

Courses on Offer to all Growers:

- ◆ Six Easy Steps
- ◆ Auschem (formerly Chemcert)
- ◆ Precision Agri

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THE CANE STALK

September 2020

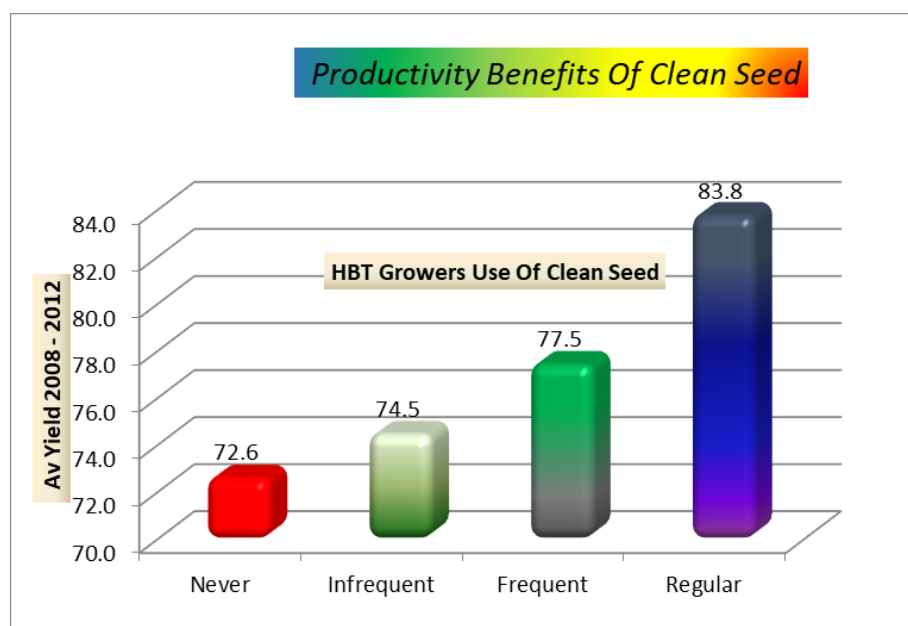
Message from the HCPSL Manager.



GETTING MORE CLEAN SEED CANE!!

The HCPSL Board and management have heard our growers' requests for more Clean Seed Cane loud and clear. HCPSL is endeavouring to provide more cane in 2020 and beyond, while making it easier for growers to access Clean Seed Cane.

Planting clean cane into commercial fields is the easiest way to increase cane productivity on a farm. The graph below clearly shows that growers who regularly obtain and use Clean Seed cane have higher cane yields than those who do not.



The following HCPSL activities are underway or in the pipeline to increase uptake and access to Clean Seed cane:

1. Increase the area planted to *HCPSL Clean Seed plots* to make more cane available for growers to purchase annually.

HCPSL has recently leased a 16.84 ha farm just outside of Ingham to grow more Clean Seed cane for the local industry. Planting on this farm will commence in 2020.

HCPSL has a lease farm at Stone River (16.34ha) which its sole purpose is to propagate up and coming varieties from the SRA and Wilmar plant breeding programs and varieties to be distributed to growers.

HCPSL has a lease farm at Macknade (21.47ha) (the old CSR TFD site) which is used for Clean Seed production, long term industry agronomy trials, the Wilmar plant breeding crossing collection and the SRA National Introgression plant breeding program. Over the next few years as some agronomy trials conclude these blocks will be converted over to the production of more Clean Seed cane production.

HCPSL has commercial arrangements in place in the Abergowrie (~3ha planted annually), Hawkins Creek (~4ha planted annually) and Ingham Line (~4ha planted annually) areas to propagate Clean Seed cane.

These Clean Seed plots will meet the industry's growing demand for more Clean Seed cane moving forward.

2. Increase the amount of *plant tissue cultured plantlets* grown by growers annually.

In 2019, 6500 and in 2020, 9,500 plant tissue cultured plantlets were supplied to growers throughout the district; this propagation method is increasing in use annually.

Nineteen growers have ordered 16,890 tissue cultured plantlets for 2021; this will be the largest order on record for HCPSL. Fifteen of the 19 growers have never ordered tissue cultured plantlets before, with most growers ordering new varieties SRA26 and SRA28. HCPSL staff can assist growers who are planting plantlets for the first time. HCPSL also hires out a water wheel planter to enable growers to plant tissue cultured plantlets.



Above left photo: Fieldworker Dion Cawthorne irrigating in HCPSL tissue culture plantlets at Macknade.

Above mid photo: Sam Sellick attending to grower ordered tissue culture plantlets at Macknade.

Above right photo: Planting tissue culture plantlets at the HCPSL Macknade farm.

3. *Hot water treatment of cane.*

HCPSL owns and operates 2 long hot water treatment (LHWT) tanks facility located at Victoria Mill, which allows growers to treat their own cane. HCPSL currently treats up to 80- 200t of cane annually through the LHWT tanks.



Above left photo: HCPSL long hot water facilities at Victoria Mill.

Above right photo: The HCPSL billet harvester cutting Clean Seed cane in the Ingham Line plot.

4. *Mechanization of cutting Clean Seed from HCPSL plots.*

In 2019, HCPSL purchased a whole stalk billet and billet harvester to make it easier for growers to access material from the HCPSL Clean Seed plots. These 2 units are mobile and will move into plots where there is demand for cane.

HCPSL has hired a whole stalk plant cutter to service the HCPSL Stone River farm and a billet harvester to service the HCPSL Macknade farm.

5. *Novel and new approaches to getting more Clean Seed cane.*

HCPSL staff are assessing new, novel and more rapid approaches to get more Clean Seed cane out to growers. HCPSL are working with SRA and other research organisations to assess new emerging technologies to propagate Clean Seed cane.

In 2020, HCPSL is assessing single eye and bud chipping methods that are used overseas to propagate Clean Seed cane. If this method is found to be successful and cost effective it may be offered to growers in the future.



Photo on left- Bud chipped cane ready for planting into pots

Photo on right- Bud chipped cane being planted into pots at the HCPSL Macknade site.

6. *Listening to growers and moving forward.*

It is proposed that HCPSL staff and Board members will be meeting with growers to investigate other methods to get greater adoption and use of Clean Seed cane by industry in late 2020. We really want to hear your views and opinions on how we can service your business better and how we can ensure that all growers plant the “cleanest” cane possible to plant on their farms.

Conclusion.

A few years ago, Dr. Jeff Hoy (international sugarcane pathologist) from Louisiana reviewed practices globally to manage the impact of RSD transmission and spread. On reviewing the Australian and HCPSL practices (during his visit) his best advice for our industry was, “Flood the industry with Clean Seed cane. Managing sugarcane diseases like RSD will be a challenge for the Herbert cane industry going forward, especially given that vast areas cane harvesters harvest daily.”

Dr. Hoy’s final comment for our industry was “Start by having your fields planted with Clean Seed cane, this is the best tool you have to manage RSD long term.”

The article on RSD testing of grower cane later in the newsletter will highlight the urgency and importance concerning the use of Clean Seed from HCPSL sources. Cane from your neighbour is not deemed as Clean Seed, because you may not know if all hygiene practices have been undertaken to ensure it is disease free.

HCPSL is listening to its members and is trying to provide more accessible Clean Seed cane to its members going forward. We look forward to catching up with you, our grower members at our up and coming Clean Seed discussion meetings. Please give me a call or come in and see me if you wish to discuss any matters pertaining to HCPSL.

Regards,



Lawrence Di Bella

HCPSL Manager.

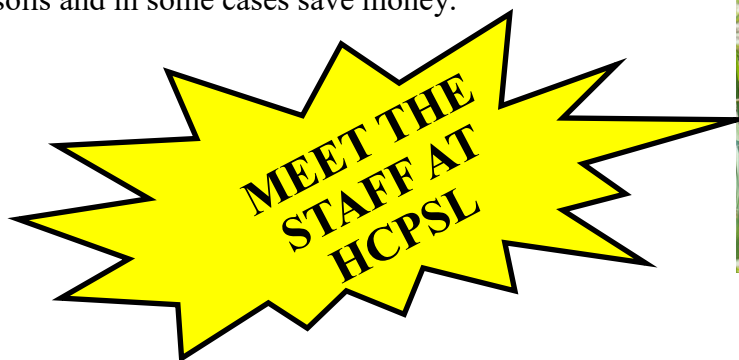
Hi, I am Megan Zahmel and I have been in the sugarcane industry for nearly eight years. I started with SRA as a field technician, supervising trial work involved with Enhanced Efficient Fertilisers and Yellow Canopy Syndrome.

In 2016 I accepted a job with HCPSL as an extension agronomist working with Project Catalyst on innovative farming practices to increase sustainability. These were grower-initiated trials and the Herbert region ran 16 trials around new farming practices. I worked on several projects with growers involving variable rate of amendments, mixed legume fallow crops, lime product and their efficiencies, bio-fertiliser & microbial products.

Recently I moved across to the Wet Tropics Sugar Industry Partners (WTSIP) team engaging with growers to provide whole of farm nutrient management plans to better match nutrient inputs to crop requirements, increase understanding their soils and in some cases save money.



of



G'day Herbert growers, I'm Ellie McVeigh. I began my role at HCPSL in April last year as part of the QFF Agricultural Extension Program.

Since starting at HCPSL I have had the opportunity to be involved in a range of projects. From completing a nematode survey, to developing nutrient management plans, and delivering grower workshops. Having now finished the program I look forward to continuing to work on various projects at HCPSL.

Recently, I have been involved in delivering the Herbert RP161 program. The project delivers whole-farm management plans to growers across the district. I have thoroughly enjoyed soil sampling, analysing results and developing plans for growers. Being part of the RP161 team has allowed me to get to know producers and gain further experience working with growers on-farm. In the near future I'll be involved in a range of activities and projects at HCPSL – including the EEF60 project, and assisting in herbicide workshops.

RSD testing of grower cane

Till the end of June 2020, 1499 RSD tests of growers' seed cane have been undertaken on over 250 farms with 133 (8.9%) confirmed cases of RSD found. All tests were undertaken through the HCPSL microscope or SRA lab. In 2019, 8% of the tests undertaken of growers' seed cane confirmed a positive RSD result.

The RSD infections were found in the following varieties:

- Q253– 93 cases
- Q240– 6 cases
- Q242- 3 cases
- Q247- 1 case
- SRA5– 6 case
- KQ228-1 case
- Q138- 2 cases
- Q232– 2 cases
- Q208– 5 cases
- Q250– 3 case
- Q231- 1 case
- Q237– 4 case
- Q200– 4 cases
- SRA14—1 case
- Q252—1 case

The results of the tests are extremely concerning because of the high incidence of infection. Growers are asked to be vigilant with hygiene when it comes to planting Clean Seed cane and to continue testing plant source material before planting.

Growers are also urged to consider purchasing Clean Seed from HCPSL plots, hot water treating cane or purchasing tissue culture cane to ensure that you have RSD free planting material.

If you would like to discuss RSD management please contact Sam Sellick, Tony McClintock or Graeme Holzberger on 47761808.



Cane impacted by RSD on the left and healthy cane on the right. Please note the variety is the same across the field

PLANTING CLEAN CANE IS THE EASIEST WAY TO INCREASE CANE PRODUCTIVITY!

ARE YOU TAKING POSITIVE STEPS?

The Spy in the Sky: using NDVI to monitor crop performance

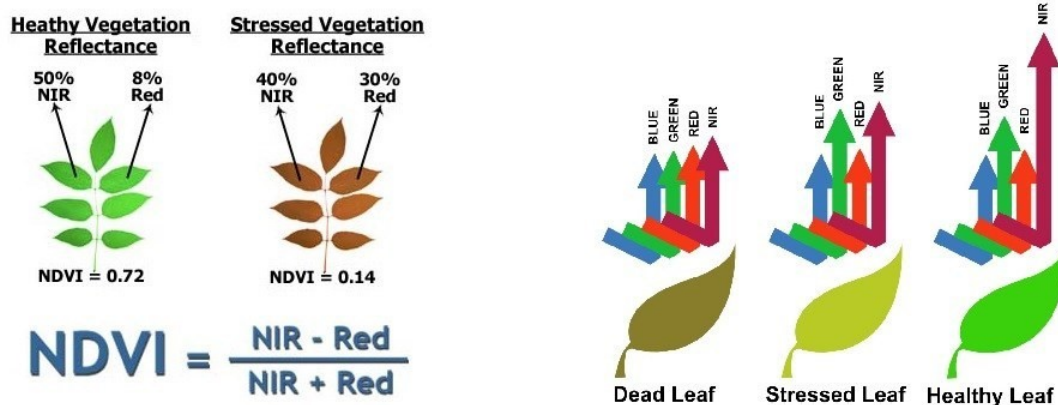
Yes ... it sounds a bit like the 1982 song by the Alan Parsons Project and is almost as poetic.

NDVI is one of the best known of the vegetation indexes which quantifies vegetation health and vigour by measuring the difference between near-infrared light (which vegetation strongly reflects) and red light (which vegetation absorbs). It is yet another tool in the toolbox for farmers to quickly assess the potential productivity within a paddock.

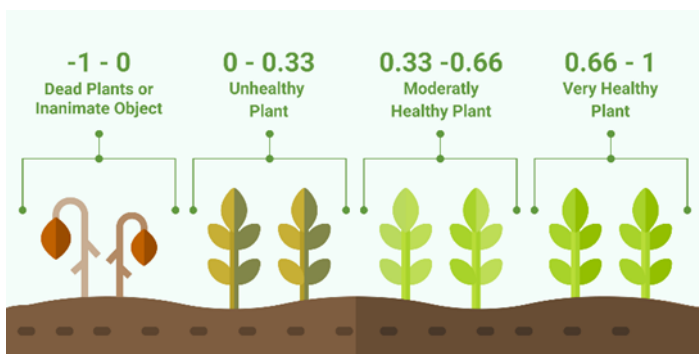
The formula for NDVI is:

$$NDVI = \frac{(NIR - Red)}{(NIR + Red)} = -1 \text{ to } +1$$

Essentially, the chlorophyll pigment in healthy plants absorbs most of the red light and blue light in the visible band (spectrum), and reflects more of the green visible band, and reflects still more of the near-infrared light (NIR), one of the invisible bands. Because chlorophyll reflects more green light than either red or blue, a plant's leaf looks green to the naked eye. The greener a leaf, usually an indicator of good plant health, means that less red light is reflected. Therefore, using a normalised ratio between the highly-reflecting NIR light band and the poorly reflected red light band, a scale, or index is created, which provides an indication of plant health and vigour.



<https://www.integraldrones.com.au/comparing-ndvi-mapping-systems/>



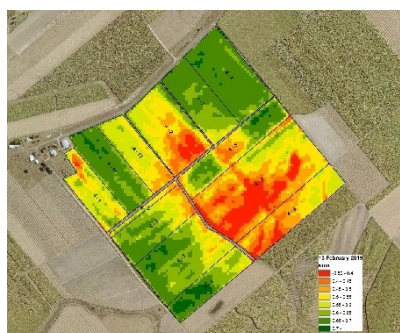
The results of NDVI always range between -1 and +1 but there are no distinct boundaries between plant health classes or land cover type. However, values close to +1 usually represent healthy vegetation while values close to and below 0 are usually bare ground or water¹.

<https://eos.com/blog/ndvi-faq-all-you-need-to-know-about-ndvi/>

The images on the following pages show change in crop health/vigour over time. Remembering the 2018/19 extreme rainfall events, the effects can be seen in the NDVI farm

maps along with the recovery of the crop over time. The final image shows the NDVI class distinctions used by HCPSL. This allows comparison between blocks on farms. HCPSL typically uses an eight class, red to green colour ramp to represent the health/vigour of the crop, red being bare ground or very sparse/poor vegetation. The transition to the darkest green indicates a crop canopy which is gradually covering any visible ground (showing primarily leaf matter) and growing vigorously. Legume crops grown as part of fallow management often show as the darkest green. As the sugarcane matures, the shade of green in the leaf tends to lighten, and this is reflected in the shade of green in the image.

Note that cane varieties which flower heavily will also affect the reflectance and therefore the NDVI values, usually showing as less vigorous. Some growers are using NDVI to interpret crop maturity, as a guide to their harvesting schedule.

13th February 201928th February 201929th April 2019

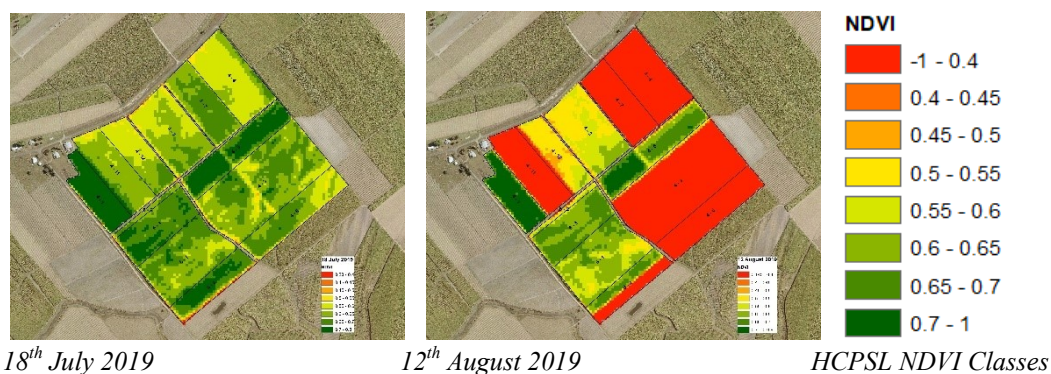
The 13th of February image shows a significant amount of crop damage due to the extreme rainfall events over the 2018/19 summer. The 28th of February image shows some recovery in parts of the crop along with a cane block having been sprayed out as fallow (the big red rectangle). The 29th of April image shows good recovery across most of the farm and shows the fallow block still with bare ground showing.

24th May 20193rd July 201913th July 2019

The images from the 24th of May through to the 18th of July show increasing crop vigour as the season progresses. The 12th of August image shows that several cane blocks have been harvested along with other blocks maturing. Having a mid-harvest snapshot of the crop may give reason to make changes to the harvesting schedule to try to maximise CCS.

HCPSL made use satellite imagery and NDVI over the 2018 March flood and the 2018/19 extreme wet season to find areas with significant damage from inundation. This identified

areas for a closer inspection and recording using HCPSL's drone. This also helped with the assessments undertaken by DAF for governmental assistance.



One of the real advantages though is the ability for farm management software packages to import NDVI imagery. Commercial companies such as DataFarming have an ability to view NDVI imagery online for free, or imagery can be downloaded at a cost, and used within farm management software packages. In other platforms like ProAgrica (SST), imagery can be purchased through associated apps and become available within the software. The limitation of many of these systems is that imagery can only be viewed by individual block. DataFarming allows the ability to create an “area of interest” polygon which can be as big as the user wants.

DataFarming and other farm management software packages also have the capacity to perform analysis on multiple images over time and to create in-field management zones. These zones can then become the basis for taking soil samples, i.e. in high NDVI value areas vs. low NDVI value areas, as a proxy if electromagnetic conductivity mapping is not available over an area.

Any way it is applied, NDVI can provide an insight into the infield performance of a crop, identifying areas of lower crop health/vigour and potential yield, allowing the grower/agronomist to assess the limitation of the soil in that area, and recommending appropriate measures to increase the productivity of the block.

As research into remote sensing continues, additional vegetation indices are developed for us in estimating crop health. GNDVI, or green NDVI is a modified version of the NDVI algorithm that uses Green and NIR light to better indicate the variation of chlorophyll content in the vegetation. It is also useful to analyse deficit/excess of water and nitrogen in the crop.

Drone-mounted multispectral cameras, after processing, can produce the same results, NDVI etc. at a much smaller resolution, good for trials and small crops. Growers interested in discussing the use of NDVI mapping can contact Rod Nielson at HCPSL on 4776 1808.



IMIDACLOPRID UPDATE

As mentioned in previous newsletters, Imidacloprid (the active ingredient in both liquid and granular grub control products) is under review by the APVMA. It is critically important that growers follow all label directions and ensure that placement of the product is correct to minimize potential environmental impacts, and most importantly, allow the product to have the best opportunity to control the target pest. Label instructions vary from product to product, and there are differences between plant and ratoon instructions, so understanding and following the label is very important.

Some key factors to consider for various products include:

- Plant cane – liquid products
 - ♦ Nuprid is registered for use between June and November
 - ♦ Confidor Guard is registered for use between August and November
- Ratoon cane – liquid products can only be used between September and November
- Liquid products should be applied 100 – 150 mm deep with 100 mm of coverage
- If side dressing liquid products, ensure it is placed in a band no more than 15 – 20 cm wide and is 15 – 20 cm deep from final hill up height.

For assistance concerning imidacloprid use and application,
please contact Richard Hobbs (0400 544 301)



UPDATE



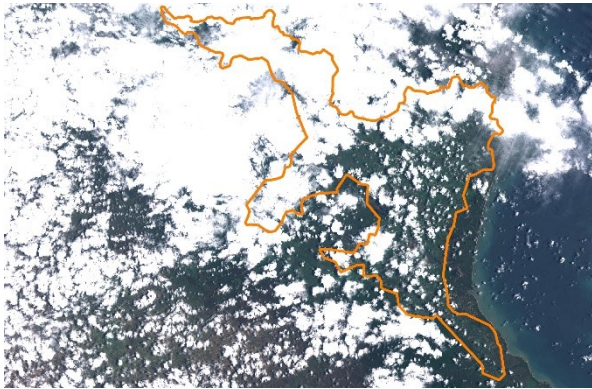
Satellite Imagery over the Herbert

The Earth Resources Technology Satellite (ERTS-1, later renamed Landsat 1) was launched carrying two main camera systems, a Return Beam Videocon (RBV) and a Multispectral Scanner System (MSS), the important one for NDVI. Initially Landsat images had a resolution of 80m which was too coarse for agricultural purposes at a farm scale or block scale. By Landsat 4 in 1982, images were acquired at a 30m resolution and were beginning to be used to look at agricultural productivity.

In 2015 the European Space Agency launched the first of two satellites (Sentinel 2A and then Sentinel 2B in 2017), to measure environmental metrics across the earth. Sentinel 2A and 2B specifically, collect data which is applicable to agriculture and vegetation management. This data is provided to users at no cost to promote its use in vegetation and crop management. Data resolution is 10m for the image bands applicable to NDVI and vegetation management while others are either 20m or 60m for atmospheric composition.

The two Sentinel 2 satellites have opposing ten-day return cycles. This means that they both acquire imagery over the same area on the earth every ten days and because there are two satellites, an image is captured every five days over the same area. In theory we should get 73 images of the district each year, one every five days. Trouble is that cloud obscures the satellite's view of the earth and while an image is acquired every five days, many are unusable, or are only partly usable as is illustrated by the images below.

During 2019 HCPSL downloaded 72 satellite images (the 23rd of June image was not available), 43 were unusable (e.g. the 19th of January and 13th of July images), 13 were partly usable (the image still had significant cloud coverage, e.g. the 24th of May), 4 were almost clear but still had small areas of cloud (e.g. the 20th of November), and 7 were cloud free (e.g. the 13th of February and the 25th of December images).



19th January 2019

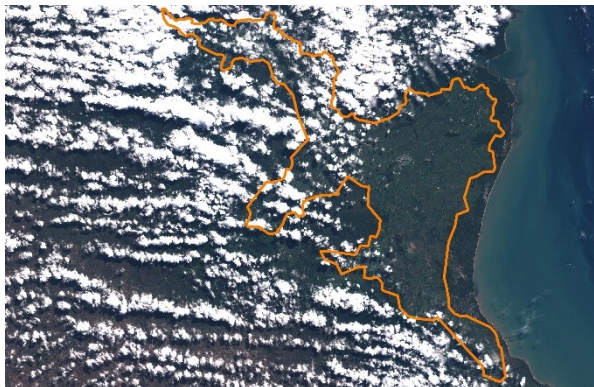


13th February 2019

The image from the 19th of January (above) shows cloud covering the whole Herbert region. This leaves very little usable data, that is, visible ground, for analysis. The image from the

https://www.usgs.gov/land-resources/nli/landsat/landsat-1?qt-science_support_page_related_con=0#qt-science_support_page_related_con
<https://en.wikipedia.org/wiki/Sentinel-2>

13th of February, however, shows the district cloud free. Cloud-free data like this allows the whole district to be viewed and analysed using indices like NDVI. HCPSL does this analysis in-house and creates a series of maps for each farm across the district. These maps are held in-house at HCPSL and are available to growers upon request.



24th May 2019



13th July 2019

The image from the 24th of May shows part of the district cloud free, and the rest with a significant amount of cloud. Images like these are held by HCPSL but no analysis is done unless specifically requested by HCPSL staff for comparison against other data, such as EM data.



20th November 2019



25th December 2019

The 13th of July image shows high cloud covering much of the district which will negatively affect any analysis undertaken. Hence no analysis is done using data like this. The image from the 20th of November shows the district almost clear of cloud. This data is usually analysed using NDVI, but much care needs to be taken not to misinterpret the cloud and cloud shadow as part of the crop. The 25th of December image again is cloud-free.

Many of the farm management software packages allow satellite imagery, or their derivative products, like NDVI to be imported and used in crop performance analysis. For example, several years of available NDVI (or GNDVI) imagery can be used to determine high to low growth zones within a field. Some software allows analysis with other data such as electromagnetic induction, while others allow block productivity data to be added to produce a yield map, post-harvest. Work is also proceeding to produce accurate crop yield estimate maps using vegetation indices and historical crop productivity data.

Herbert Water Quality Demo Farm Project

The idea for this project was instigated by growers through an extension workshop series Back to Basics® that started in 2018. With the topic of water quality high on the agenda for growers, those involved were keen to see whether the changes in management practice really make a difference to the WQ leaving their paddocks. The Herbert River Catchment and Landcare Group took the opportunity to undertake this project for grower demonstration purposes. This project is funded by the Queensland Government Reef Water Quality Program and delivered by the Department of Agriculture and Fisheries and partner organisation Terrain NRM. The Wet Tropics Sugar Industry Partnership and Herbert Cane Productivity Services also provided support to this project.



By using WQ monitoring data from best practice farming and comparing these outcomes to more conventional practices occurring on adjacent farms... the WQ data captured by this project provides key discussion points for grower group interaction and information sharing. This study was largely intended as a pilot and primarily as an initiative to engage with growers around WQ more broadly. It aims to provide growers with local evidence showing how nutrient and sediment move and also to show how different management of their soil, drainage and other farming operations can influence these losses. The results from this project supports many of the findings and assumptions that already exist in various best management practice frameworks used by industry. This project also aims to support local knowledge of these demonstration sites, targeted extension and potential implications for catchment management, including the prioritisation of investment in activities such as management practice change and extension to accelerate the adoption of improved farm management practices for WQ and sustainable agricultural outcomes.

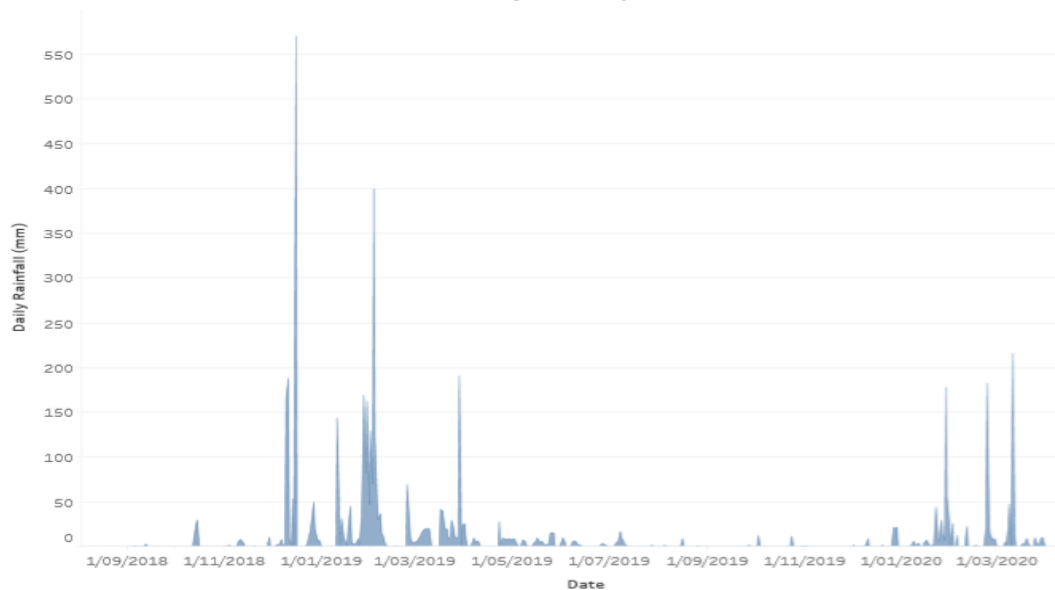


WQ samples were collected over a two-year period from the beginning of the 2018-19 wet season and first rains until March 2020, after a number of events had occurred. At times not all sites could be sampled simultaneously due to the nature of rainfall and subsequent runoff events.



Rainfall

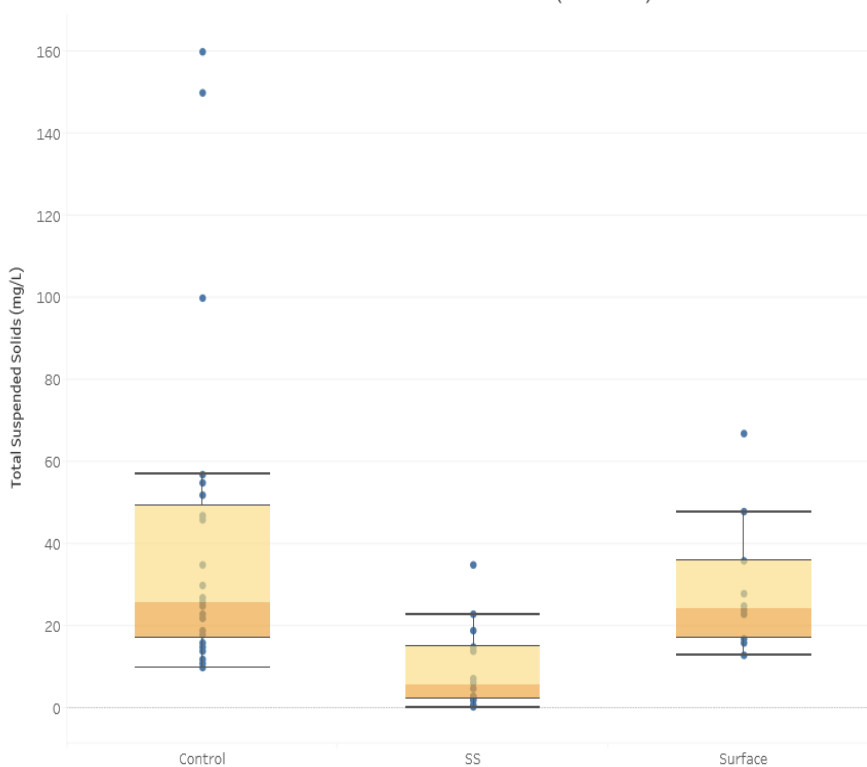
Daily Rainfall Totals at Macknade Mill (Herbert)



When trying to understand the implications and risk of applied chemicals to WQ pollution, how the rainfall is received (i.e. intensity) can be as important, if not more so, as the total amount of rain delivered. There were a number of significant events of high intensity during the sampling period.

Sediment

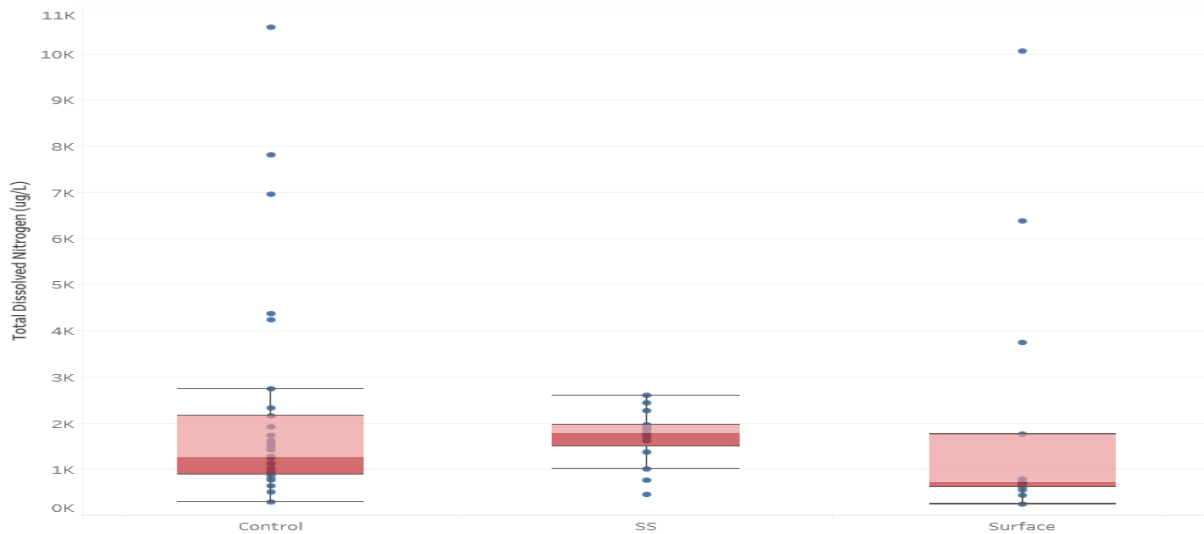
Sediment concentrations between Sites at Cordelia (Herbert)



Distinct differences in the maximum concentrations of sediment (TSS) occurred between the best practice runoff and control sites, where 6 of the top 7 TSS results were associated with the control site. This outcome suggests sediment loss at the control site during extreme rainfall events is much more likely or at higher risk, than the minimum till methods adopted by the demonstration farm site. Less tillage, improved soil structure and maintaining good groundcover, reduces the potential for sediment movement during these significant rainfall events.

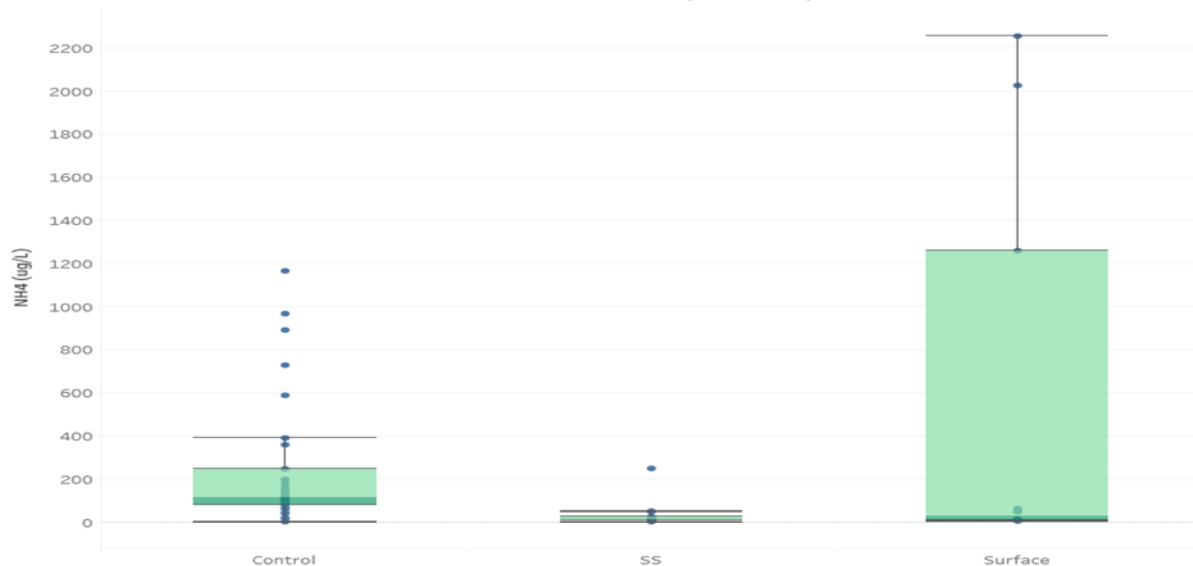
Nitrogen

NOx concentrations between Sites at Cordelia (Herbert)



Both the 'best practice' surface runoff and control sites demonstrated large fluxes of high concentrations of NOx (Nitrate) when compared to those measured on the same day for the sub surface flows. In terms of implications for the sugarcane crop, less fluctuation in SS-NOx would allow greater opportunity for capture of this nutrient before leaving the paddock, unlike the NOx in surface runoff, which may not even be made available to the crop before it is lost. The 'best practice' surface site also had the lowest median and 80th percentile values of the three sites. Suggesting that improved farming practices generally show reduced surface loss of NOx overall and that the major losses occur during the first couple of major rainfall events.

NH4 concentrations between Sites at Cordelia (Herbert)

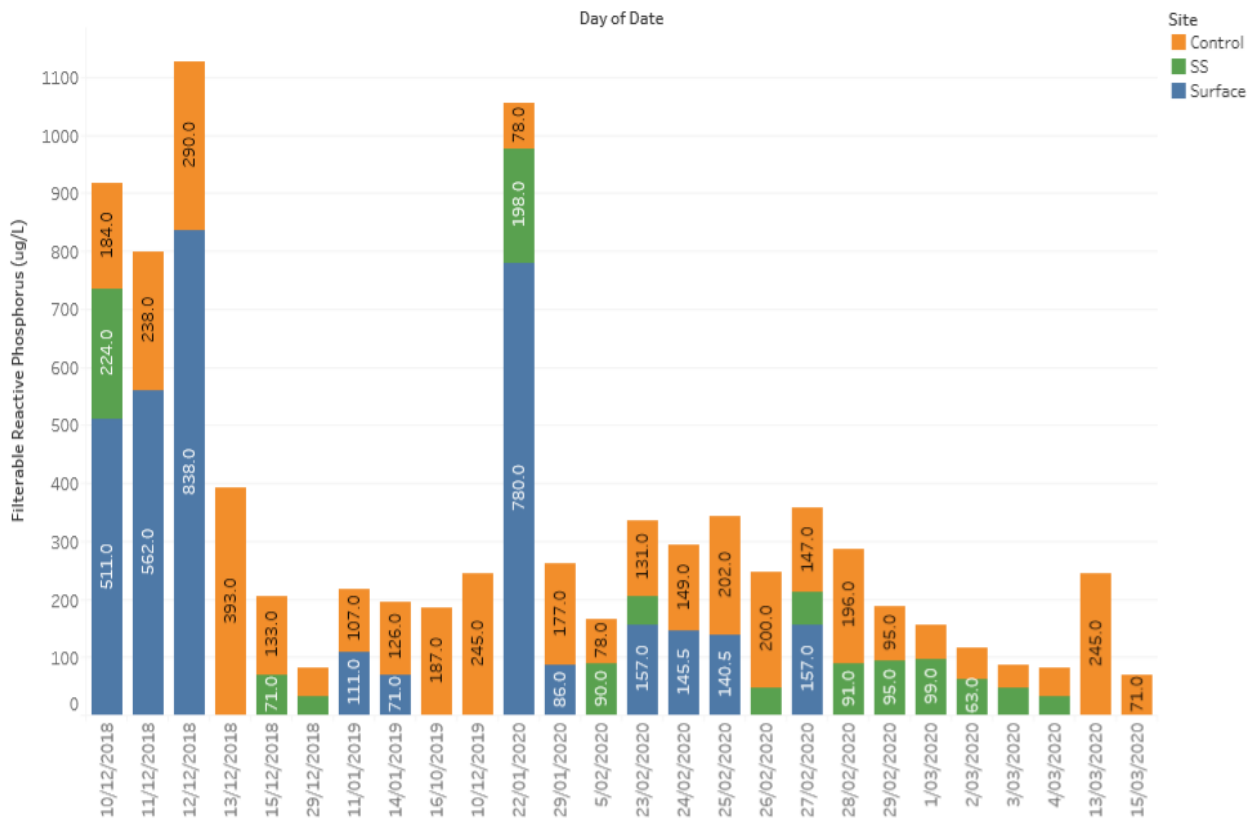


In a conventional farming system (ie. Control site) Nitrogen can be readily lost as ammonium (or urea) through runoff before it even gets into the root zone of the plant. These results suggest, during rain events, increased infiltration rates due to 'best practice' soil management, have likely reduced the amount of surface runoff and increased the chance of moisture and applied nutrients getting into the root zone of the crop. Obviously in extreme weather events like those experienced in December 2018 and January 2019 where the soil profile can become saturated, these situations/practices can still deliver significant losses even in well managed farming systems. However, the risk of these losses in moderate events becomes significantly reduced and will often benefit the crop by maximising water infiltration and increasing available soil moisture in periods of less intense rainfall.

Phosphorus

Normally, due to the binding nature of phosphorus to soil particles, high phosphorus levels in farm runoff are often well aligned with sediment loss, however this relationship does not seem to be the case in this study. Filterable Reactive Phosphorus (FRP) is a dissolved form of phosphorus and the higher than expected phosphorous levels could be due to any or a combination of the following practices; the regular application of Mill Mud which is often used in sugarcane as a soil conditioner and to improve phosphorus availability, carbon and other trace element levels in the soil; the unnecessary application of phosphorous fertiliser; or perhaps the result of other practices this grower may have implemented on his farm.

Relative Filterable Reactive Phosphorus Concentration by Day



Whats Next?

For any growers interested in joining the conversation about farming practices and how implementing different strategies may influence water quality please contact HCPSL on 4776 5660 or call Leanne Carr 0490 077 176. Many thanks to Rex and Ian Carr for initiating the idea for this project and enthusiastically encouraging the water sampling to show the real time data coming off their farm.



Wet Tropics
Sugar Industry
Partnership



HCPSL

Herbert Cane Productivity Services Ltd.



Weed control after planting

Poor weed control can lead to economic losses in plant cane. There are many different forms of weed control to consider. You may need only one form of control or a combination of different forms of weed control. The 2 main types of control we have available are Mechanical cultivation or Herbicides.

Mechanical cultivation can come in many different forms such as Cut-a-ways units, weeder rake, grubbers (tynd implement) or any form and configuration that will successfully control weed growth. Mechanical cultivation is used to control weeds that have emerged and growing.

Herbicide control can vary depending on different types of application equipment and product choices. There are 3 systems that are used to control weeds by herbicides **A. Knockdown Herbicides, B. Residual Herbicides, C. Combination of both knockdown and residual.**

- A. If you have already completed your planting, there are several options for weed control. You can apply a knock down herbicide such as Gramoxone or SpraySeed depending on the weed spectrum. These knock down herbicides will give you a short term weed control as they only control what weeds have germinated. These products will cause some phytotoxicity (leaf burn) on the young cane plants that have emerged. Trials have showed that there is no yield loss or effect on germination from these herbicides up to 4-5 leaf stage.
- B. If you would like to apply a pre-emergence herbicide to control weeds from germinating and becoming a problem, you have to firstly identify what weed species you have, as grasses and broadleaf weeds can be controlled with different pre-emergence herbicides. Their a several different pre-emergence herbicides choices from grass only (Stomp Xtra), or broadleaf weeds & vines only (Atrazine). These herbicides can be combination to control your weed spectrum or a single herbicide can be used to control both grasses and broadleaf weeds & vines (Dual Gold).
- C. If you already have weeds that have germinated and the cane is smaller than 4-5 leaf stage you can add a knockdown herbicide to your pre-emergence herbicide to control both the germinated weeds and weed seeds still to germinate. Remember soil moisture is required for a pre-emergent herbicide to work effectively.

The use and success of pre-emergence herbicides will largely depend on soil moisture and moisture on the soil surface. If the soil surface is dry you will need to have either rain (10-12mm) within 8-10 day of application or irrigation (10-12mm). Without a moist soil surface, your pre-emergence herbicide will degrade, resulting in reduce efficiency (length of control and weed spectrum controlled). The shape of you furrow or mound will also determine the effectiveness of your pre-emergence herbicide. A plant cane furrow with steep side will allow the side to dry out, causing the sides to slump down into the furrow and exposing soil that has not been treated by pre-emergence herbicides. Also, incorrect water rates and nozzle configuration can play a role in reducing the effectiveness of both knockdown and pre-emergence herbicides. Soils with cloddy, lumpy texture will also allow for weed seeds to germinate from untreated soil that has been shadowed in the application process.

There for you must be flexible in your approach and selection of herbicides. Each situation can be different and require different equipment and configurations, as well as different herbicides with different modes of actions.

Common knockdown herbicides – Gramoxone, Spray Seed, 2,4-D, Semptra.

Common residual herbicides – Stomp Xtra, Atrazine 900, Ametrex 800, Dual Gold, Metolachlor 960 EC, Balance 750WG, Amitron 700 WG etc.....

These products all must be used with caution as they may cause phytotoxicity effects on cane. Soil type, pH, CEC (cation exchange capacity), Organic Carbon and Sand/Silt/Clay levels need to be considered before any product is applied as these reading will determine how a product works and reacts to cane growth and the environment.

For any assistance contact

- ♦ Richard Hobbs 0400 544 301
- ♦ Lawrence Di Bella 0448 084 252
- ♦ Adam Royle 0417 610 446





Future-Proofing our Soils

([https:// sciencemeets business.com.au/](https://sciencemeetsbusiness.com.au/))

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New research from the Soil CRC is showing how we can naturally care for the fragile soils of Australia, the mainstay for our food, biodiversity and water future.

Australian soils are subject to many kinds of stress, such as compaction, erosion and low rainfall. Poor soil can have a huge impact on our agricultural productivity.

The CRC for High Performance Soils (Soil CRC (<http://Soilcrc.com.au>)) is bringing together scientists, industry and farmers to research practices that help farmers to improve their soil. The CRC includes universities, farmer groups and state government partners.



“The CRC is bringing new technologies and ideas into farming systems with the goal of making them more resilient,” says Dr Lukas Van Zwieten, who leads a Soil CRC program focusing on applying research to solve multiple soil issues at once. “this means farms may function for a longer period going into water stress and when the drought breaks, they bounce back more quickly.

“Water is the main limiting factor for crop and pasture productivity in Australia, ”adds Van Zwieten. Compaction due to large machinery used on farms can compound these issues, as can soil Chemical constraints such as sodicity, which make it harder for water to penetrate the soil.”

Natural Improvements

Once farmers harvest their crops, farmland can remain fallow for months or even years. Soil CRC research—including Professor Terry Rose at Southern Cross University, (<http://www.scu.edu.au/>) one of the project leaders within the program—and looking at using that time to grow plants specifically selected to improve soil resilience. They have trial plots for sugar cane and grain crops across Australia, including in northern Queensland, New South Wales and South Australia.

“Sugar cane production in northern Queensland is often affected by pests called nematodes, which eat the sugar cane roots,” says Van Zwieten. “So CRC researchers are trialing the use of a kind of mustard plant that has bio-fumigant activity to decrease the amount of these nematodes in the soil.”

The researchers are also trialing using cover crops that add extra nutrients to the soil when they break down. One of these plants is a large legume called Sunn Hemp or Ingham Hemp (*Crotalaria juncea*) which can fix its own nitrogen from the atmosphere. It also has a large root system that creates a lot of biomass, becoming food for microbial life.

“Like any other animal, microbes have to eat,” says Van Zwieten. “and what they eat is organic material. Like you or I might eat a piece of bread, microbes eat organic compounds exuded from roots and the biomass from plant matter left over from the harvest.

“By growing cover crops, farmers can maximise organic inputs into soil, increasing microbial abundance and biodiversity, and potentially increase plant-available nutrients for future crops across Australia.”

Future-proofing our soils (Cont.)

CRC researchers are also using plants to physically open the soil to reduce compactions. “The tillage radish has a large taproot which basically opens the soil. As it breaks down, you get large holes in the soil, so when it rains you’ve got an easy pathway for water.”

The CRC researchers will test the soil in a lab to see how it performs when exposed to water stress. “We are hoping these mixed-species cover crops will result in bigger, better yields and yields that might be more resilient to weather variability,” says Van Zwieten. “That’s what farmers need.

“Where farming systems or chemical inputs are becoming more difficult to use due to restrictions and cost, these types of alternative management practices are becoming more important.”

Cherese Sonkkila Soilcra.com.au (<http://Soilcra.com.au>)

HCPSSL is a partner of the Soil CRC and is hosting a number of trials in the Herbert Region. For more information concerning the Soil CRC & HCPSSL involvement contact Lawrence Di Bella (0448 084 252).



Attention Shirtan® users

Nufarm® Strategy and Terms & Conditions for the Australian Sugarcane Industry EXIT of Shirtan® Usage by 30 April 2021

- Shirtan remains permitted for use in Australian sugarcane production, in the short term.
- Growers are able to utilise existing supplies on-farm **by 30 April 2021**.
- Growers are able to purchase additional volumes of Shirtan to meet their imminent requirements from their usual Ag-Chem distributor outlet, given a firm commitment at Point of Sale to use all the additional volume purchased **by 30 April 2021**.
- Return of “excess” Shirtan stock on-farm to distribution outlets will NOT be permitted, nor will CREDITS for “excess” stock be processed. It is the Growers’ responsibility to ensure ALL stock is applied on-farm **by 30 April 2021**.

It will be illegal to use or possess Shirtan after 26 May 2021.

Please contact your local Channel Partner outlet or Nufarm Territory Manager for further details.

Shirtan Sugarcane Industry EXIT- Usage by 30 April 2021

Background:

Mercury is classed by the World Health Organisation (WHO) as one of the top ten chemicals of major public concern, posing a serious risk to the environment and human health.

Common sources of mercury emissions and release in Australia include: air emissions from coal fired power stations and non-ferrous metal smelters, the application of mercury containing pesticide to sugarcane, disposal of damaged fluorescent and low energy lamps, leaking mercury containing thermometers and batteries, and amalgam waste from dental practices.

The Minamata Convention on Mercury is a global, legally-binding instrument on mercury which arose out of intergovernmental negotiating committee recommendations to address the risks of mercury use to human health and the environment globally, through imposing restrictions on continued mercury use or banning use where appropriate.

With respect to sugarcane, Shirtan has been a key fungicide utilised in the Australian sugarcane industry to target Pineapple disease (*Ceratocystis paradoxa*) since the 1950's. However, as it contains 120g/L Mercury as Methoxy Ethyl Mercuric Chloride (MEMC) as its' active ingredient, the continued use of Shirtan for Australian sugarcane production has been under review of the Minamata Convention.

Although the Australian Government has not ratified the Minamata Convention on Mercury to date, the manufacturer of Shirtan has terminated their registration to manufacture the product given a mercury source is no longer available for manufacture due to the impact of the Minamata Convention globally to date.

What this means for the future of Shirtan:

As a result, no additional Shirtan will be manufactured and imported for use in Australian sugarcane.

Shirtan remains permitted for use, however, in Australian sugarcane production in the short term- current supplies on hand (on-farm, within the distribution network and Nufarm stock on hand) can still be used, although **ALL stock must be applied by 30 April 2021.**

Given the recent termination of the Shirtan manufacturing registration, **it will be illegal to use or possess Shirtan after 26 May 2021.**

Please contact your local Channel Partner outlet or Nufarm Territory Manager for further details.



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Managing COVID-19 @ HCPSL

With the on-going concerns in relation to Covid-19, the way we all do business will be different.

We are asking that growers please ring to:

1. Make an appointment to meet with staff in the office or to meet on farm, so social distancing can occur.
2. Stay home if you are sick, have been in contact with someone who is infected or suspected of having Covid-19, or if you have travelled to Covid-19 hotspots in the past 14 days.
3. Use hand sanitiser on entry or exit to HCPSL site.
4. Practice social distancing.
5. When attending HCPSL activities, HCPSL will have a Covid-19 plan in place. Please follow instructions from the HCPSL staff during the event (i.e., shed meetings).

Together we can all stop the spread of Covid-19 in our community.