Project Catalyst Grower Forum 2013

Pullman Reef Hotel Casino CAIRNS

25-27 February, 2013

REEF CATCHMENTS

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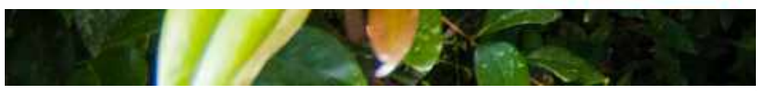

Project Catalyst Grower Forum 2013

Welcome

A big welcome to the family that is Project Catalyst, comprised of our partners, growers, collaborators, and sponsors. Your involvement and commitment to Project Catalyst over the past 12 months is very much appreciated.

The 2013 annual Project Catalyst forum marks the end of four years' of operations. We come to Cairns this year to learn what we have both individually and collectively achieved over the past 12 months. Equally the forum offers opportunity for delegates to talk about future aspirations and ideas and perhaps most importantly reflect and take pride on the efforts, outputs and outcomes that have been realised.

As one of the individuals who has been involved in Project Catalyst from day one it is astounding that in the short space of four years we have moved from a project with twelve cane farmers in one region to one that has almost 80 farmers, stretching from Sarina to Cairns. Entering into year five of Project Catalyst we are seeing strong interest from producers as far south as northern NSW and global sugarcane cane growers desiring to be part of our family; all with the ability and desire to share their knowledge and experience.

External validation of the merits of Project Catalyst can be evidenced through the high number of rural production and sustainability awards won both domestically and internationally. Even more important is the validation of Project Catalyst through the ongoing commitment that our partners and growers offer to the initiative.

While the program has its detractors and those that question it motives the fundamental purpose of Project Catalyst is simple. The program seeks to showcase that sugarcane farming can be sustainable and can in fact be a land use activity that provides substantial benefit to the environment, the community and the rural producer.

The initiative also seeks to showcase the benefits of grower lead research, development and extension through innovation and continuous improvement. Project Catalyst showcases the benefits that come from sharing this cutting edge practice information and knowledge with other growers via structured and supported programs which support on farm experimentation.

I wish to take this opportunity to thank the sponsors for their support for the forum and look forward to sharing knowledge, experiences you have each amassed over the past twelve months.

Rob Cocco
CEO Reef Catchments

Cover: Cane field Mackay, credit Reef Catchments; Great Barrier Reef, credit Australian Institute of Marine Science, Rainforest, credit Terrain.

Guest presenters

Peter Kuhlman

(Inspirational Forum speaker)

Peter Kuhlmann is the 2012 Farmer of the Year and Grain Grower of the Year.

The Kuhlmann family have farmed at Mudamuckla on Western Eyre Peninsula in South Australia for 101 years.

It is one of the driest cropping regions in Australia receiving an average rainfall of 291mm (11.45”).The annual cropping program is about 6,500 hectares of mostly wheat.

Peter has been heavily involved in grains research from doing on farm trials, hosting a focus paddock to chairing the Eyre Peninsula Agricultural Research Foundation and the South Australian Grains Industry Trust.

Peter is an early adopter of technology and uses no till, fluid fertiliser and precision farming.

Qualifications

- Associate Diploma in Farm Management (Dux) from Roseworthy (University of Adelaide)
- Private pilot
- Australian Rural Leadership Program Course 6 graduate
- Fellow of the Australian Institute of Company Directors

Dr Jennie Gilbert

(Dinner speaker)

Dr Jennie Gilbert is an experienced zoologist, veterinary technician and a post-graduate researcher of marine turtles at James Cook University, researching the implications and threats to marine turtles and post rehabilitation success using satellite tracking.

Jennie and her husband run a large veterinary clinic in Cairns and in 2000, Jennie also co-founded the Cairns Turtle Rehabilitation Centre (CTRC) with fellow marine biologist Paul Barnes which relies solely on grants and donations.

CTRC is a non-profit organisation dedicated to the rehabilitation of sick and injured turtles. The Centre has an 80-85% survival rate for its patients.

With the Great Barrier Reef home to six of the world’s seven species of marine turtles, which are threatened by a range of both natural and human-induced factors, CTRC works towards overall sea turtle conservation as well as caring for individual turtles.

With a Bachelor of Science (Zoology/Marine Biology) from James Cook University and a Graduate Diploma of Research Methods, Jennie is currently completing her Masters and upgrading to a PhD.

Project Catalyst Forum 2013

Agenda

Monday, February 25

Welcome function, sponsored by Rabobank

Venue: Pool Deck and Coral Lounge; Pullman Reef Hotel Casino, Cairns 6 – 8pm

Prepare for the Forum with some social drinks and nibbles and enjoy a presentation by Marc Oostdijk, Head of Sustainable Business Development, Rabobank.

Tuesday, February 26

Grower Forum (Innovation presentations)

Michaelmas Cay Ballroom; Pullman Reef Hotel Casino, Cairns

7.30am registration, presentations 8.00am – 5pm

This will be a day of Industry and Project Catalyst grower presentations with plenty of time for questions and informal discussion. Presentation topics by the growers include improved soil, chemical, nutrient, and water management activities. Growers will be supported by the DAFF QLD economics team, water quality scientists and precision agriculture advisors.

Participants can choose from three short (concurrent) workshops in the afternoon including getting the most from EM soil mapping, long range weather forecasting and a special event for wives and partners with Fiona George from Broken Nose Vanilla Farm, who was a finalist in the Farming Woman of the Year category of the Australian Farmer of the Year Awards.

SPONSORS: Nutrient Presentations: Sucrogen AgServices |Chemical: Presentations Syngenta | Water Presentations: The Coca-Cola Foundation |Soil Presentations: Bayer |Climate Variability Workshop: SRDC

Morning tea, lunch and afternoon tea provided.

Forum dinner

Urchins Ballroom with pre-dinner drinks at Arlington Bar, Pullman Reef Hotel Casino, Cairns 6.30pm till late

Enjoy a delicious meal and take the opportunity to catch up with your fellow cutting edge sugarcane growers and other special guests from industry, government and supporting organisations. The evening includes an introductory welcome by Terrain NRM followed by dinner and refreshments. Key note speaker Jennie Gilbert, Cairns Turtle Rehabilitation Centre.

Please arrive by 6.30pm and be seated by 6.45pm for 7pm start.

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Wednesday, February 27

Wet Tropics and Atherton Tablelands, sponsored by Bayer

Departing by bus from Pullman Reef Hotel Casino Entrance at 7.30am return 5.30pm

Visit two Project Catalyst cane farms in the Cairns area and then head up to the Atherton Tablelands to learn about innovation in a range of agricultural enterprises including mixed cropping, and grazing with a rural farm-stay. (Agenda page 33).

Please arrive at Hotel Entrance by 7am. Morning tea, lunch and afternoon tea provided.

Field trip social function, sponsored by WWF Australia

Arlington Bar; Pullmans Reef Hotel Casino, Cairns 6 .30– 8.00pm

Social drinks and nibbles mark the final event on the Project Catalyst forum agenda. This will be a good opportunity to relax together and discuss what we have learned on the field trip and the forum.

Thursday, February 28

On the way home…

Ingham Field Trip

Visit three Project Catalyst cane properties in the Ingham area. Self-drive to Ingham for a bus excursion departing a central pickup area at 11am. The trip is expected to conclude around 3.45pm. Light lunch and afternoon tea provided. (Agenda page 34.)

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Grower Forum

Presentation Day
Tuesday 26th February
Venue: Pullman Reef Casino, Michaelmas Cay Ballroom 1 & 2

7.30-8.00am	Registration (Tea and Coffee)
8.00-8.10am	Welcome and overview of the agenda: MC's Will Higham, Rob Cairns & John Reghenzani
8.10-8.30am	Reef Rescue Research Update: Jane Waterhouse, Reef Rescue Research & Development Project
8.30-8.50am	Inspirational Speaker: Peter Kuhlman, Australian Farmer of the Year 2012 – Cropping on the Edge
SESSION 1	
8.50-10.30am	Nutrients – Project Catalyst Grower Activity Updates **Sponsored by Sucrogen AgServices** Wet Tropics – Ray Zamora Bactivate to improve soil health Burdekin – Ian Haigh Variable rate sub-surface N application Burdekin – Chris Hesp Split nutrient application through an overhead irrigation system Mackay Whitsunday - Tony Bugeja and Rob Slugget Nutrient fertiliser efficiency trials
10.30-10.50am	**Morning tea**
10.50-12.10am	Herbicides – Project Catalyst Grower Activity Updates **Sponsored by Syngenta** Mackay Whitsunday – Phil Deguara Checkerboard application for cane grub control, stress shields and water sensors for irrigation Mackay Whitsunday – John Pastega Air assisted boom spray + automated controls on swing arm for centre pivot
12.10-1.10pm	Water – Project Catalyst Grower Activity Updates **Sponsored by The Coca Cola Foundation** Burdekin – Dennis Pozzebon A whole of farm system change, showcasing projects funded through Reef Rescue including; variable rate chemical application, variable rate liquid nutrient application, wavy disc coulter and legume mulcher. Wet Tropics – Michael Reinaudo Variable Rate Nutrient Application - Nutrition with water quality monitoring from CSIRO
1.10-1.50pm	**Lunch**

Wet tropics canefield, credit Terrain

Grower Forum

Presentation Day
Tuesday 26th February
Venue: Pullman Reef Casino, Michaelmas Cay Ballroom 1 & 2

SESSION 2	
1.50-3.10pm	Soil – Project Catalyst Grower Activity Updates **Sponsored by Bayer** Burdekin – Rob Ahern Soil biology improvement using microbes Wet Tropics – Steven Accornero Corn as a rotation crop Wet Tropics – Sergio Fighera Effective treatments for sodic soil
3.10-3.20pm	Closing comments, Forum Dinner and Field Trip Update
3.20-3.40pm	**Afternoon tea**
SESSION 3	
3.40-5.30pm	Workshops – break into 3 groups Workshop 1 – Inspired to innovate the Broken Nose Vanilla Story – Fiona George Michaelmas Ballroom 1 Workshop 2 Climate Forecasting with Climate Variability– Jeff Sabburg, Robert Quirk and Michael Waring: Michaelmas Ballroom 2 **Sponsored by SRDC** Workshop 3 – The MOSES Project, Increasing Efficiency in Sugarcane Farming through improved knowledgeJohn Markley and John Hughes
Evening	**Evening**
6:30 till late	Pullman Reef Casino arrival for dinner at Urchins1, Urchins 4 & Arlington Bar

Wet tropics sunset, credit Terrain

Grower Case Studies

CASESTUDY

Project Catalyst

IAN HAIGH

2012

Ian Haigh, a Project Catalyst farmer in the Burdekin.

IAN HAIGH

Project: VARIABLE RATE FERTILISER

Ian Haigh is a first generation farmer and has 240 hectares of land under sugarcane production at Brandon, near Ayr. The property is part of the Sheep Station Creek catchment area.

The land was originally timbered, before being turned into sugarcane in 1964. Ian is very interested in the improved application of nutrients, such as with variable rate technology, now that there is the capability to match specific inputs to crop-yield potential within blocks.

Ian is always interested in looking at new technology that is practicable and affordable; however this must be based on good record-keeping, as this leads to improved planning.

A sub-surface fertilizer box places nutrient in the crop's root zone

PROJECT CATALYST

IAN HAIGH
Project: VARIABLE RATE FERTILISER

Ian began implementing a Controlled Traffic System with 1.8m dual rows and a single row system with minimum tillage since 2005.

He would like to incorporate rotational fallow crops, such as legumes, however this is very weather-dependent.

Ian examines his farm mapping

Issue being addressed:

Now that Ian has upgraded to a GPS controlled traffic farming system he can now move towards using different fertiliser rate within farm block. It is likely that this practice will be more profitable than blanket rate application of fertilisers.

Solution being tested:

Ian will implement a Variable Rate Nutrient Management (Granular) system, based on yield maps, EM Mapping soil maps, elevation, block history and precision planning.

He will also implement variable rate application equipment including a fertiliser box, which has had Reef Rescue funding support.

A GPS unit and fertilizer flow rate controller inside the tractor

Results:

Ian has had a great result with his trail and in his own words "variable rate works like a beauty."

Since adopting this technology Ian has been able to expand it to variable rate gypsum.

Ian is looking to the future and plans on improving his farm by setting up a trickle irrigation trial.

What is Project Catalyst?

Project Catalyst is a pioneering partnership which reduces the environmental impact that sugar cane production has on the Great Barrier Reef (GBR). The project is 'grower led' – and involves a group of innovative farmers that are developing and testing management practices that improve the water quality of the water leaving sugar cane crops (termed A-Class practices)

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CASESTUDY

Ray Zamora

2012

Ray on his cane farm at Euramo

Ray Zamora

Project: Improving soil health using Bactivate

Ray Zamora has been growing cane for the last six years on his parents' property, about 8km west of Euramo, which is south of Tully in Far North Queensland.

Ray's parents purchased the 100 hectare property in the 1960s when his father took to growing cane.

During the slack season, Ray works at fixing harvesters and other farming machinery for farmers in the Euramo region.

Ray is interested in innovative ways of improving soil health, as he believes that after many decades of his family producing cane on the property, the soils could be healthier.

Ray believes soil health on his property could be significantly improved using Bactivate

PROJECT CATALYST

Ray Zamora

Project: Improving soil health using Bactivate

Issue:

With Ray's land having a long farming history, he began to suspect that the health of his soil was not as good as it could be. As such, he undertook some soil testing on his cane farm in order to look at the biological activity of his soil. The levels of activity shown, for Ray, confirmed his suspicions. Therefore, he has decided that it is an appropriate action for him to explore ways that he can improve the health of his soils.

The site of Ray's soil trial for Project Catalyst

Solutions being tested:

Ray is interested in trialing Bactivate, a natural tumbled coal dust coated with billions of bacteria. After the series of soil tests, a plan was developed to improve soil health in the block which was used for the soil testing. On the trial block Ray has strips where Bactivate is applied as well as strips where he is using his conventional farming practices. By using Bactivate, Ray is hoping to improve soil health and consequently, reduce his fertiliser usage. The strip trials will show if there is a difference.

A batch of Bactivate, the bacteria Ray is trialing, to see if it has a positive effect on soil health on his farm

Immediate results:

Ray's trial has been planted and he will get some early results when that crop of cane is harvested in 2013. Ray is hoping for long-term benefits coming from improvements in soil health. He does not expect to see immediate effects following the initial trial as he suspects benefits will come slowly over time.

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Michael Waring Precision Planning Coordinator, Project Catalyst Wet Tropics
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CASESTUDY

CHRIS HESP

2012

Chris & Sonya Hesp are innovative farmers for Project Catalyst.

CHRIS HESP

Project: Split N Application under Green Trash Blanket

Chris and Sonya Hesp have recently joined Project Catalyst in 2011. Their farm covers 600 hectares of sugar cane and is located in Clare on the Barrattas subcatchment.

This trial is about improving the amount of sugar from a green cane trash blanket system prior to harvest. Chris has noticed a decline in CCS with the conversion to green cane trash blanketing and thinks that split applications of fertiliser will address this in the future.

Chris has a long history with precision agriculture innovation starting out with the Mulgrave Area Farmers for integrated Action (MAFIA).

Continued over page

PROJECT CATALYST

CHRIS HESP
Project: Split N Application under Green Trash

Chris currently farms on a 2m GPS controlled traffic system and has recently moved towards precision fertiliser placement, permanent beds and zonal tillage. Approximately 30% of the farms is under green harvesting but if this practice continues to be successful, Chris is looking expand this area gradually over time.

Chris has also been trialling a lateral overhead irrigation system. With funding support from NQ Dry Tropics, Sugar Research and Development Corporation, For his efforts Chris' project won the Sugar Research Development Corporation Excellence in Regional Innovation Award for Burdekin in 2007.

Issue being addressed:

The aim of this trial is to improve his nutrient management by testing different fertigation technologies. Chris has made major improvements towards water use efficiency by using his over head irrigation system but would also like to build on his success by applying liquid fertiliser whilst irrigating.

If successful this will allow Chris to fertilise his crop without the need of disturbing the traffic zones on his farm.

Progress to date:

Chris is still in the early stages of his trial but analysis has predicted that the adoption of split rate N application will provide an economic benefit in Chris's sugarcane farming business.

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CASESTUDY

Project Catalyst

2012 Tony, John and Mark Bugeja

Tony Bugeja with Bruce and a crop of his sugarcane ready to harvest

Tony, John and Mark Bugeja

Project 2: Soil carbon strip trials with mill mud, mill ash, varied nitrogen rates and soy beans

Brothers Tony and John Bugeja, along with Tony's son Mark are second and third generation farmers in the Mackay Whitsunday region.

John controls the harvesting operation and assists with farming and irrigation when he is free from harvesting duties. Tony and Mark control all farming activities and assist John if help is needed with harvesting.

The Bugejas moved to a 1.8 metre controlled traffic system in 2006 after looking at the benefits of new farming systems and realising change was necessary to remain farming large areas with a minimal workforce. They have now converted 100% of their farms with a substantial reduction in machinery applications on their blocks.

Nutrient rates are changed from paddock to paddock and are calculated using a soil testing strategy based on an Electro Magnetic (EM) soil mapping which has been ongoing since 2002.

The Bugeja's herbicide application is adjusted annually and is based on weed type and pressure.

Legumes growing as part of Tony Bugeja's soil carbon strip trials.

Continued over page

PROJECT CATALYST

Tony, John and Mark Bugeja

Project: Soil carbon strip trials with mill mud, mill ash, varied nitrogen rates and soy beans

Management typically involves using some type of residual chemical banded on the stool with knock downs applied to the inter-row using a shielded sprayer.

"If we have a good crop we get a big trash blanket and we don't need to use much chemical at all. If we have a poor crop, like when we had a lot of flooding, then we have less trash and so need to use more," explained Tony who has been able to reduce residual herbicide use by 45% in his paddocks with good trash cover.

"The most important thing to remember is that we cannot be regimental, we need to be flexible and respond to the situation with the right chemicals applied in the best way," explained Tony.

The Bugeja's have opened their farm up to many trials over the years as they feel they are able to learn along with the researchers. "The reason I like to have trials done here is because I want to see how these different practices work on my farm, on my soil. I feel like I can see firsthand what really works," said Tony

Issue being addressed:

Over time soil carbon levels can become depleted through traditional farming practices. The Bugeja's are undertaking a series of strip trials to learn about increasing soil organic carbon levels to improve the health of the soil for a better crop and hopefully a reduced reliance on fertilisers. These trials are being undertaken as a partnership between Project Catalyst, The Australian Government's Carbon Farming Futures, Action on the Ground program and SRDC.

Solution being tested:

Strip trials have been set up to test the effect of different products on organic soil carbon levels. Prior to the trial the paddock was harvested for cane, the soil was worked and mounded with soybean grown as a fallow crop in January then worked into the soil. The soil carbon level was tested with an organic carbon mapping machine that uses NIR light reflective technology and soil tests were carried out.

The trial is currently in the fallow stage and is being treated with:

1 strip soybean	1 strip no soybean
1 strip mill mud + soybean	1 strip mill ash + soybean
1 strip bare + soybean	1 strip high N + soybean
1 strip – low N+ soybean	

Results:

This trial is in the early stages are there are currently no results.

Mark Bugeja repairs some farm machinery during the 2012 cane harvest

Ash being banded on the strip trials

What is Project Catalyst?

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Australian Government
Sugar Research and Development Corporation

clean energy future

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CASESTUDY

PHIL & JOHN DEGUARA

2011

John and Phil Deguara are innovative farmers for Project Catalyst.

Phil & John Deguara

Project: Chessboard application of insecticides

John and Phil Deguara have two farms in the Mackay Sugar district. One is at Beaconsfield (70ha) and the home farm is at Brightley (252 ha) where they have been farming since 1983. The southern branch of Sandy Creek flows next to their Brightley property, not far from where both branches meet just near Eton. Their family has a long history of being involved in cane farming in the district with John being a 3rd generation farmer and Phil is 4th generation.

In 2003 they began the conversion to Controlled Traffic farming system and after measuring their harvester, haul-out and tractor wheel spacing's, decided a 1.9m single wide row system would suit best. In that time they modified tractors and their planter to match the new row spacing and installed a GPS autosteer unit and base station.

Phil adds that they are seeing a real time saving in labour when coming into managing the new system and are looking forward to even more establishing the second crop cycle, maybe even some extra ratoons in a crop cycle with the compaction. As part of this new system they also plant legume crops such as soybean during the fallow period. This helps provide a cover crop during the wet season puts back organic matter and nitrogen into the soil to benefit and be utilised by the following cane crop.

Along with improving their soil management, John and Phil have been looking at ways to improve their farm nutrient and chemical management. This includes modifying their three row stool splitter fertiliser box to match their row spacing and the fitting of double discs for improved sub-surface application.

Continued over page

PROJECT CATALYST

Phil & John Deguara
Project: Chessboard application of insecticides

Phil says that he uses EM mapping, soil testing and the BSES Six Easy Steps recommendations to determine his nutrient requirements across the farm and the different fertiliser blends he requires.

For chemical management they are utilising a shielded sprayer to apply knockdowns in the inter-row and a high clearance spray rig to apply knockdowns at out of hand stage. They also installed a Viper Pro Variable Rate Control unit and this is used for both nutrient and chemical applications and has improved the efficiency and accuracy of operations across the farm.

Recently Phil and John have started to analyze yield data and soil EC maps to create management zones across their farms and started to understand the usefulness of combining data sets and spatial technology to improve planning and farming management practices.

Issue being addressed:

While they have been making big changes across their farms that can help improve their environmental and economic sustainability, they are not immune to the impacts of pest and disease. Over the last few years, John and Phil have seen an increasing problem with Greyback cane grub damage on their Eton property. They are currently treating half of their property with insecticides to stop cane stool damage from the cane grubs, and each year the proportion treated increases as does the cost of application.

Solution being tested:

Through Project Catalyst, John and Phil have decided to look at an alternative method of applying insecticides in their ratoons that can help reduce costs, reduce the risk of environmental losses and provide satisfactory protection against the cane grubs. In their plant cane, insecticide (SusCon Maxi) is applied conventionally by the billet planter and this provides protection from cane grubs for 2 years. Then in the latter ratoons, John and Phil are going to investigate a "patchwork" or "chessboard" application method to apply insecticides.

They are planning to have their blocks overlaid with a six metre x six metre grid of black and white squares. The aim is then in the second ratoon, insecticide (Confidor Guard) is applied to the "black squares" of the chessboard, while in the third ratoon, insecticide is applied to the "white squares". In the fourth ratoon insecticide is again applied to the black squares, and so on.

As they are only beginning the application of insecticides in the chessboard pattern, it remains to be seen whether the method successfully deters damage from cane grubs and helps maintain or improve crop productivity. At the same time there will be an economic analysis completed to determine the economic benefits from doing an activity like this.

Tractor showing GPS roof array and front tank where the Confidor Guard is carried.

Phil Deguara setting up his variable rate controller before heading out into the paddock.

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CASESTUDY

Project Catalyst

John and Helen Pastega 2012

Right: Helen and John Pastega.

Below: Side view of an air shield sprayer arm.

John and Helen Pastega

Project: Air shear boom sprayer for reduced chemical application

John and Helen Pastega have been at the forefront of change to farming systems throughout their farming lives. This drive to improve their farming methods has seen plenty of machinery modifications and changes as they implement new management practices.

Some of the more visible changes include adopting low pressure over-head irrigation using centre pivots to improve water use efficiency and improving soil health through wider rows, reduced tillage and rotational legume crops in their cane farming system.

They trialed various row widths before settling on a 2 metre controlled traffic system. This system includes using rotational legume crops in the fallow to provide a break crop and fix nitrogen that can be utilised by the next plant cane crop. With the support of Reef Rescue funding, they also purchased a zonal tillage unit in early 2009 to reduce the amount of cultivation required to go from their last ratoon into a legume fallow and back into plant cane. This system is in place across four farms managed by the Pastegas, the final hectare's changed in the 2012/13 planting season.

The Pastega's utilise EM maps and soil maps to put together an annual fertilizer plan. Rates are adjusted by paddock and they are trialing applying lime with variable rates within paddock on their Brightly farm.

Continued over page

PROJECT CATALYST

John Pastega

Project: Air shear boom sprayer for reduced chemical application

Issue being addressed:

In 2009, John and Helen were keen to look at how they could improve their herbicide management practices and maintain good weed control. With a reduction in cultivation across the farm, chemical control of weeds became an important activity, but this was not to be at the expense of the environmental sustainability outcomes they wanted to achieve.

Some of the main issues John and Helen wanted to address by improving their chemical management included:

- Traditional spray equipment causing drift through fine and medium size droplets being blown away by the wind.
- Maintaining the efficiency and effectiveness of reducing applications
- Areas with good trash blanketing getting caught on shields (used to prevent spray drift) and exposing soil and increasing weed growth
- Incorporating the use of the sprayer with on farm herbicide application plans and the AgDat remote unit to transmit information and store information on herbicide usage.

Plant cane on the Pastega's Marian property

Solution being tested:

John and Helen purchased are using the Hardi Air Shear Boom Sprayer which utilises wind assistance to deliver chemical to the target weeds to address the problems they were experiencing.

The Air Shield Sprayer blows air downward forcing droplets down towards their target and reducing spray drift when applying fine and medium droplet sizes. It is designed to have less spray drift in 8 to 9 m/s wind velocities than conventional sprayers. They believe they should also reduce the number of operations and passes by improving the effectiveness of applications.

The Air Shield Sprayer can be used for all chemicals, including knockdown and residual herbicides as well as pesticides.

Results

So far Helen and John are happy with their new technology. John says he can feel his chemical use has reduced by 20-30% and the records he keeps through his GPS unit reflect the savings. He says that he can visually see that the air shield makes a difference to the accuracy and effectiveness of application; however this year he will be working on a formal trial that will provide an accurate comparison of the Pastega's old methods of spray application and the new air shield.

John and Helen's air shield sprayer

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CASESTUDY

DENNIS POZZEBON

2012

DENIS POZZEBON

Project: Variable Rate Chemical application

Denis Pozzebon is a second generation farmer. His father originally started the sugarcane farm in 1957 and Denis now has 126 hectares under production at Airville, near Mt Kelly.

The property is part of the Sheep Station Creek catchment area.

His father originally started the sugarcane farm in 1957, since that time Denis has improved his input efficiency by upgrading multiple pieces of machinery.

Denis has tailor made his shielded sprayer to adopt variable rate application, this means Denis will only be spraying where is necessary.

This has resulted in a financial saving across the whole farm by reducing the total amount of chemical applied.

Continued over page

PROJECT CATALYST

DENIS POZZEBON
Project: Variable Rate Chemical application

Denis bases his fertiliser rates on site specific soil testing, electro-magnetic mapping, and yield data across his farm. This information allows him to change his input rates between blocks to improve that reduces waste.

To avoid monoculture, Denis rotates cow peas and mung beans and has been getting great results.

Denis has also developed a system to maximise his chemical use by adopting variable rate application across the entire far and a minimum tillage system using zonal ripping equipment and a single row billet planter.

Dennis with an example of his 2012 cane crop

Issue being addressed:

The main aims of Dennis' trial was to improve the efficiency in chemical application and reduce overall chemical use. Prior to using his new equipment Dennis was applying pre-emergents using standard spray boom to control weeds during the plant establishment.

Now with the shielded spray rig, Dennis can apply knockdown herbicides, such as Round-up, to keep the inter-row weed free and apply less residual herbicide in the long run.

Solution being tested:

Denis will implement a Variable Rate Chemical Application system on his property, based on yield maps, weed mapping and ground truthing.

Denis will also utilise the application of different chemical rates within blocks, via a shielded sprayer/boom, which is linked to a GPS/rate controller.

Dennis with his variable rate shielded sprayer

Results:

Early results indicate Dennis will benefit financially from this practice by savings made by a reduced chemical application over time. Other factors impacting the success of this practice are the efficiency gains in chemical application, size of farming enterprise and the capital investment required to make the transition.

What is Project Catalyst?

Project Catalyst is a pioneering partnership which reduces the environmental impact that sugar cane production has on the Great Barrier Reef (GBR). The project is 'grower led' – and involves a group of innovative farmers that are developing and testing management practices that improve the water quality of the water leaving sugar cane crops (termed A-Class practices)

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CASESTUDY

Michael Reinaudo

2012

Darren, Michael, Nelson and Victor Reinaudo, on their Ingham property.

Michael Reinaudo

Project: Variable rate nutrient application

Michael Reinaudo, along with his brother Darren, father Nelson and Uncle Victor, farm 750 ha in the Ingham, Lannercost and Bambaroo areas.The Reinaudo family has a harvesting contract and though they mainly harvest their own cane, they do a small amount of contract planting on neighbouring properties and within their local community.

Current farming practices include planting with a Mizzi mound planter on 1.83m wide rows using a controlled traffic system.

The Reinaudo family has received funding through the federal government's Reef Rescue program to help improve their farming practices.

They have made changes to their controlled traffic and mound planting system, widened their high rise spray tractor and also purchased a stool-splitter fertiliser applicator which is capable of variable rate application.

A GPS unit inside the Reinaudo family's tractor

Continued over page

Michael Reinaudo

Project: Variable rate nutrient application

PROJECT CATALYST

Issues being addressed:

For Michael Reinaudo and his family, farming over such a wide area of the Herbert Valley means that their blocks can have different soil types, and in most cases, there are even different soil types within the same block. As such, the Reinaudo's believe that they shouldn't be putting the same level of nutrients on their blocks as the differing soil types across their farmland means blocks have different requirements, not one uniform requirement. Therefore, the Reinaudo's are investigating opportunities to vary the nutrient rate within blocks.

The fertiliser box the Reinaudo's are using in their trial for testing variable rate application

Solutions being tested:

Proposed activities:

Develop nutrient plans using BPS001 Guidelines. These guidelines include: Veris mapping; soil sampling each EC zone with GPS location; yield maps to identify zones in paddock; topography (effect of water); satellite imagery and grower's knowledge of the block. These factors are used in developing yield potential zones within the block and the nutrient plan is developed using the yield potential of each zone.

Variable and fixed rate replicated strip trials have been established. The control strip fertiliser rate is based on "six easy steps" recommendations.

CSIRO's set up which is monitoring the quality of runoff from the trial site

The Reinaudo's will:

- Undertake a cost benefit analysis.
- Fine tune the variable rate fertiliser applicator.
- CSIRO is monitoring the water quality (runoff) coming from the trial from a variable rate strip and a control strip.

Immediate Results:

Though variable rate fertiliser application has yet to be subject to financial analysis, the Reinaudo's have done two years of profit probe analysis on their farming practices and believe that this has been beneficial to the financial planning of their business.

What is Project Catalyst?

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Nutrient losses from A-Class sugarcane management practice systems

***CSIRO researchers are working with Project Catalyst farmers** in the Burdekin and Wet Tropics regions to learn more about the nutrient losses from A class sugarcane management practices through runoff and understanding the benefits of legumes. Practices being looked at include within block variable rate nitrogen application, fertigation and lowered fertiliser rates following a legume fallow.*

Why is this study important?

Nutrient losses from agricultural land through runoff are threatening coastal marine and aquatic ecosystems in many parts of the world. In Australia the Great Barrier Reef ecosystems are threatened by increased pollutant loads from agricultural and urban land. Governments have introduced policies and funding programs to reduce pollutant exports which will benefit from identifying changes in land management that will be most effective in reducing the runoff of pollutants.

Intensive cropping lands are the dominant source of nutrients and pesticides entering the Great Barrier Reef. Sugarcane is grown throughout the Great Barrier Reef region and a major source of excess nutrient. It has been identified that sugarcane growers can reduce nutrient loads entering waterways and the Great Barrier Reef through a variety of practices many of which are likely to also have on farm benefits.

Images: Soybean on pre-formed beds fallow at Project Catalyst CSIRO trial site Leichhardt and planting at Leichhardt trial site

Project Catalyst

Project Catalyst is a partnership working across the Mackay Whitsunday, Burdekin and Wet Tropics regions which aims to reduce the environmental impact that sugar cane production has on the Great Barrier Reef (GBR).

The project is grower led – and involves a group of innovative farmers (termed A-Class growers) that are developing and testing management practices that improve the water quality of the water leaving sugar cane crops. Project Catalyst will provide economic information on these trials. Find out more at www.projectcatalyst.net.au

A Project Catalyst CSIRO Partnership

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Images: Water quality sampling equipment at Gairloch, Brazilian university student Breno Fernandes Dias with a flume for water quality monitoring at Leichhardt, Ross Coventry (Soil Horizons Pty Ltd) and Dennis Stubbs (BBIFMAC) undertake soil characterisation at the Gairloch site, a flume at Leichhardt

The Trials

CSIRO researchers and Project Catalyst growers have established three trial sites which are being used to measure yield, economic input and the quality of water leaving the cane field through runoff and deep drainage under innovative sugarcane management practice systems.

Monitoring equipment measures nitrogen, phosphorous and sediment losses. Prior to planting the sites were all EM mapped and the soil analysed with the data informing the trial design.

Trial descriptions

Airville, Burdekin, Precision Ag, legume fallow + variable rate nitrogen within paddock.

EM mapping found minimal variation in soil, across the field only one management zone was identified.

Treatment 1: Low rate of nitrogen fertiliser; nitrogen contribution from legume supplemented with 36 kg of nitrogen.

Treatment 2: Standard 6 Easy Steps; legume contribution of nitrogen supplemented with 130 kg nitrogen.

Leichardt, Burdekin: precision irrigation, fertigation with legume fallow.

Potassium and nitrogen applied frequently in small amounts through a drip irrigation system*.

Treatment 1: Higher rate (6 Easy Steps) + legume contribution.

Treatment 2: Lower rate + legume contribution.

*Phoshorous applied as granular at planting.

Gairloch, Herbert, Precision Ag: variable rate fertiliser + fertiliser application technology.

Five management zones identified within paddock linked to soil tests and EM mapping with nitrogen rate varied for each zone.

Two management zones monitored.

Zone 1: Continuous nitrogen rate based on 6 Easy Steps for length of trial strip.

Zone 2: Two distinct nitrogen rates applied within trial strip. Rates are based on soil needs identified through EM mapping according to different soil properties, and 6 Easy Steps

Contact

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CASESTUDY

ROB AHERNE

2012

Rob Ahern is an innovative farmer for Project Catalyst.

ROB AHERN

Project: Application of Microbes

Rob Ahern is a fourth generation farmer, after his family first began farming in 1880. Rob now has 113 hectares on two farms under sugarcane production in the McDesme region.

Both farms border the Burdekin River but drains into the Sheepstation creek catchment.

Rob is currently has a 1.52m single row system on his property, as well as the use of soil biology/microbes to improve the economical and soil health of a cane production system.

Rob is implementing soil biology/microbes, which involves applying anaerobic bacteria and humus to the soil through a liquid brew, utilising a conventional spray rig to apply.

Rob's farm is located along the picturesque Burdekin River

Continued over page

PROJECT CATALYST

ROB AHERN
Project: APPLICATION OF MICROBES

Issue being addressed:

Rob currently uses mill mud and ammonium sulphate fertilizer on 113 hectares of sugar cane. Rob also harvests green cane and thinks that the microbes are a good way of accelerating the decomposition of the trash blanket. This means that Rob will be able to improve his irrigation efficiency because of the fast breakdown in trash material in his water furrows.

Solution being tested:

The liquid product is brewed off-farm and also includes N-Fixation bacteria. Rob's aim is to raise the soil's carbon levels through sequestration and the use of organic nutrient sources such as compost (bagasse, council green-waste and mill mud). Rob hopes to then utilise targeted low-nitrogen rates (50-127kg/N/ha) through a side dresser, applying granular sulphate of ammonia.

Results:

Early results on the two farms showed an average of 165t/ha (ccs 13.4) and 164t/ha (ccs13.7). Rob is still able to utilise chemical weed control, due to the robust nature of the microbes involved. Rob has noticed the increase a huge increase in soil resilience and thinks that over time the microbes will eventually overcome any impact.

Rob Ahern on his farm at McDesme

Rob holds in his hand soil which shows the fungi production (white) from his microbe application

Rob shows his spray rig which he uses to spray the microbes on his farm

A bird eye view of the microbes brewing process

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CASESTUDY

Project Catalyst

2012 Stephen Accornero

Stephen and his son Brenden on their property at Foresthome

Stephen Accornero

Project: Profitability of corn as a rotational crop

Stephen Accornero farms 485 hectares of cane land in three areas around Ingham; at Foresthome, Abergowrie and Bambaroo.

It's a family business for Stephen, with his father growing cane in the Ingham region before him and Stephen's son Brenden now working alongside him.

As well as himself and his son, Stephen also employs one full timer to work across these three properties.

Stephen's corn trial, ready to harvest at his property at Abergowrie

Previously, Stephen fallowed his land from cane for 18 months growing instead, a crop of corn which ended up turning a profit. Growing corn as a rotation to his sugarcane is the basis of Steven's project for Project Catalyst.

Stephen has also improved his farming practice through the federal government's Reef Rescue program.

Continued over page

PROJECT CATALYST

Stephen Accornero

Project: Profitability of corn as a rotational crop

Issues being addressed:

Not only was Stephen's corn crop turning a profit but Stephen believes he was also getting an improvement in his cane yield after growing the corn. However, this perception was by observation only, as Stephen never actually properly measured the gain in cane yield. The questions Stephen wanted to answer were, was the gain he believes he observed because of the corn or because of the 18 month without cane, and furthermore, was growing corn economically beneficial or would he have been better off just growing cane.

Stephen's trial site for Project Catalyst

Solutions being tested:

Stephen has set up his trial on a block that was fallowed in November 2011. On this 3.3 hectare block, in May of this year, Stephen planted three strips of corn and left three strips fallow. At the time of planting, Stephen was expecting to harvest the corn in October 2012. After the corn harvest, cane will be planted across the entire block, in about May of 2013. From there, in 2014 cane will be harvested from each strip to supply data for an initial economic analysis. However, cane yield from this trial will be measured for a full crop cycle. Although Stephen will have some early data, he will not have complete results for a complete crop cycle.

A crop of sugarcane next to a crop of corn on Stephen's farm

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CASESTUDY

Sergio Fighera

2012

Project Catalyst grower Sergio Fighera

Sergio Fighera

Project: Improving Sodic Soil

Sergio, his wife Sharon and their sons live south of Ingham, in the lower Herbert. His father, who lives at Bambaroo, has been growing cane for over 50 years.

Sergio grows cane over 49 hectares on a property at Helens Hill.

Sergio also received funding through the first three rounds of the federal government's Reef Rescue program to improve his farming practices.

Sergio's project for Catalyst is to address treatments that improve sodic soil on his farm.

Sergio's trial plot emerging after planting with a Mizzi Mound Planter

Continued over page

Sergio Fighera

Project: Improving Sodic Soil

PROJECT CATALYST

Issues being addressed:

Sergio plans to assess treatments that improve sodic soil through application of ameliorants to beds in a controlled traffic farming system.

Previously, Sergio had to plough out second or third ratoon because of sodic patches in the block. This meant an increase in expenses on his farm due to additional planting costs and less income due to reduced yield.

Sergio loading his spreader with Minplus

Solutions being tested:

Farming with controlled traffic, Sergio's project focuses on the actual beds, concentrating the ameliorants where the cane is actually growing. Sergio's project is quite complex as he is trialing both the combinations and rates of, a number of different ameliorants.

Sergio's trial also includes planting on higher mounds in order to improve drainage and the leaching of sodium from the soil profile.

He has established two trials; one trial is testing the mound height in relation to drainage and sodium leaching and the other trial is comparing the effects of different ameliorants that are applied over the bed.

Sergio dispensing one of the ameliorants he is trialing across his

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Project Catalyst Grower Forum Dinner

Tuesday 26th February

Venue: Arlington Bar & Urchins 1, Pullman Reef Casin

6:30 - 6:50pm	Guests start to arrive and have some drinks, find seats etc.
6:50 - 7:00pm	Be seated
7:00 - 7:05pm	MC: Phil Staley , ABC Tropical North
7:05 - 7:15pm	Terrain Welcome to Cairns – Carol Sweatman
7:15 - 7:40pm	Entrée served
7:40 - 7:50pm	Coca-Cola South Pacific – Michelle Allen
7:50 - 8:00pm	MC introduces Dermot O'Gorman, Dermot O'Gorman, CEO WWF Australia
8:00 - 8:45pm	CEO WWF Australia
8:45 - 9:15pm	Jennie Gilbert Cairns Turtle Rehabilitation Centre
9:15 - 9:20pm	Coffee and Dessert: self-serve at own leisure
9:40 - 9:50pm	Rob Cocco, CEO of Reef Catchments Limited

Top: Field Trip visit to Dennis Pozzebon's, 2012 Project Catalyst Forum, Burdekin.
Right: Brooke Edwards (DAFF), Tony Bugeja, Chris Blackburn, Madonna Blackburn, Rebecca Gowen (DAFF), Gerry Deguara and Miriam East (DAFF); Field Trip visit at Davco, Project Catalyst Forum, Burdekin.

Field Trip:
Cairns to Atherton Tablelands

7:00: Assemble at bus departure point – Pullman Hotel Reef Casino, Cairns

07:15	DEPARTURE	Travel south on the Bruce Highway via Gordonvale to stop 1
08:15	Arrive stop 1	Mark and Chris Rossi, 1 Vohland Road Aloomba: Cane Soybean in ratoon trials with range of special blend fertilisers and mill mud Spray equipment, riparian plantings, sediment trap.
11:15	Arrive stop 2 & Morning Tea	Bruce and Elizabeth Carcary, 122 Nash Road, Minbun: Tropical grazing Cell grazing, off stream watering, riparian revegetation, farmstays. Presentation by Bernie English (DAFF) about grazing and dairy.
12:05	Depart stop 2	Travel north on Millaa Millaa - Malanda Road via Malanda and Atherton to stop 3.
12:55	Arrive stop 3 & Lunch	Ben Poggioli, 118 Graham Road Tolga: Multi cropping. Peanuts, maize and potato cropping, strip tillage peanuts, GPS. Presentation by Michael Hughes (DAFF) about multi-cropping.
14:00	Depart stop 3	Travel to Tolga then north on Kennedy Highway via Rocky Creek to stop 4.
14:15	Arrive stop 4	Marian, Dennis, Stephen and Jason Salvetti, 6732 Kennedy HWay, Rocky Ck: Cane Soybean, tropical seed and oil/meal production.
15:05	Depart stop 4 & Afternoon tea	Travel north on Kennedy Highway to Mareeba, then east towards Kuranda. Descent to the coast on Kuranda Highway, via Smithfield to stop 5.
16:24	Arrive stop 5	Mark Savina, RN 508 Kamerunga Rd, Freshwater : Cane Variable rate fertiliser, organic matter, contract farming. *Note stop 5 will be taken out if there is insufficient time. This decision will be made on the day.
17:15	Depart stop 5	Travel south to Pullman Hotel Reef Casino, Cairns.

17:30: Arrive Pullman Hotel Reef Casino, Cairns.

Field trip 2 Kennedy – Ingham

Meeting point: Bilyana Rest Stop, Bruce Highway

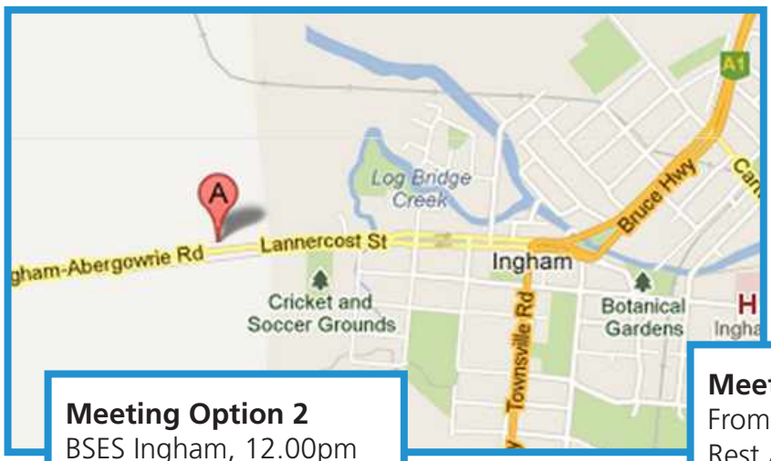
Stop 1: 10.00am Michael & Peter Ottone , Compost Tea to Improve soil Health, Bilyna

Stop 2: 12.00pm BSES Building for Lunch.

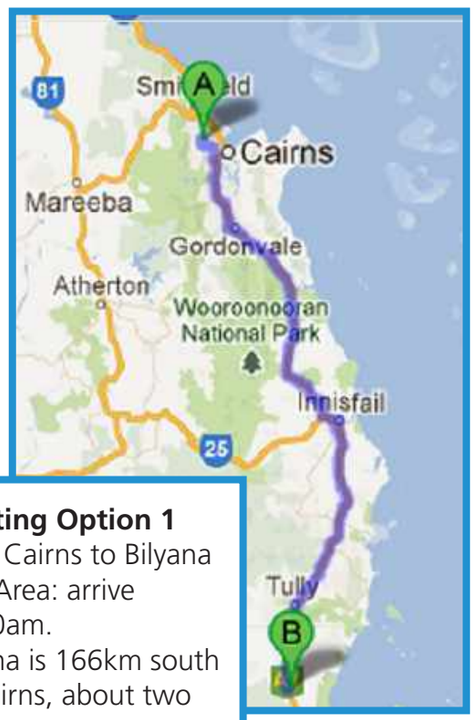
Stop 3: 1.00pm Reinaudo Farming , Variable Rate Nutrient Application, Ingham

Stop 4: 2.30pm Norm Reid , Cultivation Methods of Existing Controlled Traffic Beds , Pinicle Hill Ingham

Stop 5: 3.45pm Return BSES Ingham



Meeting Option 2
BSES Ingham, 12.00pm
143 Fairford Rd



Meeting Option 1
From Cairns to Bilyana Rest Area: arrive 10.00am.
Bilyana is 166km south of Cairns, about two hours drive.

Contacts

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Project Catalyst Grower Forum 2013
My notes

Project Catalyst Growers at Davco during the 2012 Burdekin Field Trip

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