Reef Rescue
IMPROVING WATER QUALITY OF THE GREAT BARRIER REEF LAGOON

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Conservation
AND INCREASING PRODUCTIVITY WORK HAND-IN-HAND AT HERBERT RIVER

By Jasmine Hunt

Farming in the Herbert River region for more than 90 years, Stephen Accomnero’s family has seen a lot of advances throughout the sugarcane industry over the years.

Since his grandfather cleared land at Abergowrie to grow sugarcane in the 1950s, before the returned soldiers’ settlement package, the family farm has grown from one farm to three, and has significantly increased tonnages.

When Stephen came onto the farm full time in 1979, the Forest Home farm harvested 2934 tonnes of sugarcane. The Abergowrie farm, which was previously leased out was taken back and tonnages farmed increased in two years to 6000 tonnes in 1981. Now the combined farms at Forest Home, Abergowrie and Bambarloo harvest about 36,000 tonnes in a normal year.

“Last year was an extremely wet year and we had about 35% standalone,” says Stephen.

“Some of the standovers had to be destroyed as it wasn’t suitable for crushing.”

Today, Stephen, his wife Annalisa and their son Brenden run the family company’s on-farm and off-farm operations, with the help of one full time worker.

Brenden has only recently come onto the farm on a full time basis, after finishing his boiler maker apprenticeship just over six months ago. He is the family’s fourth generation and one of the youngest farmers in the district.

“I am considered a young farmer at 30 - I find that a bit scary for the industry,” Stephen says.

“Brenden always wanted to be on the farm, but we encouraged him to complete an apprenticeship first. And, a boiler maker is very handy to have on the farm.”

Stephen said Brenden assists him a great deal with new farming technology, including GPS which they added to their farming tool box this year after successfully applying for Australian government Reef Rescue grant assistance.

“We’ve just begun using GPS – Brenden can jump on in 10 seconds and make it do what he wants. Because I don’t use it all the time I struggle a little. When I left school we didn’t even use calculators.

“But that’s ok; he can handle tech and I have the experience he doesn’t have yet.”

Using GPS technology, gained from the Reef Rescue Grant, subsurface grub control and fertiliser is applied with a stool splitter, which was also purchased with the assistance of a Reef Rescue Grant. The Accomneros also use zonal tillage and permanent beds on their Forest Home property. Stephen says each of their properties is managed entirely differently.

“Every farm is managed differently due to the soils and climate,” he says.

“The Bambarloo farm is a much drier area, while Forest Home is extremely wet and Abergowrie gets inundated but has better soils. All of them are managed and worked differently.”

Stephen believes strongly in obtaining advice from local experts to best improve productivity and efficiency. The Accomneros employ the services of agronomists to manage weeds and pests efficiently on each individual farm.

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**Weedseeker®**

**SELECTIVE SPRAYING TECHNOLOGY**

The Australian Government's Reef Rescue program is funding an exciting project that has brought together AgriServ Central with Mackay sugarcane grower, Rod Lamb to modify the Weedseeker® selective spraying system for use with sugarcane. The technology has resulted in a reduction of up to 80% of herbicide applied in other crops, and it is hoped that this project will yield similar results for cane.

Traditionally growers have used a blanket spray approach to control weeds in the sugarcane inter-row. With the advent of Reef Rescue funding, the use of shielded sprayers in combination with glyphosate has become a more common method for inter-row weed control.

Weedseeker® technology is popular in broad acre farming with weed sensors fitted to broad acre boom sprays. Weedseeker® selective spraying technology uses weed sensing technology to detect weeds before firing herbicide which greatly reduces the volume of chemical needed. Light emitting diodes emit infra-red and visible red light which is projected downwards. Light reflected back is captured and analysed to see if it matches the light spectrum of green plants. If the reflected light is identified as being from a green plant then the spray nozzle fires a small amount of herbicide. AgriServ Central and Rod are adapting this system so that it works successfully in an inter-row shielded spraying system.

“We have had to change a number of things to adapt Weedseeker® for use in cane farming. Rod is currently doing some informal trials on his property and we will be ready to demonstrate to growers before the end of the year,” said Phil Ross from AgriServ Central.

Weedseeker® sensors have been attached to the spray shields which are used to reduce spray drift. With herbicide being applied directly onto the weed and the majority of what is sprayed being directly absorbed by the weed, farm runoff of the chemical sprayed will be minimised to almost a negligible amount.

“Adapting this technology for use in the cane industry has the potential to result in substantial savings for the grower by significantly reducing the volume of herbicide applied to their fields. Weedseeker® will also be beneficial for the environment, minimising the potential for herbicide leaving the farm in runoff,” said Phil.

Field trials are being conducted to assess at what level of weed pressure the technology is economically viable. If the weed pressure is high the nozzles will be firing non-stop making Weedseeker® no more effective than current hooded sprayers. The potential for systems like Weedseeker® are in blocks with low weed infestation, where the grower may need to do a clean-up of remnant weeds or where isolated or fragmented outbreaks of weeds occur.

**WeedSeeker® selective spraying system**

**Hands-on learning**

**LINKED TO REEF HEALTH PROJECT**

An award-winning collaboration is helping local students learn while reducing erosion risks on a grazing property in the Dawson region of central Queensland.

Gin Gin State High School realised boys in grades 9 and 10 were disengaged and socially challenged, and developed a range of alternative learning options in partnership with community groups and rural industry.

The Gin Gin Alternative Pathways Programme (GAPP) won an Education Queensland Showcase Award for Excellence in late 2011 for its success in providing flexible ways for students to pursue their studies through vocational learning.

Dawson graziers Rob and Melinee Leather got involved with the programme by hosting a team of students on their ‘Carlyle’ property situated between Theodore and Banana.

“We thought it was a great opportunity not only to improve our land management for long-term environmental sustainability but also provide the GAPP students with valuable hands on learning experience,” Melinee said.

The students worked towards a Certificate in Rural Operations as they helped the Leather family to install new fencing and cattle watering points designed to protect a stretch of Lonesome Creek from erosion.

“The students’ help was really valuable. The project target included 1.8km of fencing and installation of 700m of poly pipe and troughs for off-stream watering points. With the help of the GAPP students the project was completed in four days,” Melinee said.

The fencing project was developed by the Leathers in partnership with the Dawson Catchment Coordination Association with funding from the region’s peak natural resource management group Fitzroy Basin Association Inc. (FBA). FBA provided $16,800 through a Reef Rescue water quality improvement grant, which was matched by the Leathers.

The project resulted in 1.6 km of stream bank being fenced off, providing protection for 109 hectares of fragile riparian vegetation. The fencing helped Melinee and Rob to better manage stock movement and reduce overgrazing.

Poor distribution of watering points meant cattle were crossing the creek to access water in the opposite paddock, causing damage and erosion of the riverbank, and also resulting in uneven grazing pressure.

Fencing to create two paddocks, both with watering points, means the Leathers have greater control over cattle grazing in each area, helping them to keep ground cover at a good level.

Less disturbance of the riparian area means less erosion and cleaner, healthier water flowing in Lonesome Creek and out to the reef.

**GAPP students fencing at ‘Carlyle’**
Fencing project protects ground cover
AND MINIMISES RUNOFF INTO REEF ON MT RAVENSWOOD STATION

At first glance the red ranges and river flats of Mount Ravenswood Station southeast of Charters Towers seem a world away from the crystal blue waters and colourful corals of the Great Barrier Reef.

Both are separated by a distance of more than 100km, but the sprawling cattle property’s proximity to the Burdekin Falls dam means the two are far more closely linked than you might think.

With 56km of frontage to the Burdekin River and the Burdekin Falls Dam, any sediment that runs off Mount Ravenswood Station may find its way downstream to the Burdekin Coast and the Great Barrier Reef lagoon beyond.

In dry years the potential for grazing to leave country bare and exposed to erosion and sediment runoff has been identified as a key issue of concern for the health of the reef.

It is a correlation well understood by the property’s owners, the Rich family, who have embarked on a targeted development program to protect ground cover and minimise potential runoff.

Former long-term Theodore district graziers Jim and Robyn Rich bought the historic cattle breeding property in 2007 and it has since been run by their son and daughter-in-law Jono and Jessica Rich.

Jono said in buying Mount Ravenswood the family had been attracted to the property’s extensive river frontage and overall scale. The station has the capacity to run up to 6000 breeders.

Such scale also means higher costs when it comes to infrastructure improvements.

Funding through the Australian Government’s Reef Rescue Program has made the challenge of developing the property to improve its runoff management more affordable.

The Rich’s learned about the voluntary Australian Government’s Reef Rescue initiative from a flyer from NQ Dry Tropics and with the help of project manager Linda Hygate and local DEEDI grazing specialist, Bob Shepherd, the family designed a project to split a large 3200ha paddock with 15km of frontage to the Burdekin Dam.

A 10km fence now divides the paddock and allows the heavily grazed area to be rested and the under-utilised side to be effectively grazed. New pipelines and troughs have also helped to spread cattle out and to move them off the dam itself.

The project was funded with a grant administered through NQ Dry Tropics, matched dollar for dollar by the Rich family, who also paid the full labour component.

The Rich’s have embarked on a new project, which involves constructing a watering point at the back of Mount Ravenswood, which will help to keep stock away from Stones Creek and to make better use of available grazing areas on that side of the property.

“If you can put another seven waters in and it only costs you half the amount of money, it is good for the property and it takes pressure off the river,” Jono said.

“We are getting assistance with development, but we are also getting recognised for doing something for sustaining where we live, and we believe there will be a lot of value in that down the track.”

Cyclone Yasi
BOUNCE BACK

It’s been a tough year for some primary producers in the Wet Tropics with some farms only just producing a crop ten months after Cyclone Yasi hit the north Queensland coast. You would expect that reducing water quality impacts from farms after such a setback would be the last thing on landholders’ minds however, Terrain NRM found the response to recent Reef Rescue grants quite surprising.

The fourth round of funding opened in May in the Terrain NRM region, just two months after the cyclone wiped out many of the coastal crops. Terrain was concerned that the number of applications would be affected due to the added financial strain on landholders.

“Last year we saw the number of project withdrawals triple up to 11% due to a heavier and prolonged wet season”, said Neil Sing, Team leader for Terrain’s Sustainable industries.

Predicting a larger number of withdrawals because of cyclone damage to crops, Terrain approached the Australian Government with the proposal of a reduced cash and in-kind contribution of 25%.

Although Terrain did not know nor publicise at the time of application if we could make this offer to applicants, more applications were received than in previous years. Applications were assessed and then the landholders that satisfied the criteria were awarded a grant requiring only a 25% co-contribution. Applicants were eligible for a reduced co-contribution if their properties were located in the destructive wind zone of the cyclone and they could show that their crop production was impacted by more than 40%.

“Without the reduced co-contribution many farmers would not have been able to implement a Reef Rescue project this round”, said Neil.

Terrain funded 77 (41% of project submitted) projects for improving practices in the cane, horticultural, forestry and grazing industries that were in the path of cyclone Yasi. The majority of these projects were in the cane (55) and banana (13) industries.

“It was interesting to see as a result of the cyclone, that landholders added an extra risk factor in their application budgets this year, so that the amount sought was noticeably lower in the cyclone hit areas than in the non-affected areas,” commented Neil.

“We anticipate that the added risk calculation added by landholders and the reduced co-contribution will significantly reduce the number of landholders who will withdraw projects this year,” he added.

The Reef Rescue team are preparing to open the fifth round of funding in January 2012, and we keeping our fingers crossed that it’s not such a destructive wet season for the last funding round.

Damaged banana crop following Cyclone Yasi in early 2011
CONSERVATION AND INCREASING PRODUCTIVITY WORK
HAND-IN-HAND AT HERBERT RIVER

"I also work closely with HCPSL [Herbert Cane Productivity Services Limited] the local productivity board – they’ve just finished measuring a couple of hundred acres here for future lasering and drainage,” he said.

"With any other problems we contact the local BSES Limited. These specialised services are an integral part of my farm management practices.”

In addition to cane, the Accorneros also grow corn for grain feed and previously farmed cattle before using the cattle property land to increase their cane production. Corn is grown in the sugarcane falls at the Abergowrie farm, which results in reducing fertiliser inputs in the following year’s cane planting. It provides a break from continuous cane growing, as well as another source of income.

"I plough out and whatever fallow I have on farm, I put that under corn for one crop cycle,” says Stephen. "The following year I put what was under corn under cane, and then I put the next lot of fallow under corn.

"I give the ground at least one year under fallow.”

Travelling to the Accorneros’ three farms is a 200 km round trip, so every piece of their multi-use machinery has to be able to be transported legally by road.

Stephen also holds a registered escort licence which further increases efficiency.

"We multi-use everything,” he says. "We pick the corn using the headers, which is also used for picking soyas beans and contracting to other farmers to pick other legume crops for market. This provides other farmers with an option of selling their legume crop for seed in addition to increasing their soil health while maintaining lower fertiliser inputs. We use the semi tipper to take the corn to market where I sell it as well as utilising the tipper for repairing headlands and buying bulk fertiliser to economise input costs. The prime mover and a trailer are also used to transport machinery and equipment to all farms, again minimising capital costs.”

The Accorneros supply to both the Victoria and Macknade mills, and use a different contractor to cut the cane on each of their three properties.

Stephen says the family’s diversification into three different farming areas was not necessarily a conscious decision to manage risks, but has worked out that way.

"They say originally they expanded the family farm by buying out other neighbouring cane farms as they came onto the market, and also then slowly developing the cattle property into a cane farm.

"It works as we can work on one farm when it is raining on another,” says Brenden.

Stephen says Annalisa is an integral part of their business, and in addition to working as a finance officer for Rabobank, she provides invaluable advice on-farm.

"Annalisa didn’t grow up in farming but she is on the ball when it comes to any of our financial decisions about borrowing. She has the capacity to view things from an outsider’s perspective,” says Stephen. "Rather than an emotional perspective like we have here on the farm, she has a more business approach – are we going to make money? And if we’re not, why are we doing it?”

"Being a finance officer, she deals with a lot of businesses outside the industry – bananas, cattle, horticulture, so she has a different outlook on what other people are doing to maintain profitability.

"Sometimes it puts me out of my comfort zone but it’s good for the business.”

"When we need to make any farming decision, the family sits around the table and talks about the proposed purchase-move. We discuss all the pros and cons in an impartial way. We research as much as possible about the proposal to enable us to make an informed decision.”

Stephen says they also complete SWOT (strengths, weaknesses, opportunities, threats) analyses on different new ideas.

Another person who has influenced Stephen’s outlook on the conservation side of the farming business has been another Steve – Steve Irwin.

The Accorneros’ farm at Bamburao was the site of the Irwins’ first documentary, and was also the site where many crocodiles were caught for the Irwins’ wildlife sanctuary, Australia Zoo.

Stephen says one day Steve Irwin simply fronted up at their home.

"He just fronted up at the kitchen table one day - walked in with his father Bob, they introduced themselves and basically said, ‘We’d like to come around to your place and catch some crocodiles’.

"We asked if we could watch,” Stephen says the Irwin’s would stay on their property four or five months of the year while catching crocodiles.

Steve would share with Stephen his ideas about wildlife conservation and preservation of the environment.

"Back in the 1980’s, when developing Bamburao, we left wildlife corridors, creek buffer zones and left hundreds of acres for the preservation of wildlife and used a fair and balanced approach to progress our farming business before any government intervention,” he says. "For over 40 years we were also caretakers of over 700 hectares of environmentally sensitive areas which we maintained in a pristine condition.”

The Accorneros have also invested heavily in drainage and farm management plans that assist in choosing and using farm inputs wisely.

Located near a popular local fishing creek and not far from the ocean, the Accorneros’ Bamburao property borders a mangrove, which means the property has faced hefty scrutiny and resumptions from government agencies.

"We have mangroves, wetlands and red zones [vegetation that cannot be cleared due to national significance] and resumptions caused by the construction of new transmission power lines as well as national parks,” he says.

"When we were developing the property, we made a conscious decision to leave 80 hectares of freehold land to the preservation of the natural environment.

"Originally our total area was approximately 3000 acres, now it’s close to 1200.

"Dealing with government and environmental departments has become an extremely stressful and time consuming issue as well as a financial burden. There are not too many regulations and red tape out there that haven’t affected us in some way.

"The thing is you can’t tar everyone with the same brush [in regards to government regulations]. Each and every farm is different.”

Stephen Accornero

Fertiliser box feeding the sub-surface stool spiller funded through a Reef Rescue grant.
Keeping up WITH THE TAYLORS

For the Taylors, 2011 has been a busy year with the introduction of two new projects, accepting an award in Sydney and representing the Burnett Mary region in Canberra. In September, Col and Jan Taylor were acknowledged for their hard work when they received the Diversification Farmer of the Year Award. The Taylor’s property, Mango Paradise, in Cordalba has been in the family for nearly 50 years and produces sugarcane, avocados, bananas, mangoes, lychees, fish and red-claw. Col and Jan also run a farm stay on the property where guests are welcome to participate in a number of farm activities. After receiving their award, Col travelled to Canberra to represent the Burnett Mary region at the Reef Rescue Showcase.

BMRG’s Reef Rescue Coordinator, Cathy Mylea said “The Taylors and their Cordalba farm are shining examples of what can be achieved through the development of mutually beneficial partnerships and the application of technology and best practice in farming activities. Reef Rescue funding has allowed the Taylors to increase their production, reduce their costs and at the same time deliver better outcomes in terms of water use and the quality of the water that leaves their farm.”

They have been successful in securing funding for two projects, focusing on the introduction of GPS technology into their farming systems. The introduction of this technology aids in the improvement of chemical and soil management practices. Installing a Hemisphere autosteer system has allowed the farm to move towards a controlled traffic system. Using a controlled traffic system facilitates better soil management practice and minimises tillage operations and soil compaction. The use of GPS technology also reduces the occurrence of overlap during nutrient and pesticide application and reduces the risk of soil erosion.

The Taylor family is also implementing a zonal tillage system to further improve their soil management practice. This involves the construction and use of a three row ripper. The three row ripper is used to cultivate the stool area only, leaving the interspaces undisturbed. This helps to minimise soil disturbance and improve soil structure. Benefits associated with improved soil structure include better water holding capacity and infiltration and decreased runoff and erosion.

A History of Helping the Reef

Col and Jan Taylor, together with their son Paul, were first involved in Reef Rescue back in 2009 when they decided it was time to start making changes to their land management practices, Col feels that “the younger generation are more open to the adoption of technology and sustainable land management practices.”. The first practice change to take place was to make use of water from a drainage dam for irrigation. With the help of Reef Rescue funding, a pump was purchased and installed so that water from the drainage dam could be reused to irrigate cane on their Cordalba property. Soon after installing the pump the Taylors’ next move was to improve their herbicide and pesticide management practices.

The Taylor’s received their second Reef Rescue grant in 2010 for the purchase of a MT-EX50 water meter and a BRAVO 180 spray rate controller. Installing the water meter allowed the exact water rate required for spraying to be used and the spray rate controller meant that the application of chemicals could now be precisely matched to the drive speed of the tractor. To complement this new equipment, the Taylor’s increased interspace widths and modified wheel spacing on the sprayer frame to match these row widths. The use of this equipment and modifications to row widths and wheel spacing meant that chemical application was more even and precise.

With the assistance of Reef Rescue and their determination, the Taylor family has introduced technology into their farming system and moved towards more sustainable land management practices.
Nutrient use efficiency

RESEARCH GETS UNDERWAY IN QUEENSLAND

An on-farm nutrient use efficiency research project is now underway with sites established on Thefs’ Gympie dairy farm and the Ravenshoe State High School dairy farm.

The Queensland Dairyfarmers’ Organisation has partnered with the Queensland University of Technology (QUT) and James Cook University (JCU) to assess the efficiency of nitrogen and phosphorus fertilisers using ‘state of the art’ technology to measure losses from leaching, runoff and gaseous emissions.

This research will answer some critical questions about the movement of nutrients used on dairy pastures, particularly nitrogen fertiliser. It is well known that nitrogen efficiency in agriculture (the percentage of nitrogen brought onto farms that ends up in saleable products, e.g. milk, hay, grain and cattle) is generally low. The ‘Accounting for Nutrients on Australian Dairy Farms’ project found the median efficiency for nitrogen and phosphorus on 41 Australian dairy farms was 26% and 35% respectively. This is in line with results in other countries, but small changes in efficiency have the potential to vastly improve sustainability and profitability for dairy farmers.

This research will quantify the amount of phosphorus and nitrogen lost through the various pathways (runoff, leaching and gaseous emissions) under intensive irrigated dairy farming systems. Research leaders, Professor Peter Grace (QUT) and Dr Paul Nelson (JCU), will use urea containing a harmless naturally-occurring isotope of nitrogen (N15) to trace exactly where the nitrogen applied ends up. Automated equipment will capture gaseous emissions, runoff and water leaching through the soil profile. The uptake of N15 in the pastures will also be measured.

By combining this information with comprehensive soil profile nutrient analysis, and data from soil solution samplers, the research will help to solve the mystery of where the nitrogen and phosphorus ends up after broadcasting it onto the paddock.

The research will also determine whether a slow-release form of urea treated with a nitrification inhibitor can improve production and reduce nitrogen losses, and a cost-benefit analysis on the practice will show if the treatment has potential to help dairy farmers to become more profitable and sustainable in the future.

Farmers will have the opportunity to visit the research sites, and to find out more about the project directly from the researchers at the field days to be held in May this year.

David Rowlings (QUT) conducts a soil survey at the nutrient use efficiency research site on Thefs’ dairy farm

The research forms part of the Dairying Better ‘n Better program which is a partnership between Queensland Dairyfarmers’ Organisation and Subtropical Dairy and funded by the Australian Government’s Caring for Our Country Reef Rescue Initiative, and Incitec Pivot Fertilisers Limited.

For more information about Reef Rescue or the projects profiled in this newsletter, contact Queensland Farmers Federation on 07 3857 3747 or Queensland Regional NRM Groups Collective on 07 4699 5002.