**COMBINED SOUTH EAST QUEENSLAND & WIDE BAY PINEAPPLE STUDY GROUP**

**Bundaberg, 3 & 4 December 2020**

## Take home messages

The most effective step that can be taken to reduce sediment, pesticide and fertiliser loss from the field is to cover the ground, e.g. with trash, a fallow crop, living mulch etc.

Other practical measures are a planting layout that follows the contour, plants in the interow to stem soil loss, reinforce primary drains with either vegetation or synthetic erosion preventative products, installation of a bioreactor, and installation of sediment ponds and silt traps.

Innovative ideas such as injecting water with or without pesticides at planting could make the difference between success and failure in new plantings especially in dry conditions.

The first thing to do to reduce pesticide & fertiliser loss from the field is to apply less in the first place. (a) Test the soil & monitor pest levels to see if they are needed; if they are (b) make applications more efficient & targeted. Using GPS to plant & spray pesticides and fertiliser reduces amounts needed because there is less double up through overlap with application directly on the plants & not on bare ground. Foliar nutrient sprays are far more efficient & far less wasteful than side-dressing (refer to Rachel Abel's work in the previous minutes).

Measures such as incorporating trash underground asap after ratoon harvest will result in improved soil health and reduce the amount of pesticides and fertilisers that need to be applied in the next crop.

We are now in an era when technology such as satellite imagery, GPS guidance, computer software and robotics can be integrated to deliver major advances in farming efficiency.

Ideas for the current demonstration trials came from growers across the industry—concepts are simple with minimal capital outlay and easy for growers to adopt. Focus has been on innovation, environment, increasing yield and reducing costs. For more info give Tim Wolens a call on **0409 848 076**

To find out more about these demonstration trials check out the new industry website or read the latest pineapple press.

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**Present on day 1 (35 + 25 = 60)**

Growers (35): Faruch & Catherine Buzaki, Tony French, Mark & Graysen Harris, Colin Hawken, Jay & Trey Hubert & Ashleigh Rasmussen, Scott Maxwell, Col Matthews, Peter Maywald & Bernadette, Harry Milbank & David Forsyth (Bundaberg Sugar), Wayne & Michelle Moffat, Gordon, Murray, David, Tom and James Oakes, Adam & Trisha Payne, Ashley, Nathan, David & Leyton Petersen, Sam Pike, John & Linda Steemson, Ben Stokes, Tom Suter, Les Williams, Clint Zamek

Non-growers (25): Rachel Abel, Bridie Carr, Luke Griffin, Simon Newett, Kevin McCosker & Paul Humphries (DAF), Rowena Beveridge, Janine Clarke, Abby Kent, Lene Knudsen & Michelle Haase (Growcom), Troy Jensen & Bruen Smith (USQ), Liliana Hidalgo (Trical), Sue Sargent (consultant), Doug Jones & James Tattersall (Kraft Heinz), Tim Wolens (Agri Supply Global), Emma Baker & Abbie Taylor (Burnett Mary Regional Group – BMRG), Trent de Paoli & Sharnee (Novum), Ross Rankine (Agrichem), Rene Liddle & Patrick Rooney (Nutrien Ag Solutions)

Apologies: Doug Christensen (Tropical Pines), Chris Doyle

**AGENDA**

**THURSDAY 3 DECEMBER - Farm visits near Bundaberg**

8.45am: Meet at Hubert family's "Amaryllys" farm at 565 Gooburrum Road, Welcome Creek, Bundaberg. Farm tour looking at innovative equipment and trials - including planter with injection, target sprayer, boom sprayer with droppers, drone imagery for natural flowering.

11.00am: Depart farm for Moore Park Tavern for lunch (order and pay on arrival) – menu here. Guest speaker Kevin McCosker (DAF) speaking on 'Farming Practices & Risks to Water Quality' over lunch.

1.00pm: Depart for Steemson family's "Littabella" farm at 232 South Littabella Road, Yandaran

1.45pm: Meet at shed to begin farm tour inspecting a range of demonstration trials and initiatives on farm layout/contours, drains, sediment pond, DAF trials (by Luke Griffin), Hortus product trial, mulch/fallow/compost/conventional trial and fumigation.

4.15pm - 5.15pm: Return to shed for final session – Hort 360 talk by Michelle Haase and module with happy hour drinks sponsored by Liliana Hidalgo from 'Trical'.

7.00pm: Dinner at Bargara Golf Club - menu here. Guest speaker Sue Sargent a marine biologist from the Burnett local marine advisory committee

**FRIDAY 4 DECEMBER - Trip to Lady Musgrave Island**

6.30am: meet at the Bundaberg Port Marina outside the Lady Musgrave Experience for check in

10 hour trip with guest speakers relevant to agriculture and the Great Barrier Reef, follow up from Hort 360 Reef Certification module from day before. Includes morning tea and lunch, and an educational tour of the island with a chance to inspect the reef close up. The pineapple group will have exclusive use of the VIP lounge deck on the boat where the guest speakers will make their presentations.

4.30pm: return to the marina

**AMARYLLIS FARM – HUBERT FAMILY**

Jay Hubert is a third-generation cane farmer whose family has fairly recently branched into pineapples. In addition to growing pineapples on their home farm they have taken over Bill Embrey's pineapple farm nearby.

Initially they used any planting material they could get hold of but are now becoming more selective. Recent years have been very dry in the Bundaberg region and this year has been no exception with only 200mm in the past 12 months. The whole crop is behind schedule due to the drought.

They are active participants in 'Reef Rescue' initiatives taking measures to minimise inputs of fertilisers and pesticides and to maximise outputs.

**Rate control folding spray boom with crop targeting droppers** – on the AP website there is more info, click SA03WB-05

An example of their efforts to minimise inputs and maximise outputs is the development of their precision sprayer which consists of 6.5 separate sections each of which can be independently controlled, and the four-way nozzles (plus a nil) which include a dropper designed to only spray the pineapple plants themselves and not the interow. The boom is also designed to fold to facilitate easier transport between fields and was manufactured by Chris Curtis at Yannie Creek engineering.


*Folding spray boom with 6 ½ variable rate sections*

*Variable rate spray boom showing some of the variable rate sections. Eventually these sections will be controlled by GPS. The folding point of the boom is visible on the left.*

*Spray boom droppers target the spray on pineapple plants only, achieving chemical savings and benefits for the environment*

The four-way nozzles allow the Huberts to apply 4,000, 3,000, 2,000, or 1,000 litres/ha and to also block some nozzles off. Jay said that the lowest output (using the directed droppers) permitted 4 ha to be sprayed with a single tank compared with covering only 1.5 ha with the high volume broadacre option.

The boom will be directed by GPS but this is only possible because the crop was planted using GPS.

Tim is evaluating how well the crop will perform with some sprays only being directing on the plants themselves.

The Huberts plan to start foliar nutrition sprays using the directed droppers from 2 months after planting and I will continue to 9 months of age. There is no side-dressing of fertilisers.

DAF's Rachel Abel showed through her investigation that young plants are too small to need or use much fertiliser from a side-dressing suggesting that not only is it money wasted and of questionable benefit to the plant but also an unnecessary negative for the environment.

A suggestion was made to put a "V" drain down the centre of the bed.

*Left: Close up of the four-way nozzle, with the dropper nozzle operating.*

*Right: The Hubert's four-row planting configuration. 6' centres, 60,000 plants/ha, targeting size 10 fruit, achieving 60% in this size range*

The Huberts use a four-row bed with 1.8m (6') centres, 60,000 plants/ha. They are targeting an average fruit count of size 9 in the plant crop and size 10 in the ratoon. With the drought conditions in Bundaberg over the last five years ratoon yields have been more difficult to achieve.

**Hooded weedicide rig**

The Huberts have developed a weed spray rig with hoods over the jets to target the interow space where most of their weeds are and prevent the chemicals from going on the pineapple plants. The rig can deliver 150 L/ha at 8 km/hour applying herbicides such as Basta to control blue top.

When they took over this farm there was a big weed-seed bank and it took several seasons of broadacre spraying to reduce it, however spraying over the pineapples was knocking the crop around. They are now achieving adequate control by targeting the interow space only.

It was suggested that the rig might also be useful for applying geopolymers such as 'Stonewall'. Tim will be trialling a range of other geopolymer products through this machine.

It was also suggested that the opposite approach could be used – i.e. shielding the pineapples and spraying the rest of the area.

*The Hubert's rig which confines weedicide to the interows and protects the pineapples from chemical spray by using shrouds around the jets - thus achieving weed control using less weedicide and subjecting the pineapple plants to less chemical.*

**Water injection at planting** – on the AP website there is more info, click SA02WB-02

"Necessity being the mother of invention" – the ongoing drought in the Bundaberg area played a big part in the Hubert family developing a planter that injects about 250 - 400mL of water for each plant at planting. The rig also opens up the possibility for including pesticides in the water dose to better target where it is needed, achieving better timing and greater efficiency of use, potentially reducing the amount of pesticide that needs to be purchased. This method may avoid having to put 5,000 L/ha for a metalaxyl spray and also could be very efficient at including root stimulants such as Transformer. Typically, they can plant 15 – 18,000 plants/day. Jay believes that the first 6 months of the plant's life are the most critical. Tim is currently looking at a trial evaluating the injection of a range of fungicides, root stimulants, liquid fertilisers, nematicides and insecticide at planting.

*The planter injects a shot of water (and potentially chemical) into the planting hole as the top or slip is planted. Here the planter has been raised to show the water jet in action. Inclusion of the rollers also saves a second tractor operation. The water tank is mounted on the front of the tractor.*

*The mulcher on the front of the tractor macerates the ratoon plants whilst the rotary hoe on the back immediately buries the trash and with the help of the roller seals in much of the moisture assisting in its breakdown. This improves soil organic matter, retains & recycles more of the nutrient contained in the trash & reduces the expenditure on leachable fertilisers for the next crop.*

One pass with the above rig (mulcher mounted on the front and rotary hoes on the back) is done soon after harvest of the ratoon to maximise the amount organic matter and nutrients that stay in the soil for the next crop. A 200 HP tractor is needed and the speed is only about 1.5 km/h. Conducting this in one pass keeps more of the moisture from the trash in the soil and aids with its breakdown. After this pass the field is left for about a month then the bed former is run over the ground followed by one pass of the rotary hoe then it is planted again. There is approximately 1.2 t nitrogen and 1.6 t potassium per hectare in the ratoon trash. These nutrients together with the organic matter make a difference to soil health and the requirements of the next crop.

**Estimating percent of natural flowering**

*Trey Hubert unpacking the drone for a demonstration flight.*

Troy Jensen from the University of Southern Queensland in Toowoomba started working with Jay Hubert in sugarcane, this progressed to looking at the potential from image work in pineapples. Jay wanted some way of estimating the % of a field that had natural flowering in order to make decisions about the viability of making an extra harvest round to pick the natural fruit.

The developmental work with the drone and camera included determining the optimum altitude and speed to capture the necessary detail and to adapt current recognition software from broad acre industries that was used to identify weeds to now identify flowers and their stage of development.

This work could progress to mapping each fruit in the field, identifying the stage it is at and its exact GPS position. This information could in theory be downloaded into a mechanical harvester which could potentially then enter the field to pick all the fruit in the field at a specified stage of maturity.

**"FARM PRACTICES AND WATER QUALITY" – lunchtime talk by Kevin McCosker, DAF, Rockhampton**

Kevin and Paul Humphries work in the "Paddock to Plate" program for DAF and are based in Rockhampton.

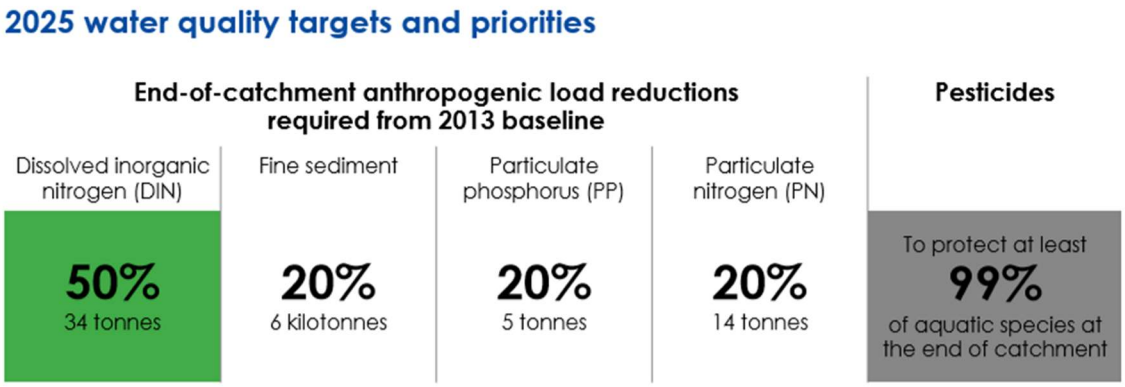
Kevin has worked for DAF for 20 years, mainly in cotton and grain and has been involved with Reef programmes since 2012.

He pointed out that there has been $½ billion provided by the combination of the Australian and Queensland government directed at improving farm management practices to help protect the Great Barrier Reef.

Every catchment from Mary River north has targets for:

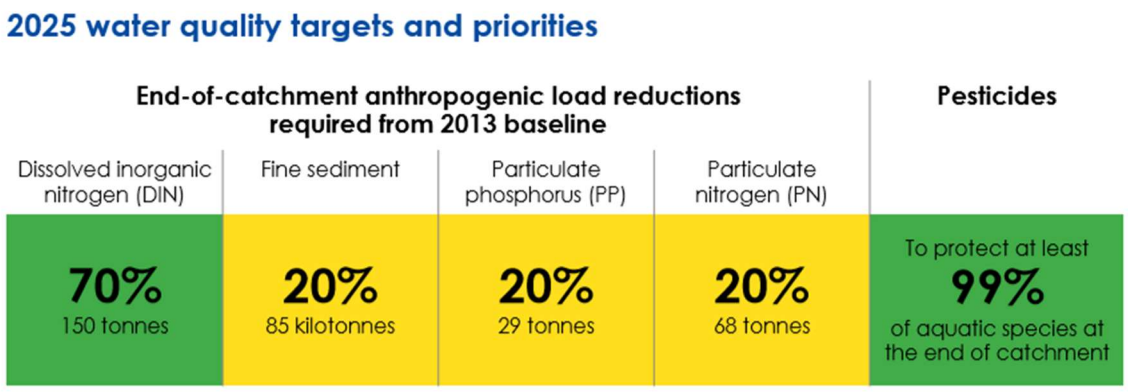
1. Dissolved inorganic nitrogen
2. Fine sediment (less than 50 microns, i.e. 50/1000$^{th}$ mm)
3. Particulate phosphorus (PP)
4. Particulate nitrogen (PN)
5. Pesticides

Here are the targets for the **Kolan River basin** as an example:




This means for example that one of the targets for this catchment is to reduce the amount of Fine Sediment lost between 2013 – 2025 by 20% and this means reducing the loss by 6 kilo-tonnes.

Here are the targets for the **Burnett River basin**:




This means for example that one of the targets for this catchment is to reduce the amount of dissolved inorganic nitrogen lost between 2013 – 2025 by 70% and this means reducing the loss by 150 tonnes.

Targets for other catchments can be found by using the link:
https://www.reefplan.qld.gov.au/about/catchment-targets/

**Fine sediment**

Loss of soil/sediment is driven by runoff.

Sediment traps are useful but not that effective, we need to do other things first, the most important of which is having some sort of ground cover, and the more the better . . . . . .

## Hierarchy of importance - cropping

1. Ground cover 70% + (attached cover is better)
2. No bare ground during periods when it rains
3. Minimise tillage and compaction
4. Contour banks, drains/waterways
5. Sediment traps

In some research on sugarcane at Innisfail in NQ it was found that in a crop with a trash blanket and no tillage that soil loss was about 40 t/ha (bad enough) whereas using the traditional system of tillage and no trash blanket soil losses were a staggering 320 t/ha (8 times more)!

The following information reinforces the groundcover rule, measurements were taken at Kairi on the Atherton Tablelands, note the contrasts in both runoff and erosion:

| Treatment | Runoff (mm/year) | Erosion (tons/ha/year) |
|---|---|---|
| Pasture | 59 | 0.17 – 0.28 |
| Grain cropping | 71 | 0.8 – 3.2 |
| Bare cultivation | 304 | 18.7 |
| Conventional tillage | 135 | 4.1 |
| Reduced tillage | 99 | 2.9 |
| Pasture | 43 | 0.6 |

**Pesticides**

Loss of pesticides is also driven by runoff.

- Things that reduce runoff also reduce pesticide loss.
- The amount that is applied is the main factor in how much is lost
- Timing of pesticide application in relation to **runoff** events can make a big difference
- Big differences in the risks of different products

The volumes of residual herbicides that need to be applied can be reduced over time where weeds are well managed. Many pineapple growers now make an effort to prevent weeds getting to the seed stage or physically removing seeding weeds from the field and destroying them thus reducing the seed bank in the field. Targeting weedicides (as the Huberts are doing with their interow rig) and pesticides rather than broadacre application also significantly reduces the amount that needs to be applied.

Again, the less you can put on the less that can be lost to the environment.

Timing of pesticide application can also make a big difference – the risk of pesticide loss is greatest immediately after application.

Choice of pesticide is also important. Ametryn and diuron are significantly more harmful/toxic to species than bromacil for example. For more information on this and other pesticides see the copy of Kevin's presentation on the AP grower website (Slides 17-27).

**Monitoring**

Basing spray applications on needs that are determined by monitoring rather than conducting calendar sprays can reduce pesticide load in the environment.

**Nitrogen (and other nutrients)**

Where pesticides are picked up in the water there will also be nutrients and sediment too, however the loss of nitrogen is driven more by leaching than runoff.

Some losses of nitrogen are inevitable, but steps can be taken to minimise this loss.

Nitrogen in excess to crop requirement is vulnerable to loss at any point in time. This reinforces Rachel Abel's (DAF) work presented in the last SEQ/WB study group workshop that recommends much lower applications to young plants because (a) small plants don't need much and (b) don't have a sufficiently well-developed root system to take it up. Rachel found that the **plant demand for nitrogen closely matches the vegetative growth rate of the plant**, and also that nitrogen requirements are directly related to leaf weight or leaf area. Please see the meeting minutes from the last SEQ/WB meeting for more information as well as Rachel's presentation.

A key message is to match nutrient supply with crop demand.

The pineapple industry already has a best practice with the application of multiple low rate applications of fertilisers using the spray boom. This will minimise potential nutrient losses from the field.

**LITTABELLA FARM – STEEMSON FAMILY**

*Observing the farm layout designs at "Littabella"*

The Steemson family planted their first pineapples in 2002 having been attracted to the crop because, unlike sugarcane, they require little or no irrigation. However, this year they have only received 100mm since the 400mm that fell in January.

Currently the Steemsons grow 400 ha of sugarcane and 250 ha of pineapples, plus some water melons, pumpkins and sweet potatoes. Most of the pineapples go to the cannery and about 400 t to the fresh market.

Family members are involved on the farm and they also have a fairly stable workforce.

They are scrutinising their planting material and being more selective with what they use but this has been difficult because of the high proportion of small fruit in the past dry seasons.

They developed a de-topping harvester with Yannie Creek Engineering in 2010. They have been trying many different things for sustainability and yield and are experiencing challenges with the change in the weather. The involvement and collaboration of industry gives a better chance of developing solutions.

**Field layout demonstration trial**

The first trial established through the P.E.S.T. (Pineapple Environmental & Sustainability Team) collaboration was established on 'Littabella'. All members of the P.E.S.T. group have been involved, viz. Australian Pineapples, Agri Supply Global, Growcom, DAF and DES. It is a demonstration trial of different farm layouts where erosion levels are monitored:

Treatment 1A: Beds planted up and over slopes with no contour banks (standard practice)

Treatment 1B: Beds planted to contours on 1-2% slope

Treatment 1C: Beds planted down slope separated by contour drains/banks on 1-2% slope


Images of the three different treatments taken several months ago – note these images and more detail is available on the Australian Pineapples website.

The erosion levels measured earlier this year were 86, 26 and 55 t soil lost/ha for layouts 1A, 1B and 1C respectively.

*Metal collection troughs were used at the ends of the row to collect and measure soil erosion.*

Three different types of drain were tested. 1. Standard drain with no groundcover which soon scoured out. The photos below show type 2. the drain lined with geofabric as ground cover (bottom left) and with three Gabian basket levy banks (inset) and 3. (bottom right) drain with jute mesh and vegetation. All three included a silt trap at the end of the drain.

**Bioreactor to remove excess nitrogen - Luke Griffith (DAF)**

Luke explained the purpose and construction of the bioreactor on Littabella farm. Its purpose is to primarily to remove most of the nitrogen in the seepage water from the pineapple field. Its location is important in order to intercept the seepage water from a large area of pineapple fields.

A bioreactor is simple in construction, this one is 130m long, 0.7m wide (the width of the excavator bucket) and 1.2m deep. Its depth was determined by the soil profile. It was back filled with a 0.7m depth of woodchip (mainly sourced chipping some pine trees on site) and capped with 0.5m of soil. It took 4 hours to dig and 3 hours to backfill.

Sampling points were established above and below to bioreactor to measure the amount of nitrogen in the water entering and leaving the installation. The bioreactor began to operate as soon as water flowed through it and so far the tests have shown that it is removing between 50% and 90% of the nitrogen flowing underground out of the pineapple field. This is an excellent result for reducing the nitrogen load from the farm into the local creek and to the Barrier Reef. It is expected to have a useful life of about 10 years.

*Luke Griffith standing above the bioreactor with the silt trap behind where he, John and Tim are standing*

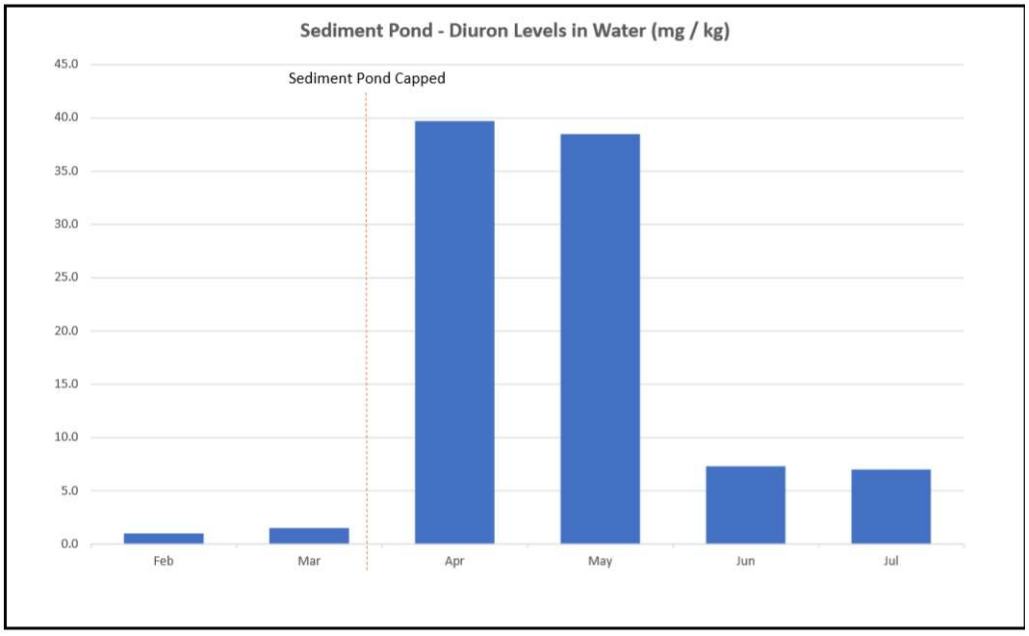
**Run off and sediment collection basin** – on the AP website there is more info, click SA05WB-03

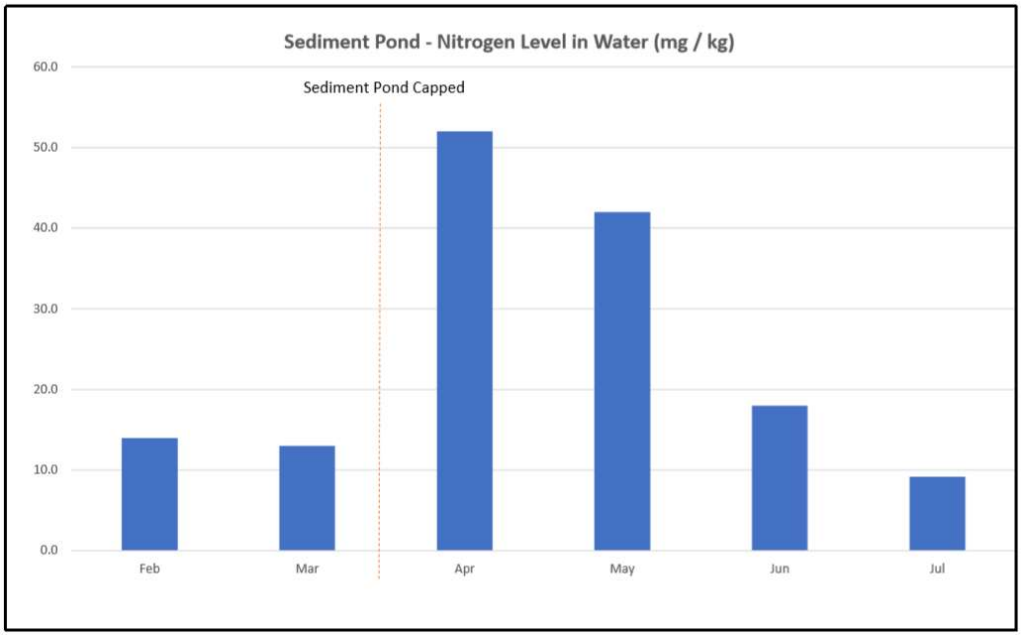
Research has shown that most pesticides and fertilisers that run off a field do so with the first 25mm of rain. The purpose of the collection basin was to test its effectiveness at collecting the first 25mm of rain runoff and megasure the degradation of pesticides from UV light and heat whilst sitting in a shallow depth of water. The basin was designed to be wide and shallow to allow the water to heat up as much as possible and get maximum exposure to UV light.

Kevin McCosker from the 'Paddock to Reef; DAF team said that heat, UV light and microbial activity will accelerate the degradation of chemicals and reduce the half-life of pesticides.

*The sediment pond (above) under construction and (right) after 12 months after having filled then evaporated.*

The first runoff event was captured by the sediment pond in January, the pond was then capped so no more run off could enter and the levels of pesticides and nutrients in the water and in the sediment itself were then tested at various intervals. Levels of pesticides and nutrients have shown good decreases over time, especially in the water. Levels of diuron and nitrogen are shown below.






**Alternative pest management products -** on the AP website there is more info, click SA04WB-01

This trial is testing various alternative products for the control of pests and diseases. These include pre- and post- plants applications of products including:

- Chicken manure
- RhizoMax - a selective strain of Bacillus sp. which is claimed to provide effective management of a wide range of both fungi and bacteria.
- Nematamax - a biological inoculant based on a selective strain of naturally occurring entomopathogenic fungus. The spore of the fungus acts by infecting, parasitizing and killing eggs, juvenile and adults of most nematode species.
- Squadron - contains bacteria which it is claimed protect plants from pathogens by rapidly colonising the rhizosphere on the roots.
- Mycorrhizal fungi - fungi with a network of minute filaments, which attach and penetrate roots of plants. The benefit to plants is that they in effect increase the surface area of plant roots in exchange for sugars supplied by the plant roots. In this way they can improve nutrient and water uptake by plants.
- Tri Fix N - three naturally occurring endophytic bacteria which are claimed to enhance fertiliser efficiency by improved nutrient uptake and utilisation by the crop, increase nitrogen fixation and improved uptake of applied nitrogen and improved root development in plants, improving plant health and their ability to cope with stress.
- Hatake - *Bacillus amyloliquefaciens* strain claimed to show excellent plant pathogen fighting ability and high organic matter degradation activities.

These treatments are compared with standard practice of metalaxyl, phosphorous acid, bifenthrin, dimethoate and diazinon, but with no fumigation.

Trent De Paoli (Managing Director) and Sharnee (soil health expert) from Novum Lifesciences (formerly known as CropTech) in Bundaberg gave a brief talk about the direction of their company. Trent mentioned that the market for Australian corn in Japan recently dried up because of pesticide content and said that we need to start moving away from so much reliance on pesticides and look at

alternative means of managing and reducing pests and diseases. Trent also outlined the importance of monitoring your crop, saying that you can't improve anything unless you are managing it.

*Left: the field where alternative treatments are being tried. Right: Plants from the fumigation trial, without fumigation (left) with fumigation (right)*

**Fallow management trial -** on the AP website there is more info, click SA03WB-03

This trial is comparing mulching the previous crop, using compost, planting fallow crops and comparing these practices with the more convention practices of only rotary hoeing, no additional of organic material and bare fallows. It commenced December 2018.

New approach

- Phase 1. One pass with mulcher, follow immediately with one pass of rotary hoe, apply 20 tonnes chicken compost, another pass with rotary hoe.
- Phase 2. Three different inter-fallow crops planted (rye grass, oats, barley), fallow crops destroyed after four months.
- Phase 3. Standard pre-plant and post plant pesticides but no pre-plant fertiliser or side dressing. Start applying foliar fertilisers fortnightly from two months of age.

Standard practice

- Phase 1. Four to six passes with rotary hoe.
- Phase 2. Fallow ground with no ground cover.
- Phase 3. Standard pre-plant and post plant pesticide and fertiliser practices - nutritional requirements as per soil analysis and 250kg/ha 77S side dress.

Evaluation will include nematode counts, soil analysis, soil health assessment, crop health assessment, crop residue breakdown, cost analysis.

Nematode counts were conducted just prior to crop destruction and found to be very high. Standard practice required significantly higher levels of pre-plant nutrition compare to the treatments which needed minimal fertiliser of which could be made up in the foliar program.

**Fumigation trial**

This is an independent trial being currently undertaken by John Steemson and Trical. The pre-treatment nematode count was extremely high, namely 2,500 root knot nematodes (RKN) per mL of soil.

**Growcom's 'Hort 360' Reef Certification**

After the farm walk attendees gathered in the Steemson's shed for drinks sponsored by Liliana at Trical then Michelle Haase from Growcom introduced the 'Reef Certification' module from Hort 360 and many growers made a start on it. Emma Baker from the Burnett Mary regional Group also spoke.

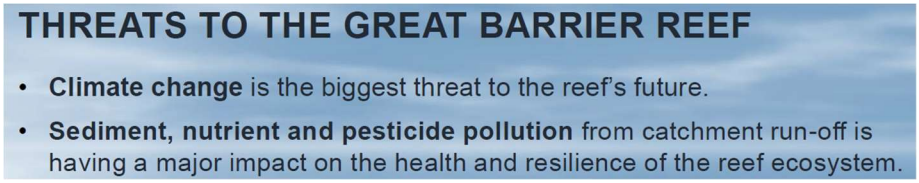


*Michelle Haase from Growcom and Emma Baker from the Burnett Mary Regional Group*

*Visiting the Hubert family's pineapple plantings*

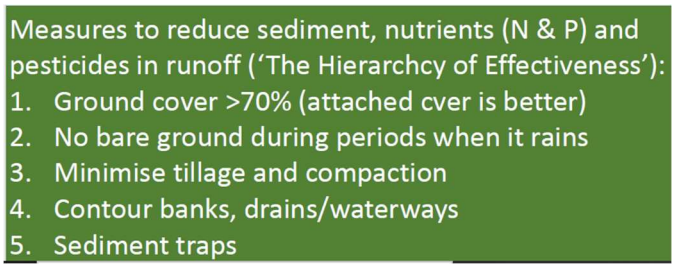
**'PINEAPPLE GROWERS CONNECTING TO THE GREAT BARRIER REEF' -** Sue Sargent, Sue Sargent Consulting

Sue gave an entertaining after-dinner talk about the Great Barrier Reef (GBR) and how farming decisions by growers can make a difference to preserving it for future generations.

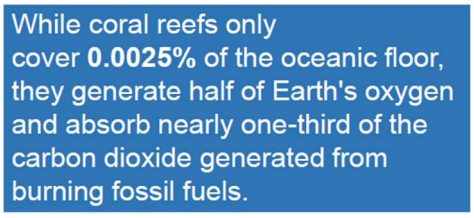



The GBR is 2,300 km long and between 60 – 250 km wide. It has 600 species of coral, 1625 species of fish, 130 species of sharks and rays, 100 species of jellyfish and 30 species of whales and dolphins to name just a few of the groups of species.

One of the key messages was that like a desert or the artic tundra, the GBR is actually a nutrient poor environment and its diversity is as a result of the evolution of a very complex ecosystem where the interdependence and symbiosis of species is critical. For example, corals are the result of a symbiotic relationship between the coral polyps themselves and algae that live inside them. For this reason even small amounts of sediment, extra nutrients and chemicals reaching it from the mainland can upset the balance.




Another key message . . . .




Oceans regulate the global climate; they mediate temperature and drive the weather, determining rainfall, droughts and floods.

Her presentation can be found alongside these minutes on the AP grower website.

**MAIN MESSAGES FROM THE TRIP TO MUSGRAVE ISLAND, GREAT BARRIER REEF**

It was an early start on Friday morning to board the boat in time! Weather and sea conditions were favourable for most on the journey out, with only a few of the group succumbing to sea sickness. After the 2.5hr trip we arrived in the protected lagoon where we then took a glass bottom boat to the island for a short walking tour.

The Island is named after Lady Lucinda Musgrave, the wife of Sir Anthony Musgrave, a colonial governor of Queensland, and is referred to as Wallaginji by local Australian Aboriginal tribes. The name Wallaginji means 'beautiful reef' - of which is certainly is!

A large population of white-capped noddy terns were nesting during our tour in the many Pisonia trees. The carcasses of noddy tern chicks that fall out of nests or adults that become tangled in the sticky Pisonia seeds are quickly devoured by centipedes and the nutrients eventually returned to the soil - an interesting lifecycle! From December to May, migratory wedge-tailed shearwaters, colloquially known as 'mutton birds', nest in burrows in the interior of the island and their mournful wails can be heard at night. These birds are readily seen along the forest walk at night and precaution must be taken to not stray from the path as the burrows easily collapse under the weight of a person.

After the tour we then returned to the boat for lunch and then were free to explore the reef where we enjoyed snorkelling alongside many turtles and a good variety of coral and fish species.

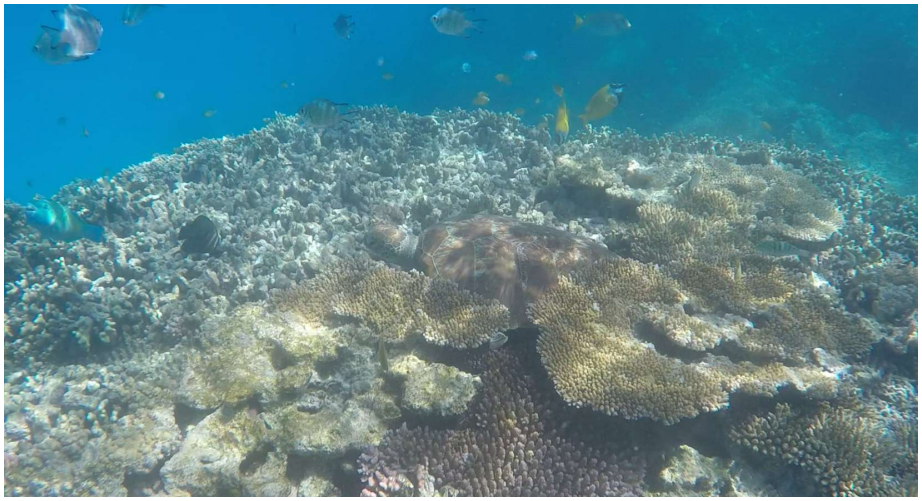
Before our journey back to Bundaberg, Emily from the Burnett Mary Regional Group gave the group a quick overview of some of the interesting projects that the group is undertaking in regards to improving land management practices and reef water quality - for more information see their website on each of these projects - https://bmrg.org.au/projects/. Rowena Beveridge and Michelle Haase from Growcom were hoping to present some feedback and results on the Hort360 reef certification module and a Hort360 Wide Bay and South East Queensland data summary but unfortunately the TV was not able to present the slides. Rowena Beveridge has prepared some of the summary points on the Wide Bay and South East Queensland Hort 360 data findings which are at the end of these minutes.

Overall, the group had a fantastic day out, putting into context the importance of managing off farm sediment and reef water quality. Emphasising the key take home message that we all have a part to play in making efforts to help protect and preserve the amazing natural habitat the Great Barrier Reef is, and just how important it is we do!


*Pineapple pirates aboard 'The Lady Musgrave Experience' boat*

*Lady Musgrave island*

*Green sea turtle (photo taken by Rachel Abel)*

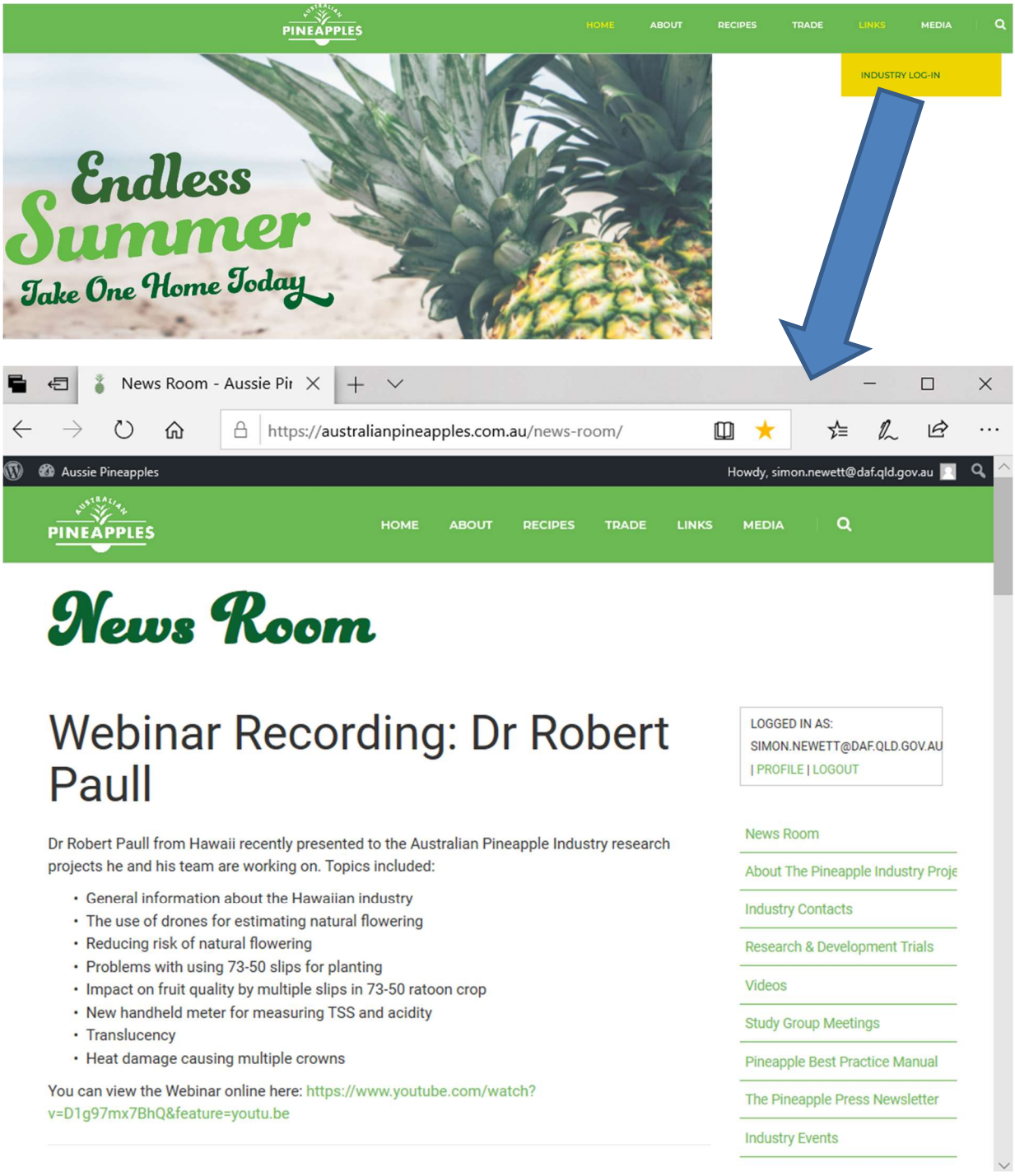


*Healthy biodiversity of coral and marine life (photo taken by Rachel Abel)*

**ACCESS TO 'AUSTRALIAN PINEAPPLE' WEBSITE**

Details for the seventeen trials established by Tim are available on the Australian Pineapple website. Select the "Research and Development Trials". The descriptions include treatments, photographs and results. If you don't already have a 'log-on' please contact Natalie Brady at Growcom, Mon – Thu on phone **3620 3863** to arrange access.

Here is what you see on the 'Home' page when you open the AP site, then once you log on to the Industry Members section what its first page looks like right now – the menu items are listed along the right hand side.



**ACKNOWLEDGEMENTS**

Many thanks to our hosts and presenters: The Hubert family and the Steemson family, Troy Jensen from the University of Southern Queensland, Kevin McCosker from DAF in Rockhampton, Sue Sargent for the after dinner talk, Emma Baker and Abbie Taylor from the Burnett Mary Regional Group and Michelle Haase from Growcom.

Thanks also to Liliana Hidalgo and the drinks supplied by Trical.

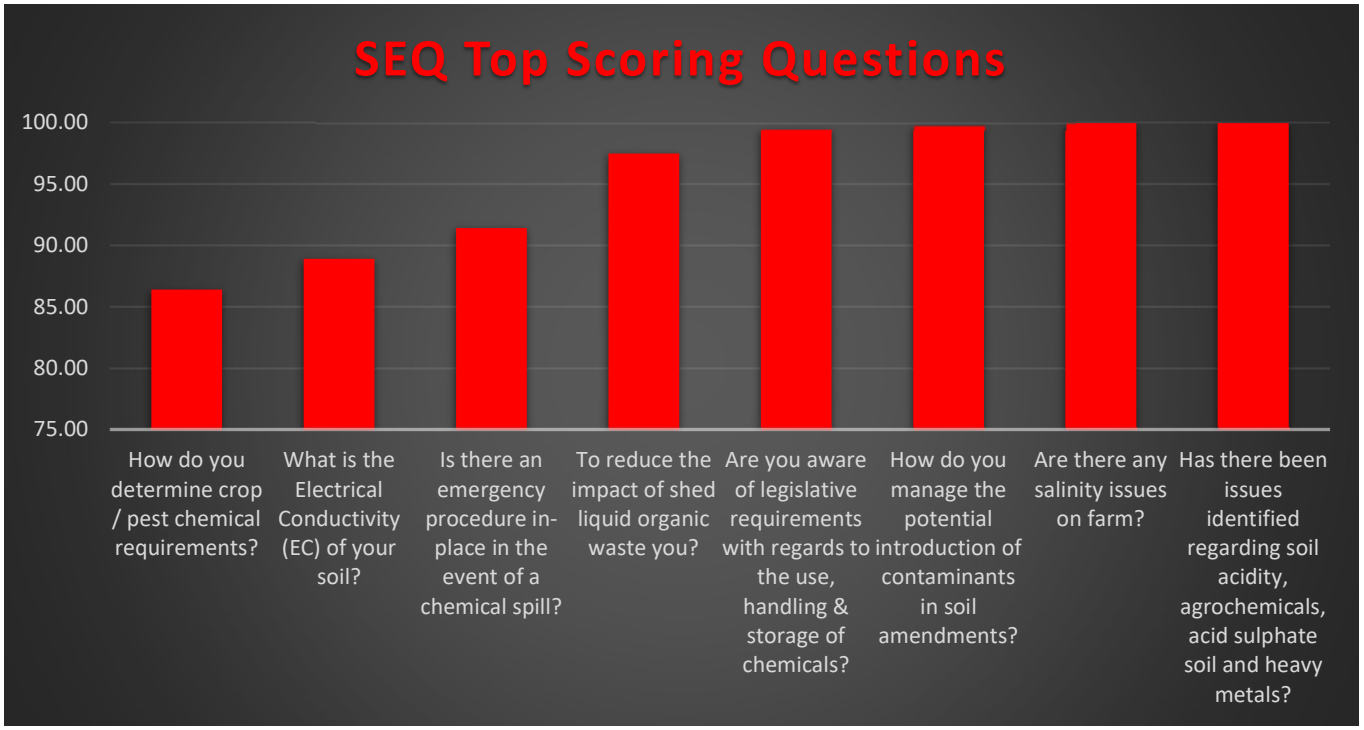
Special thanks to the generous sponsors of the boat trip on Friday, namely the Burnett Mary Regional Group and Growcom.

Simon Newett, Bridie Carr and Tim Wolens

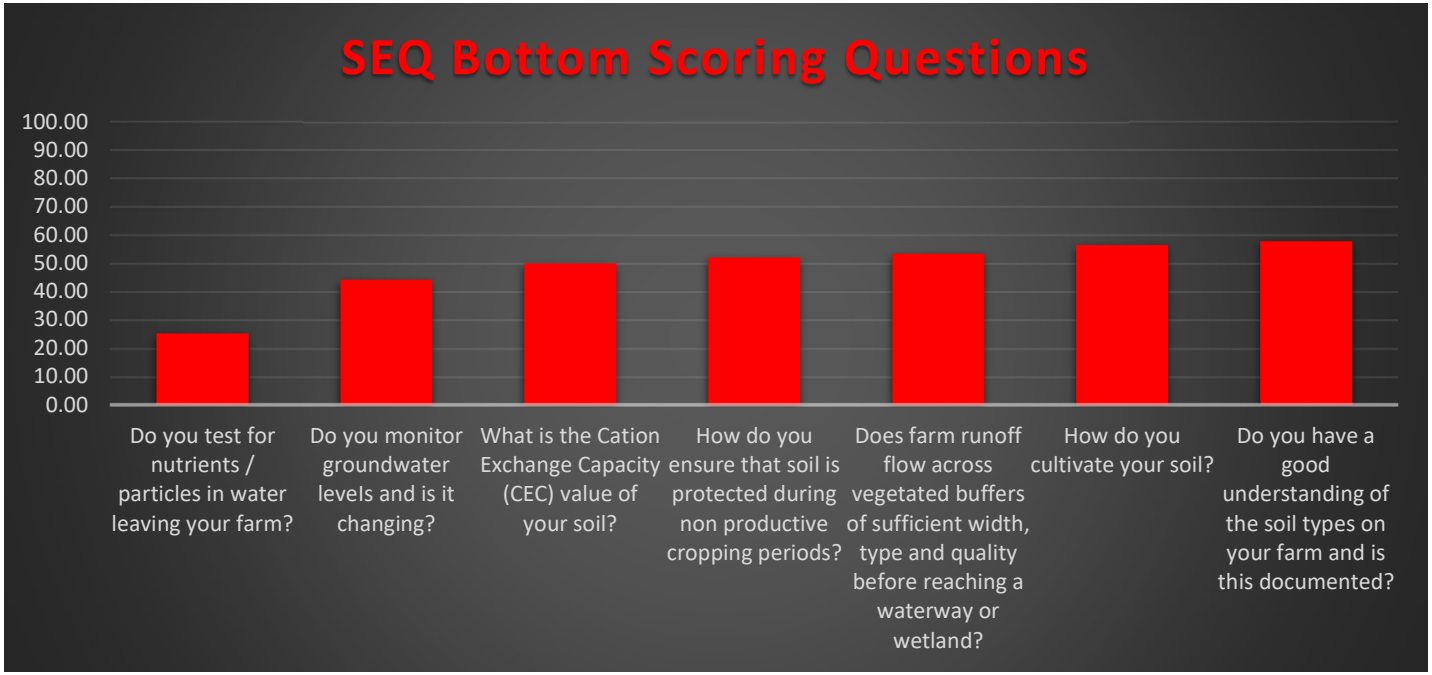
*These workshops are part of the project "Improved viability and sustainability of the Australian pineapple industry" (PI17001) which is a strategic levy investment under the Hort Innovation Pineapple Fund. The project is delivered by the Department of Agriculture and Fisheries, Agri Supply Global and Growcom and funded by Hort Innovation using the pineapple industry research and development levy, with co-investment from the Queensland Department of Agriculture and Fisheries, and contributions from the Australian Government.*

**HORT 360 WIDE BAY AND SOUTH EAST QUEENSLAND DATA SUMMARY**

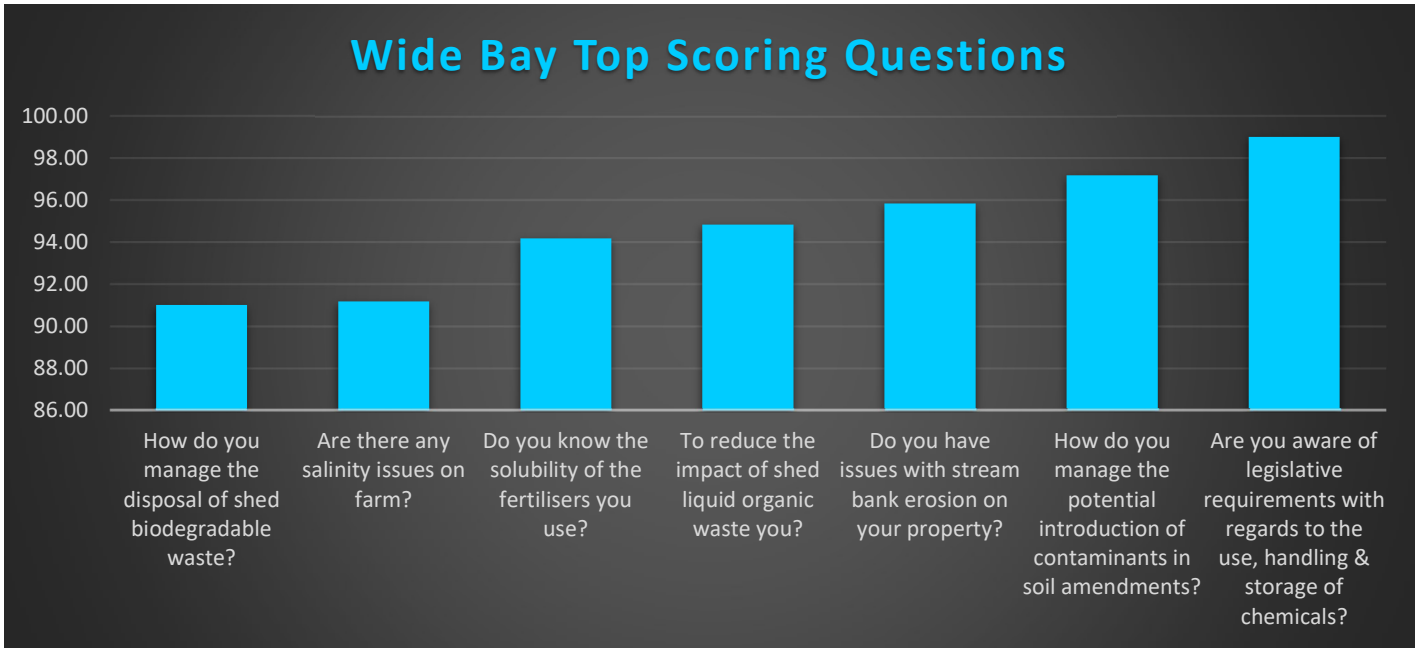
Growcom continues to actively promote the uptake of one of its flagship programs Hort360 through the delivery of its environmental modules. The key focus for pineapple growers remains creating better efficiencies with what they are applying to the field, reducing any losses that occur into nearby waterways and alleviating the time spent on redistributing soil back into production areas. Through the feedback and reporting process that Hort360 provides, growers can highlight where their strengths and weaknesses are and concentrate their efforts far more efficiently.



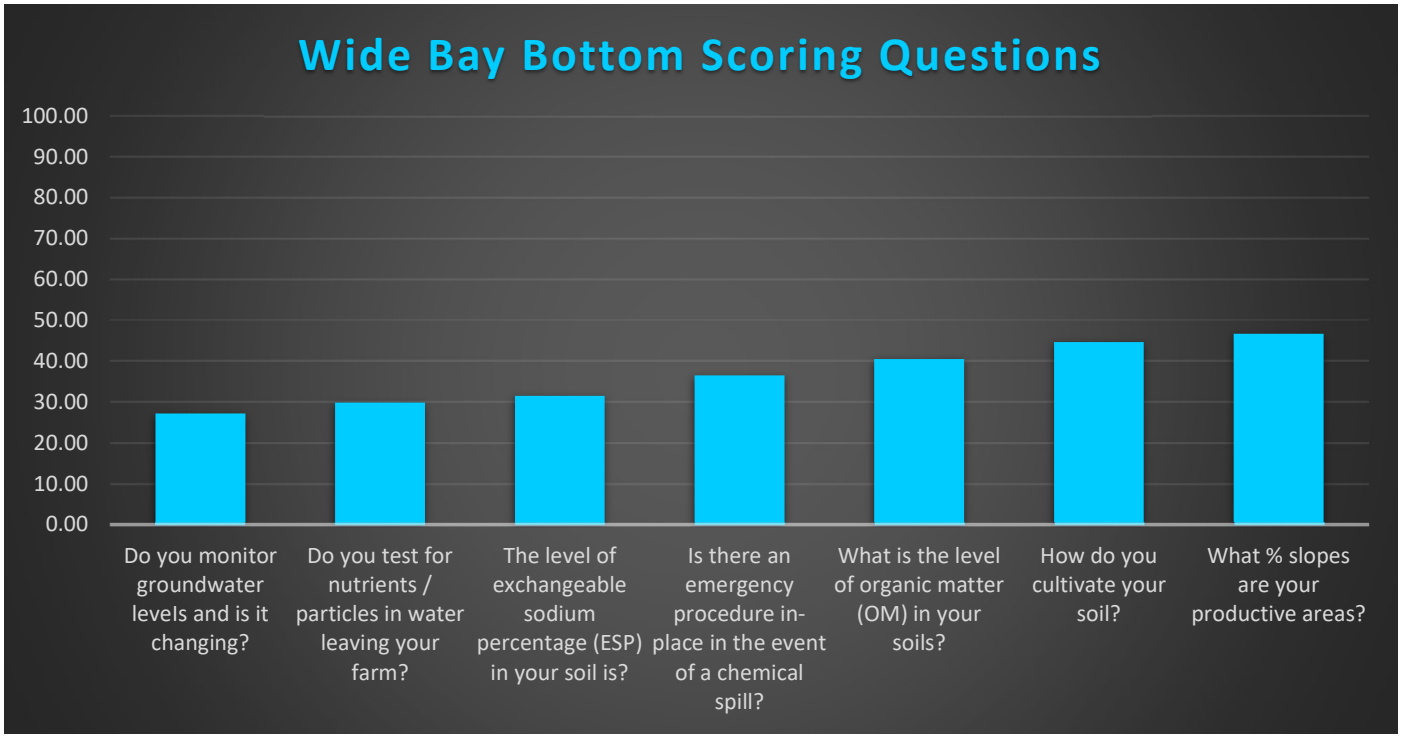

SEQ Growers: The most **notable strengths** for growers in SEQ is their understanding of legislation around chemical use and the handling and distribution of it. They are very aware of their soils capabilities and its behaviour with management activities and in weather events. They display a good understanding of crop/pest chemical requirements and they are typically using their own recorded crop monitoring results, action thresholds and labelled rates in line with crop monitoring consultant recommendations / implementation of IPM practices where possible.




SEQ Growers: The most **notable weakness** for growers in SEQ is that they do not test for nutrients/particles leaving their farm or monitor changing ground water levels. The documentation of soil data could be improved with soil data mapping exercised with a tailored management plan for variances across the production area. There is also still room to improve cover cropping in non-productive periods and better vegetative buffers.




Wide Bay Growers: The most **notable strengths** for growers in the Wide Bay is, like SEQ, their understanding of legislation around chemical use and the handling and distribution of it. They display a good understanding of fertiliser application and commonly refer to solubility charts. Stream bank erosion is not an issue, there is no evidence of salinity issues and the disposal of shed biodegradable waste is typically chopped and spread across the farm to be used as compost.




Wide Bay Growers: The most **notable weakness** for growers in Wide Bay is again very similar to SEQ, in that growers do not test for nutrients/particles leaving their farm or monitor changing ground water levels. The production area in the Wide Bay is more representative of 8-10% slope, which combined with cultivation practices commonly answered as “regular intensive tillage / within the production area” is an area that will need further focus.