and O’Connell River basins, projects also include in-stream works like fish barrier removal and the construction of fishways, bank stabilisation and riparian revegetation.”

## Microwave tech feedback



Feedback from participants who attended the microwave technology workshops in Mackay and Proserpine.

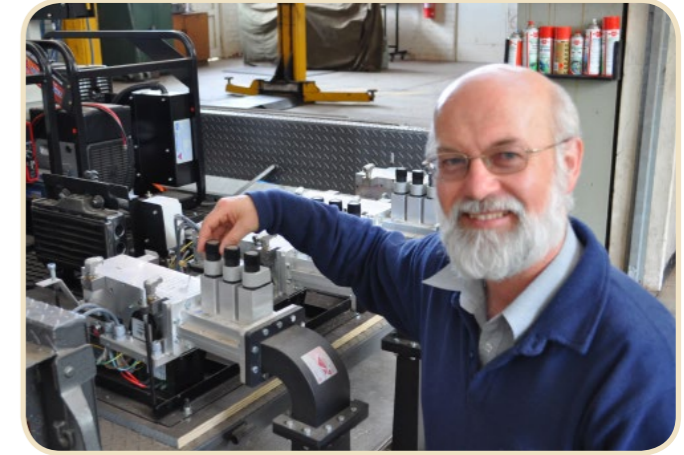
### What was of most interest to you?

- *The concept - future potential*
- *The applications of using microwave technology*
- *Broad range of applications. Very interesting potential*
- *A new idea for weed control with no herbicides*
- *Increasing soil productivity, proactively killing off the seed-bank before planting.*
- *Cleaning up the seed bank and improving hay quality*
- *The wide range of uses*
- *Potential use in the cane industry*
- *Weed control and plant germination*
- *Weed and seed control*
- *The whole concept is fascinating and provides a valuable alternative to current activity*
- *Application to pyrolysis / biochar from bio-waste*
- *Treatment of fruit for biosecurity (mangoes)*

### What uses of the technology would you like to see explored?

- *Weed and grass control*
- *Trials*
- *Weed control (and cooking crabs and prawns on the tractor)*
- *Weed control in row crops*
- *Weed control & sugar milling efficiency*
- *Development of a commercial machine*
- *Fallow application*
- *Better germination of plant cane*
- *Weed control + all uses – keep an open mind*
- *Pre-planting*
- *Weed control and plant germination*
- *Application to weed management and fallow management*
- *Trials in environmental weeds*

# Weed Microwave Tech is “fascinating”



LEFT: Dr Graham Brodie with his weed microwave prototype machine.

Could the same technology used to microwave last night’s pizza control the weeds on your farm?

Local growers, horticulturists and agricultural extension and research providers were fascinated to find out more when Dr Graham Brodie presented information on his prototype weed-killing machine at Reef Catchments weed microwave technology workshop in June.

The machine works by cooking emerging weeds and steaming the seeds in the top layer of soil.

The technology was originally developed for application to grain crops, in collaboration with Australia’s Grains Research Development Corporation and Rural Industries Research and Development Corporation. However, it has potential to be adapted to work any agricultural system, including sugarcane and horticulture.

Dr Graham Brodie, currently with the University of Melbourne, is originally from the Mackay region. He held two presentations in Mackay and Proserpine to share his work with interested farmers and ag representatives.

Dr Brodie said microwave technology could provide an alternative to herbicides, particularly in cases where weeds have developed herbicide resistance or where residual weed seed is an ongoing problem.

With microwave energy, the weed plant effectively dies of heat stroke.

“The microwaves excite the water molecules in the plant, cooking the stem and killing the seeds by energising water in the soil to steam them,” Dr Brodie said.

“The application will depend on the need. In particular this system could be really useful where there are problems with herbicide resistance, where chemical use is limited, or where weeds have long-lived seeds.”

Wind or rain does not affect microwave weed treatment, with potential to extend the application periods compared with conventional spraying methods.

## Farming and fishing come together at Ag Trade Life

**Mackay and Whitsunday farmers' love of the land can only be matched by one thing... fishing.**

The two were combined by Reef Catchments at this year's CANEGROWERS Ag Trade Life event.

Reef Catchments partnered with local business Tackle World Mackay to offer a tempting fishing prize pack to one lucky landholder.

Winning North Eton cane farmer, Michael Attard, said he was thrilled – and that farming, soil health and water quality were all connected.

"We (sugarcane growers) go from generation to generation, and are thinking about the future. Soil health is a big issue – when you improve soil health you can bring your productivity up, your inputs down, and improve water quality," he said.

Mr Attard has been involved in the Reef Programme (formerly Reef Rescue) for more than five years. He has experimented with inputs aimed at soil health and brews a range of fertilisers on-farm.

"Over time we have reduced our salt based fertilisers and introduced elements like micronutrients, seaweed, fish and molasses. Our water holding capacity has gone up and we have increased organic carbon in the soil from below 1 to around 1.3. We have also noticed that it now takes more rainfall to produce runoff on our farm," he said.

Andrew Elworthy from Tackle World Mackay said the



ABOVE: Winning landholder Michael Attard (left) with Andrew Elworthy from Tackle World Mackay and Reef Catchments CEO, Rob Cocco.

business was happy to support local agriculture and a sustainable approach, including to fishing.

"Most farmers are fishermen and there are not too many farms without a boat in the shed!" Andrew said.

"We are happy to partner with organisations (such as Reef Catchments), we are a local business and we want to put back into the community."

## Project Catalyst Mackay Whitsunday grower trials 2014

Mackay Whitsunday Project Catalyst sugarcane grower innovation trials are managed by independent agronomists from Farmacist with economic analysis undertaken by Queensland Department of Agriculture Forestry and Fisheries.

The trials focus on interests of the grower group and are run over a number of years with data updated and shared annually. Each trial investigates a practice that has the potential for sustainability and water quality benefits along with economic and productivity improvements.

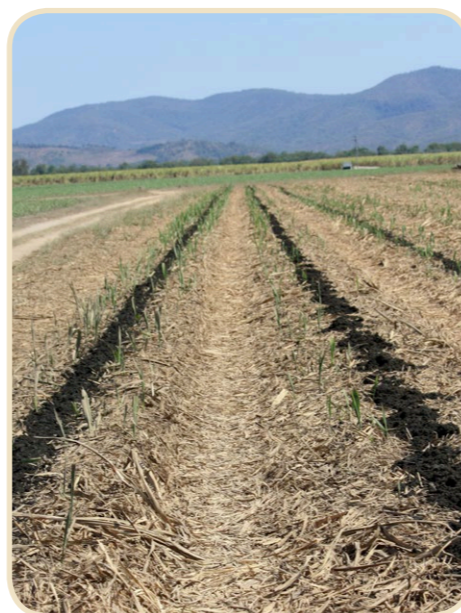
Project Catalyst focuses on innovations that can be adopted across the sugar industry in the long term. As these trials progress information will be made widely available. Not all trials

will work out as anticipated, however learnings are documented and shared as understanding what does not work can be just as important as knowing what does.

### Trials being implemented by Project Catalyst for 2014:

- Development of herbicide strategies based on the spatial location of different weed pressures
- Identifying the benefits of extended fallow in farming operations
- Evaluation of controlled release urea
- Variable rate nutrient applications based on yield zones

- Evaluate Variable rate overhead low-pressure irrigation based upon distribution of soil properties



## PROJECT CATALYST

## Hamilton Island hosts Project Catalyst Forum 2014



RIGHT: Lou Raiteri (Catalyst grower), Michelle Allen (Coca-Cola), Will Higham (Reef Catchments) and Dave McLaughlin (Vice President of Agriculture, WWF United States).



**Cane farmers swapped tractor seats for smooth sailing when they set off to Hamilton Island for the Project Catalyst Growers Forum 2014.**

The annual event attracted over 150 delegates from Australia and globally and celebrated the good work of more than 70 Catalyst cane producers from Mackay Whitsunday, the Burdekin and the Wet Tropics.

Now in its milestone 5th year, Project Catalyst is a pioneering partnership between cane farmers, the Coca-Cola Foundation, WWF, the Australian Government and Natural Resource Management Groups (Reef Catchments, Terrain Natural Resource Management and NQ Dry Tropics).

The 2014 forum was coordinated locally in Mackay and the Whitsundays by Reef Catchments with major sponsors including Syngenta, Wilmar and Bayer CropScience.

Reef Catchments sustainable agriculture project officer, Belinda Billing, said the forum was a critical part of inspiring growers to learn about and adopt improved and more sustainable methods for sugarcane production.

"Since 2008, Project Catalyst farmers have reduced agricultural runoff to the Great Barrier Reef by more than 62 tonnes each year and brought more than 204,300 hectares of farmland under A-class management – a terrific outcome."

Project Catalyst farmer Lou Raiteri hosted the 2014 Field Day on his property, north of Proserpine and said

Project Catalyst fitted in with what growers were trying to do.

"I'm a third generation grower, my family has been on the same property for over 85 years and my son is coming on to take care of the farm. This land is still taking care of us after all that time and I think it is our responsibility to look after what we have.

"What Project Catalyst does is bring together likeminded growers with enthusiasm who are all ready to try something new. It gives us the support we need to step out and raise the bar and challenge ourselves – we can look up and say 'ok, there's the benchmark' and we find new ways to reach it. It's remarkable what comes out of it."

Michelle Allen, from Coca-Cola South Pacific, said the Coca-Cola Foundation funded Project Catalyst because it provided the holistic resources farmers needed to pioneer new and promising sustainable agriculture advances.

"We provide financial support to enable growers to speed the adoption of innovative sugar cane practices which can lead to tangible improvements in water quality. Integral to Project Catalyst's success, it is the growers who are the ones generating the ideas, they are the ones leading Project Catalyst's success," she said.



# Land and Water

## PROJECT CATALYST

*Continued from previous page*

Keynote speakers included Dave McLaughlin, WWF Vice President of Agriculture (United States) and Dr David Cropley, University of South Australia Associate Professor (Engineering Innovation).

Dave McLaughlin's presentation on the global view of agriculture and the acknowledgement that yield is a key part of sustainability resonated with growers.

"The real issue is not about the commodity being produced, but rather how it is being produced. ... crop yield needs to be a key sustainability indicator," Mr McLaughlin said.

"Although there are trade-offs between yield, inputs and agricultural practices, many opportunities exist to increase yield through improved varieties, reduced waste and improved fertilisation practices, harvesting and overall crop management."

Ms Billing said Catalyst growers had been doing exceptional work on-farm

for five years now.

"The Project Catalyst forum is an important platform for networking between innovative, motivated farmers, to help them explore new ideas and concepts for the future," she said.

"The forum this year helped growers to identify what they see as priorities for ongoing research, development and extension in the areas of herbicide management, nutrient and soil management and water quality."

WWF Sustainable Agriculture Program Manager, Rob Cairns, said Project Catalyst brought together a diverse group of people with the ability to effect real change.

"The challenges facing agriculture and the Great Barrier Reef are immense and all stakeholders need to work together like never before," Mr Cairns said.

"Project Catalyst brings a diverse group of people and organisations together to trial and validate practices that are good for farmers, good for the community and good for the reef. We can all be very proud of this collaboration, as well as the outcomes achieved so far."



## Contact Reef Catchments

### Mackay Office

**P:** 07 4968 4200

**F:** 07 4968 4228

**E:** info@reefcatchments.com

Suite 1/85 Gordon Street  
Mackay QLD 4740

PO Box 815  
Mackay QLD 4740

### Proserpine Office

**P:** 07 4945 2321

**F:** 07 4968 4228

**E:** info@reefcatchments.com

45 Main Street  
Proserpine QLD 4800

PO Box 1096  
Proserpine QLD 4800

This newsletter is produced by Reef Catchments - the Natural Resource Management organisation for the Mackay Whitsunday Isaac (MWI) region. For more information on any of the articles in this newsletter, or to submit a story idea for the next issue, please contact Reef Catchments on (07) 4968 4200.

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