HCPSL
Herbert Cane Productivity Services Ltd.

THE CANE STALK

July 2019

Courses on Offer to all Growers:

- Six Easy Steps
- Integrated Weed Management
- Safechem (Chemcert)

INSIDE THIS ISSUE:

A word from the HCPSL Board & Manager

HCPSL INVESTS INTO GETTING MORE CLEAN SEED CANE TO GROWERS IN THE HERBERT

Planting Clean Seed cane is one of the easiest ways to increase productivity on a cane farm. A recent study undertaken by HCPSL staff shows that growers who regularly obtain Clean Seed cane, yielded on average 10tcph more cane than those who do not obtain clean cane.

To better manage diseases like RSD and CSD, the best control measure found globally, is to flood the industry with Clean Seed. This approach was confirmed when HCPSL Manager, Lawrence Di Bella consulted world leading sugarcane pathologists from both Australia and abroad. Cane from HCPSL Clean Seed plots is RSD free and annual testing confirms this.

Recently HCPSL Board Chairman, Michael Waring signed the agreement to lease a property near Ingham, to be used to grow more Clean Seed cane for Herbert growers. “Once this farm is fully operational it will be able to provide an additional 1000 tonnes of Clean Seed cane to Herbert growers. In the past few years we just have not had enough Clean Seed cane to meet industry demand. Going forward, HCPSL plans to have available up to 3500 tonnes of Clean Seed cane available for growers to purchase annually,” Michael Waring stated.

HCPSL has also recently invested in a whole stalk cutter and billet harvester to make it easier for growers to obtain Clean Seed cane from its plots. “Growers are getting busier as farms are getting larger, so it is important that we make it is as easy as possible for growers to obtain Clean Seed cane every year from the HCPSL plots,” HCPSL Grower Board member, Michael Reinaudo said.

A recent industry study by Productivity Services Groups and SRA from across Queensland and New South Wales, found that Herbert growers are lagging behind many other districts when it comes to using Clean Seed to plant commercial crops. “When you compare the Herbert and Burdekin, the Burdekin area growers purchase about 4500-6000 tonnes of Clean Seed annually through their Productivity Board plots, compared to the 1200-1400 tonnes sold through the HCPSL plots,” HCPSL Manager Lawrence Di Bella said.

In the future HCPSL Clean seed plots will be located in the following areas: Ingham Line, Lower Herbert, Central Herbert, Abergowrie & Stone River areas to service the growing demand of the industry. In the Stone River, Central Herbert & Lower Herbert areas cane will be grown on the HCPSL managed farms, where large areas will be grown. In the Abergowrie & Ingham Line areas, HCPSL has commercial agreements with growers to grow the clean seed on their farms. “The Abergowrie & Ingham Line plots are managed by HCPSL and the hosting grower does not receive any advantages over his fellow growers in the region”, stated the HCPSL Manager Mr Lawrence Di Bella.

HCPSL Grower Board member, Vince Russo stated that, “Making Clean Seed easier to access by more growers, will lead to a greater area of cane planted from good quality seed material. This in turn should lead to an increase in productivity over time. The purchase of Clean Seed is a relatively low cost investment when given the overall high cost to establish and harvest a crop of cane. It makes good commercial sense to purchase Clean Seed regularly from the HCPSL plots, while taking care to keep it disease free for future plantings.”

If you would like more information concerning HCPSL’s Clean Seed program and ways to obtain cane from the plots, please call the HCPSL office on 47761808.

NEWLY RELEASED VARIETY

The annual Regional Variety Committee (RVC) meeting was held recently (9 April 2019) to discuss top performing clones making their way through the Herbert breeding program. Significant outcomes from the meeting included a new variety, **SRA24**, making the list of recommended varieties for the Herbert region. This variety is listed as a 2019 Herbert-released variety, with planting material available to growers in 2020.

SRA24 (Clone: QA05-2486) (Parent Clones: QN80-3425 X BN61-1123)

Excellent disease resistance: resistant to Smut, Pachymetra & Leaf Scald
Average to Above Average Yield (compared to standards Q200^{Ф} and Q208^{Ф})
Average to below average CCS (compared to standards Q200^{Ф} and Q208^{Ф})
Has been noted to be a potential Mid CCS variety

.

How do growers acquire this Variety?

This newly-released variety is currently being planted out into our subdistrict seed plots for distribution in 2020. At this stage a seed cane order form will be sent out early 2020 where you are then able to order your required amount of clean seed cane.

TISSUE CULTURE

What are the benefits?

- Ability to order large amounts
- Tissue Culture Seedlings stool out, providing more material than conventional methods
- Receiving your order is almost guaranteed, regardless of weather conditions
- No hot water treatments or cold water soaks are required.

How is Tissue Culture planted out?

HCPSL have a "Water Wheel Seedling Planter" which is available to hire from HCPSL for a small fee.
If you would like to order Tissue Culture or have any further questions regarding the process, please call Sam Sellick on 0417 622 129.

HERBERT RP161

WHOLE FARM NUTRIENT PLANNING + MORE

- SCIENCE
- SUPPORT
- EDUCATION

To register or for more information, contact:

Herbert Cane Productivity Services Ltd Ingham
07 4776 5660
www.hcpsl.com.au
aroyle@hcpsl.com.au

HCPSL
Herbert Cane Productivity Services Ltd.

WHAT'S INCLUDED?

- Tailored, spatially mapped whole farm nutrient and crop plan
- One year of project specific agronomic support
- Nutrient management plan with fertiliser, ameliorant and soil mapping, with the option of EC mapping and variable rate applications
- Crop plans with variety and class analysis, planting recommendations, disease risk assessment and fallow management options
- On-farm services that include collection of soil samples and assistance with equipment calibration
- Nutrient application data recorded in line with regulations
- Opportunity to attend Google Earth training
- Crop and Soil Health training with the Farming 4 CASH™ course

Cost is $550 (GST inclusive). Selection criteria apply.

Queensland Government Australian Government REEF TRUST FARMACIST

HCPSL
Herbert Cane Productivity Services Ltd.

Sugar Research Australia

The 2019 Recommended Variety List for Planting & Harvesting.

Variety	Recommended (Planting and Harvesting)	Recommended (Harvesting Only)	Orange Rust	Pachymetra Root Rot	Smut
Q96	No	Yes	R	I	I
Q119	No	Yes	-	I	I
Q120	No	Yes	R	R	S
Q124	No	Yes	S	I	I
Q133	No	Yes	-	-	-
Q135	No	Yes	R	I	I
Q138	Yes	Yes	R	R	S
Q152	No	No	R	I	S
Q157	No	Yes	R	S	S
Q158	No	Yes	I	I	S
Q171	No	Yes	R	S	R
Q172	No	Yes	R	I	I
Q174	No	No	R	I	S
Q177	No	Yes	I	S	R
Q179	No	No	R	I	S
Q183	Yes	Yes	R	R	I
Q186	No	Yes	R	R	S
Q187	No	No	R	R	S
Q190	Yes	Yes	R	R	I
Q194	No	No	R	I	S
Q200	Yes	Yes	R	I	R
Q204	No	Yes	I	I	S
Q206	No	No	R	S	S
Q208	Yes	Yes	R	I	I
Q215	Yes	Yes	R	R	I
Q216	No	No	-	I	S
Q219	Yes	Yes	R	R	R
Q220	No	Yes	R	R	S
Q231	Yes	Yes	R	R	I
Q240	Yes	Yes	R	I	R
Q241	No	No	R	R	R

Variety	Recommended (Planting and Harvesting)	Recommended (Harvesting Only)	Orange Rust	Pachymetra Root Rot	Smut
Q242	Yes	Yes	R	R	I
Q247	Yes	Yes	R	R	I
Q250	Yes	Yes	I	I	R
Q251	No	Yes	R	R	S
Q252	Yes	Yes	R	I	I
Q253	Yes	Yes	R	I	R
CASSIUS	No	Yes	-	R	R
MIDA	No	Yes	R	I	I
ARGOS	No	Yes	-	I	S
MQ239	Yes	Yes	R	I	R
KQ228	Yes	Yes	R	I	R
KQ236	No	Yes	-	I	R
SRA3	No	Yes	-	I	I
SRA5	Yes	Yes	-	I	I
SRA10	Yes	Yes	R	I	I
SRA14	Yes	Yes	R	R	I
SRA24	Yes	Yes	-	R	R

Above: Clean seed in HCPSL plots.

Above: Young ratoons of SRA14

HINCHINBROOK SHIRE COUNCIL

WEED ALERT

HINCHINBROOK SHIRE

HAVE YOU SEEN THESE WEEDS?

Hinchinbrook Shire Council requires your assistance to locate all known infestations of the following four priority weeds:

- **Mikania Vine**
- **Pond Apple**
- **Thunbergia**
- **Singapore Daisy**

These weed species are defined as restricted invasive matter under the *Queensland Biosecurity Act 2014* and have been prioritised under the Hinchinbrook Local Government Area Biosecurity Plan for eradication in all known locations.

If you think you have sighted any of these weed species, please contact Council's Environmental Services Department on 4776 4607 during office hours.

More information about these weeds can be found on the Department of Agriculture and Fisheries website, **www.daf.qld.gov.au**

Mikania Vine

Pond Apple

Thunbergia

Singapore Daisy

4776 4600 council@hinchinbrook.qld.gov.au HinchinbrookShireCouncil

HINCHINBROOK.QLD.GOV.AU

HINCHINBROOK SHIRE COUNCIL

HINCHINBROOK COMMUNITY

FERAL PIG MANAGEMENT PROGRAM

Feral Pigs are a common and widespread pest animal found throughout the Hinchinbrook Shire. Feral pigs damage crops, stock, property and the natural environments whilst having the ability to spread exotic diseases such as Foot and Mouth Disease.

The *Hinchinbrook Community Feral Pig Management Program*, established in 2009, supports the management and control of feral pigs and aims to reduce the **environmental**, **social** and **economic** impact that feral pigs have throughout the Shire

Assistance is available for landholders to manage feral pigs on their properties and includes:

- The establishment of *Feral Pig Management Programs*
- Best Practice Methodology - Training and Advice
- Feral Pig Trap Loans
- Low Cost Bait Options
- Assistance to Implement 1080 Baiting Programs - eligible landholders only

For further information regarding the *Feral Pig Management Program* please contact Council's Environmental Services Department on 4776 4607 during office hours.

4776 4600 council@hinchinbrook.qld.gov.au HinchinbrookShireCouncil

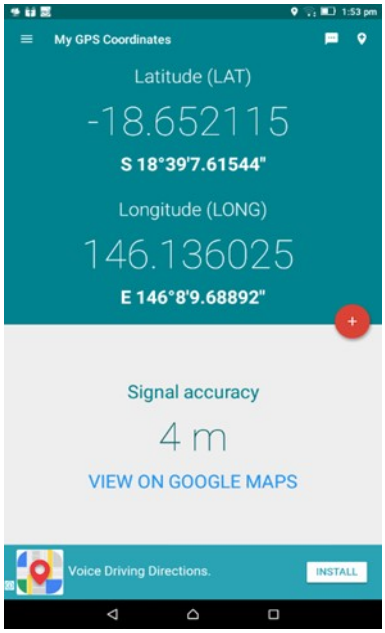
HINCHINBROOK.QLD.GOV.AU

FACTSHEET #1901
GPS for Collecting Soil Samples

The addition of GPS coordinates when collecting soil samples helps with the long-term usefulness of the collected data. Cane blocks change periodically from crop cycle to crop cycle. Bringing GPS coordinates in along with your soil sample helps HCPSL staff know where in your field your sample has been taken from. As we move closer to precision agriculture, this becomes more and more important, i.e. to match soil sample with soil type (from previous soil mapping projects), with yield mapping (where available), with EC_a mapping, and with NDVI from satellite imagery (which may be a surrogate where yield data is not available).

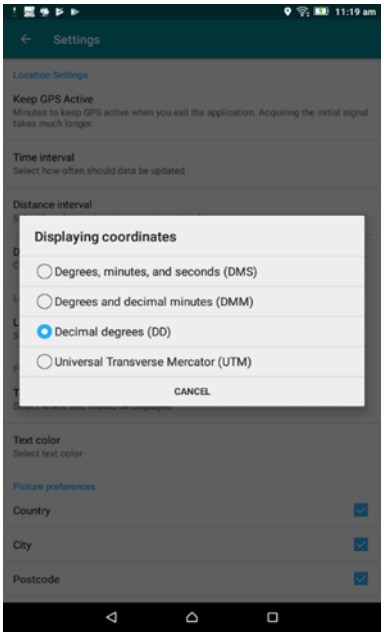
There are many GPS apps available for smartphones which are accurate enough for the collection of soil samples. Decimal Degrees is the preferred format and **5** decimal places is required for ~1m accuracy.

MyGPSCoordinates (iOS & Android)



iOS icon

Android icon

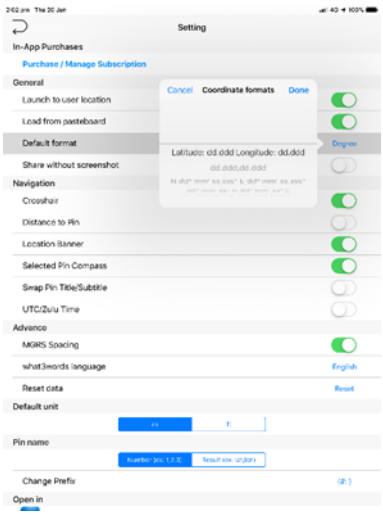


The free version of MyGPSCoordinates is a basic GPS which will give coordinates for where you are when you turn it on and an indication of the accuracy of the point. The image left shows coordinates in two formats; decimal degrees (DD) and degrees decimal minutes (DM). Which shows as the larger text can be set in the settings of the app.

For ease of use HCPSL recommend using decimal degrees as it is just one number for each coordinate and less likely to be copied incorrectly.

Android Interface

Android settings



MyGPSCoordinates looks different in the iOS version but the use is the same. Wait until the Accuracy stops improving and then copy down the coordinates.

iOS interface

iOS settings

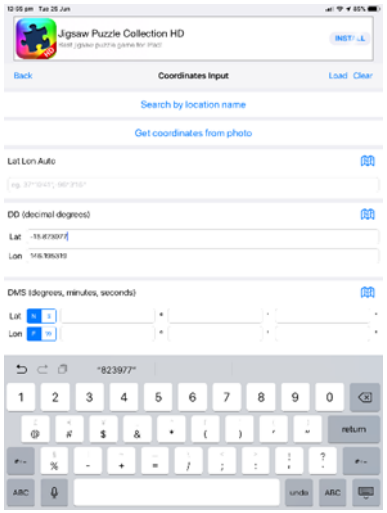
EC_a: Apparent electromagnetic conductivity – from a DualEM, EM38 or Veris etc.
NDVI: Normalised Difference Vegetation Index – a measure of plant vigour and health.

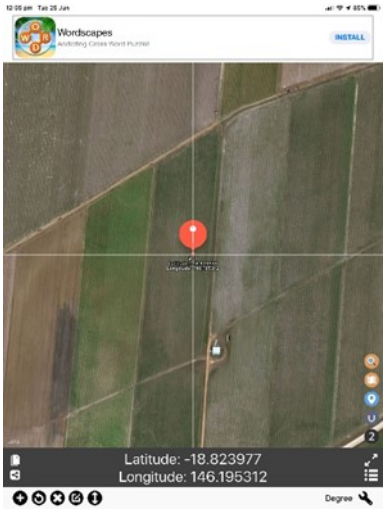
Coordinates (iOS & Android)

The Coordinates app does the same thing with a little more sophistication. Coordinates allows GPS coordinates to be entered to allow a return to a point.

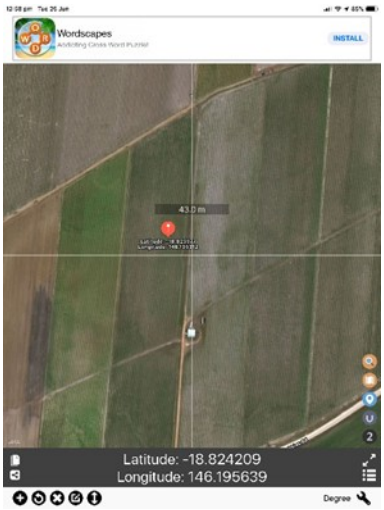
At times HCPSL will provide GPS coordinates for where to take soil samples based on EC_a or yield etc. The coordinates are provided in decimal degrees.

Enter the coordinates into the DD fields; Lat is the Y coordinate, and Long is the X coordinate.





Coordinates interface



Coordinates Settings

Click on the + icon in the lower left of the screen. This will plot the point onto the main screen. Click on the edit icon to rename the point and make some notes. The crosshairs on the screen are where you are, and you can navigate back to the point.

There are settings which can be set to tell you how far from the point you are.

Note that your smartphone will give you approximately 5m of accuracy according to the app.

Again, for accuracy, **5** decimal places are required. This is better when the point is plotted onto a map.

While HCPSL doesn't promote any particular GPS app, these are a few which will serve the purpose well when set up properly.

GPS Essentials (Android only)

Gaia GPS (iOS & Android)

GPS Coordinates

PointToPoint

Impacts of cropping sequences on soil borne fungal communities and root disease incidence in sugarcane.

The broad aims of this 4 year SRA-CSIRO project were to deliver fundamental knowledge of soil-root-fungal interactions in sugarcane cropping systems and agronomic factors impacting on the incidence and suppression of fungal and oomycete (e.g. Pythium, Pachymetra) root diseases. This information forms the basis of disease prediction and management strategies focused on selection of planting sequences and targeting of inputs to suppress disease, thereby enhancing root health and maximising resource-use efficiency.

Microbiological and DNA sequence analysis of fungal communities colonising sugarcane roots and soil closely adhering to the roots (i.e. rhizosphere) were conducted across two cropping seasons at two sites in the Herbert region. Agronomic treatments included replant continuous cane, cane-legume rotations and longer-term (5th-10th) ratoon cane. Full and minimum tillage treatments of the cane-soybean rotation were compared and a native forest soil was included as a comparison with cane cropping.

DNA sequencing of sugarcane rhizosphere soils indicated that fungal communities under long-term (5th-10th) ratoon cane were significantly different from replant continuous cane and cane-legume rotations. There were no significant differences in fungal communities among replant continuous cane and cane-legume rotations or between the full and minimum tillage treatments of the cane-soybean rotations. Forest soil fungal communities had the highest diversity and were significantly different from the adjacent sugarcane crops.

The majority of differences among soil communities were attributed to 33 fungal taxa, their abundances being significantly different among cropping treatments. These included numerous root-associated saprophytes involved in carbon turnover and nutrient cycling, 5 pathogen antagonistic and potentially disease suppressive fungi, recognised plant pathogenic Fusarium and 5 broad groups (fungal orders) reported to contain plant-beneficial and plant pathogenic fungi related to wilt, stem rot and root rot pathogens of sugarcane.

Microbiological analyses indicated that fungal communites actively colonising inside sugarcane roots (i.e. endophytes) were dominated by 3 saprophytic genera, pathogen suppressive Trichoderma and plant pathogenic Pythium and Fusarium. Pythium (Figure 1) had the highest root disease incidence but only relatively low levels of soil inoculum detected by DNA diagnostics. Pachymetra was not isolated from roots or root-associated soils at either site, despite DNA diagnostics detecting the presence of the pathogen in these soils.

This contrast between Pythium and Pachymetra soil inoculum and root disease incidence has implications when using soil-based DNA diagnostics for these pathogens as predictors of root disease severity in sugarcane. This highlights the need to develop pathogen-specific diagnostics that are linked to disease-related functions (i.e. pathogenicity) to better predict root diseases in sugarcane cropping systems.

There was however, a positive correlation between soil abundance (DNA diagnostics) and internal root colonisation by a pathogen antagonistic Trichoderma species (Figure 2). As abundance of Trichoderma increased in roots and soil, root infection by plant pathogenic Pythium and Fusarium decreased. This suggests that the Trichoderma soil diagnostic may be used as a predictor of root disease suppression.

Pathogen antagonistic Trichoderma and Epicoccum fungi were significantly more abundant under long-term ratoon cane and produced compounds that significantly inhibited Fusarium growth and killed Pythium in vitro (Figure 3). These root colonising fungi and the compounds they secrete require investigation as potential disease suppressive treatments in sugarcane.

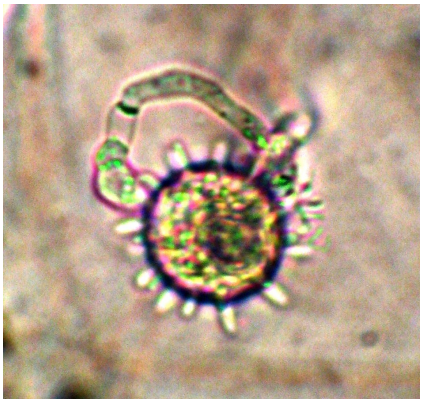
Collectively, microbiological and DNA sequence analysis of sugarcane roots and rhizosphere soils indicated that saprophytic communities and plant pathogenic Fusarium and Pythium spp. were significantly more abundant in early (1st) ratoon replant continuous cane and cane after legumes, compared with longer-term (5th-10th) ratoon cane. In contrast, abundance of disease suppressive T. harzianum and Epicoccum spp. increased with time under cane cropping, being greatest in longer-term ratoon cane.

These results contrast with the generally accepted view that longer-term ratoon cane increases communities of root pathogenic fungi, resulting in higher root disease incidence. Whilst Fusarium and Pythium root disease incidences were high in these sugarcane fields (30% and 60% respectively), both were significantly lower in longer-term ratoon cane. Significantly greater root colonisation and soil abundance of pathogen-antagonistic Trichoderma and Epicoccum fungi may account for suppression of these diseases in longer-term ratoon cane.

Multiple years of ratoon cane is expected to apply relatively uniform selection over time, increasing the abundance of these fungal antagonists and in turn, suppressing Fusarium, Pythium and related wilt, stem rot and root rot pathogens of sugarcane. Communities of beneficial Trichoderma and Epicoccum fungi were significantly lower in recently tilled replant cane and cane-legume rotations, indicating that the cultivation phase of the cropping system is detrimental to these fungi and advantageous to the root pathogens.
Five fungal orders previously reported to contain plant beneficial and sugarcane plant pathogenic species also significantly decreased in abundance under longer-term ratoon cane. This includes dematiaceous fungi (Pleosporales) previously implicated in causing sugarcane root rots and yield declines. Fungi within these functionally diverse orders remain largely unidentified and further research is required to isolate and identify plant pathogenic species and monitor how their communities change in response to cropping sequences.
This research delivered new information on how agronomic practices impact on fungal and oomycete communities in sugarcane soils and the incidence and suppression of root diseases. The research identified poor correlations between Pythium, Pachymetra and Fusarium soil inoculum levels and root disease incidence, a result that has implications when using soil-based DNA diagnostics for these pathogens as predictors of root disease severity in sugarcane. Novel diagnostics linked with further research on root-pathogen-antagonist interactions are required to refine disease prediction frameworks in sugarcane.

Acknowledgements:
This research is part of the SRA-funded project Strategies to manage soil-borne fungi and mitigate yield decline (2013/101). The CSIRO research team thanks HCPSL, Lawrence Di Bella and Michael Waring for providing access to the Stone River and Ingham trial sites and their assistance with on-ground activities associated with the project.
Dr Paul Harvey is a Microbial Ecologist in CSIRO Agriculture and Food, a Research Fellow in Shandong Academy of Sciences and was the chief investigator of the four year SRA project. Paul can be contacted at Paul.Harvey@csiro.au

Figure 1. Oospore of Pythium spinosum isolated from sugarcane root. Pythium spinosum was the most frequently isolated sugarcane root pathogen.



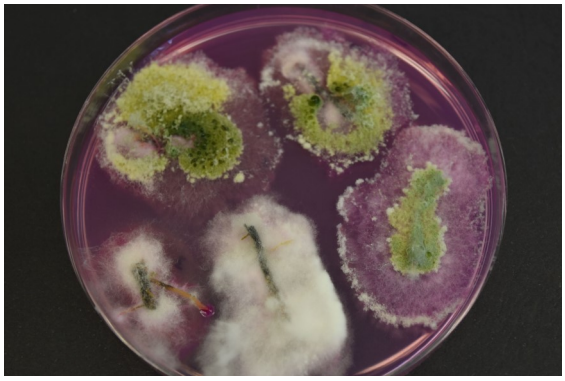


Figure 2. Isolation of pathogen antagonistic Trichoderma and plant pathogenic Fusarium species from sugarcane roots. Trichoderma is easily recognised by the formation of numerous green spores (conidia).

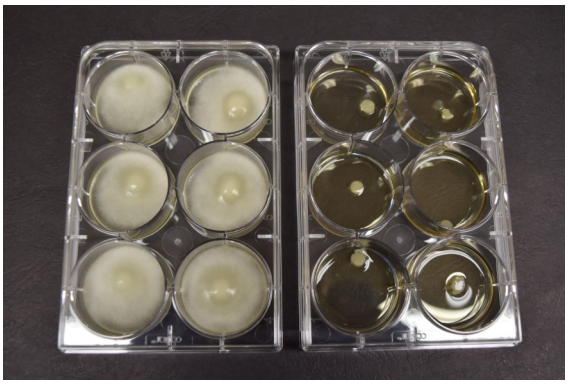
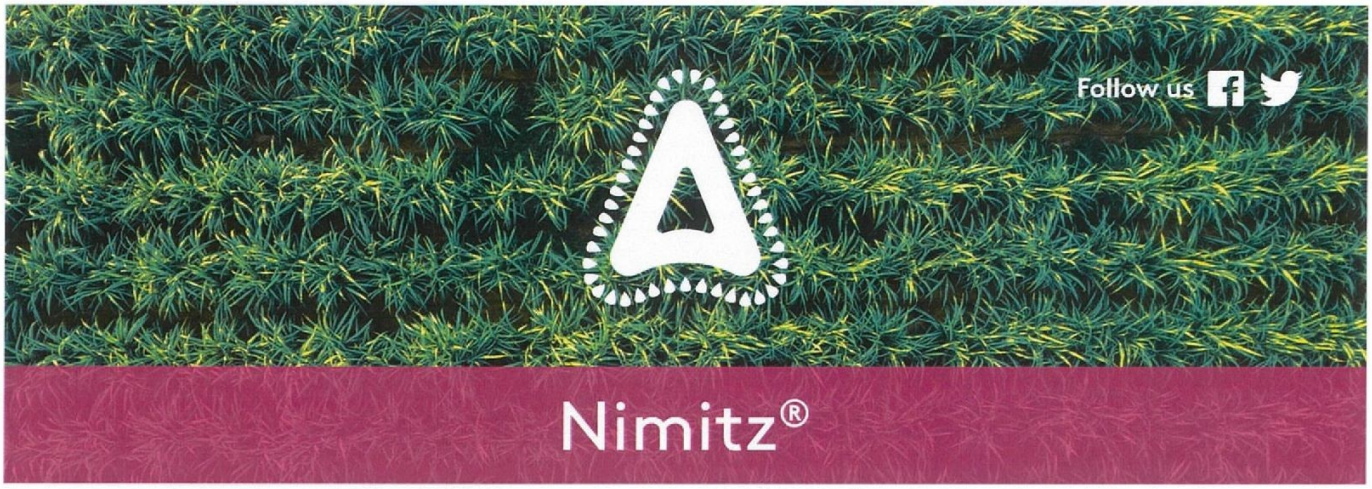


Figure 3. Compounds secreted by pathogen-antagonistic Epicoccum inhibiting growth of plant pathogenic Pythium spinosum. Pythium growing in the absence (left hand panel) and presence (right hand panel) of the compounds.



Nimitz®

Nematodes in Australian Sugarcane

Conservative estimations of yield lost from nematodes in Australian Sugarcane systems in 2007 were $82 M Aus (Blair, 2007) in QLD. The most common in the sugarcane growing regions of QLD and Northern NSW that can be economically damaging are plant parasitic nematodes of the *Pratylenchus* spp. and *Meloidogyne* spp.

Pratylenchus zeae tends to be the most common and found in all sugarcane growing regions and all soil types (Blair BL, 1999) however *Meloidogyne* species such as M.javanica are still endemic to low clay content soils
and can reach economically damaging levels if not managed correctly.

Integrated approach to nematode management in Sugarcane

Several factors will reduce populations of nematodes in sugarcane systems:

- Green Cane Trash Blanket
- Legume rotation crops
- Fallow management
- Minimum tillage
- Practices to generally improve soil organic carbon.

Although when economic thresholds are exceeded or traditionally high-pressure sugarcane blocks are identified, there are requirements to look to nematicide options.

There have been limitations on nematicides which often made them ineffective, expensive and unviable for use in sugarcane. Nimitz® however is revolutionary in its ease of use, nematode selective activity and benefit to yield increase.

Application at planting often shows the best response due to targeting the early establishment phase in the crop when nematodes can be most detrimental. Nematodes reduce yield by reducing early root and tiller establishment

Nimitz® at a glance

Active ingredient	480 g/L fluensulfone
Chemical name	5-Chloro-2-[(3,4,4-trifluoro-3-buten-1-yl)sulfonyl]thiazole
Chemical Group	heterocyclic fluoroalkenyl sulfones
Target Pest	Root-knot nematode, Root lesion Nematodes
Formulation Type	Emulsifiable Concentrate (EC)
Application Rate Range	4 – 8 L/ha

Key features

- True nematicidal control
- Fast acting and unique mode of action
- Simple, safe and effective application options at low rates
- Minimal impact on beneficial and non-target species.

Mode of action

Fluensulfone belongs to a unique new chemical class with a new Mode of Action. Studies have shown that fluensulfone is a true nematicide that kills the target by contact, rather than temporary nematostatic (paralysis) activity as seen with current organophosphate and carbamate chemistry.

Nimitz® has rapid activity on nematodes. Within 1 hour of contact nematodes cease feeding and quickly become paralysed. Fluensulfone requires 24 - 72 hours to achieve complete mortality.

Any nematode eggs laid after exposure to Nimitz® are likely to be unviable, or if juveniles do hatch, they do not survive.

Nimitz®

Target species

Root-knot nematode

The Root-knot nematode (RKN) group get their name from the characteristic formation of root galls on affected plants and are among the most damaging of plant-parasitic nematodes.

In Australia, there are five relatively widespread Meloidogyne species (*M. javanica*, *M. incognita* and *M. arenaria* in warm climates and *M. hapla* and *M. fallax* in cool climates).

They are capable of attacking a wide range of plants and can cause economic damage to crops with as few as 1 - 2 nematodes per gram of soil.

In Australia, RKNs have been reported to attack scores of different plant families including some of our biggest crops; Cucurbitaceae (Cucumbers, Melons, Squash, Zucchini), Solanaceae (Capsicums, Tomatoes), Fabaceae (Chickpeas, Soybeans, Peas, Beans, Lucerne), Musaceae (Bananas), Poaceae (Wheat, Barley, Corn and Rice), Vitaceae (Grapes), Sugarcane and Malvaceae (Cotton). The level of susceptibility varies in each host. Adult female RKNs live inside the root gall where they feed, mature and lay eggs.

The characteristic root galls produced by RKN infested plants are outgrowths of the roots themselves.

Photo by Steve Tancred

Root-knot nematode larvae penetrating a tomato root. Once inside, the larva establishes a feeding site, which causes a nutrient-robbing gall.

Photo by William Wergi

Root-knot nematode damage most often results in poor growth and reduced resistance to other problems such as moisture stress and disease. High enough levels of damage early on can lead to total crop loss.

The diminished capacity of the roots due to galling usually leads to a reduction in the number of leaves - and therefore a decrease in photosynthetic ability - a reduction in flowering, and subsequent decrease in the yield of fruit produced.

Symptoms most visually obvious above the ground may include stunted plant growth, yellowing of the leaves and wilting on hot days as plants struggle to draw moisture from the soil effectively.

Root lesion nematodes

Nimitz® is registered for the control of root lesion nematodes (RLN) for sugarcane only. The RLN species that cause serious damage to the sugarcane is Pratylenchus zeae. RLN are an important pest as the occur in all type of soil (while RKN are mostly present in light, sandy soils). The damaged root system limits the ability of the plant to access moisture and nutrients, resulting in slower stalk growth and reduced crop yield.

Further Resources: https://sugarresearch.com.au/wp-content/uploads/2017/02/Nematodes-IS13040.pdf

Application

Crop	Pest	Rate/ha
Sugarcane	Root-knot nematode (*Meloidogyne* spp.), Root lesion nematode (*Pratylenchus zeae*)	4 L

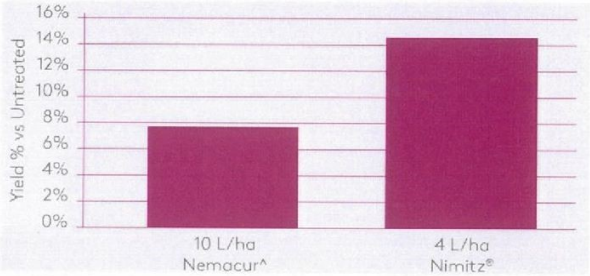
In Furrow

In Sugarcane, apply a single application of Nimitz® as a spray into the furrow at planting. Use a spray nozzle that will deliver a coarse spray quality in a minimum volume of 100 L/ha, in a band 30 – 50 cm wide over the centre of the row immediately prior to soil cover being brought in over the sett.

Compatibility classification Nimitz® Nematicide

Partner Poduct	Rate/ha	Water L/ha	Classification
Strikeout	2.0 L	60	Compatible
Pyrinex® Super	1.88 L	60	Compatible
Venom® 240	156 mL	60	Compatible
Kohinor® 350	1.44 L	100	Compatible
Albatross® 200	65 mL	60	Compatible
Jubilee® 500	500 mL	60	Compatible
Serenade Prime	7.0 L	200	Compatible

Nimitz® Sugarcane Yield (%) results 4 trial average



Conclusions from these trials and other trials

In Sugarcane based on a 4 trial average, a single application of Nimitz® at the rate of 4 L/ha have contributed to a 15% yield increment vs the untreated control whereas Nemacur application at the rate of 10 L/ha have contributed to a 7.7% yield increment vs the untreated control.

FZ-13-N01-13-Mackay, FZ-13-N01-14-South Ballina, FZ-13-N01-15-Oakenden, FZ-13-N01-16-Burnett Heads
^Note - Nemacur is a registered trademark and is now de-registered for this use.

For more information on Nimitz® scan here or visit adama.com

For more information visit: **adama.com**

For Customer Enquiries: **1800 4 ADAMA**

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To undertake a trial on your farm in the Herbert, please contact Richard Hobbs—HCPSL Extension Agronomist on 0400 544 301

The new 2019 Herbert Weed & Pest Management Guide Now available at the HCPSL Office or on www.hcpsl.com

Fee for Services offered by HCPSL to its Members:

- Soil Testing for nutrients
  Short Test—$130
  Long Test—$200
- Nematode Test—$55
- Pachymetra Test—$55
- Drone (UAV) farm assessments for crop performance, crop damage assessment, pest & weed scouting—$100/hr
- Soil mapping with the HCPSL Dualem machine—$30/hectare

Pachymetra Root Rot

Can be causing yield loss on your farm!

Introduction
Pachymetra root rot is a sugarcane disease unique to Australian cane fields. The disease is not seen in any other country, or in fields where sugarcane has not been previously grown. The disease greatly reduces root growth and yields in susceptible varieties. Pachymetra root rot is a major disease in many parts of Queensland and New South Wales. It is important that appropriate controls are implemented to minimize losses.

Causal organism
The disease is caused by a fungus-like organism, Pachymetra chaunorhiza.

Symptoms
Affected root systems typically exhibit a soft, flaccid rot of the larger roots, and are much smaller than healthy root systems. The fungus invades individual roots, usually near the root tip, and breaks down the internal root tissues. These roots either stop growing, or are completely destroped. This leads to a poorly developed root system and a lost of stool anchorage, which may give rise to excessive stool tipping. Root reddening may accompany the early stages of Pachymetra infection.

Yield Loss
Yield losses of up to 40% in susceptible varieties have been associated with the disease.

Management
Pachymetra root rot control is based on strategic planting of resistant varieties. Some Australian varieties have good resistance to the disease, and, in the production of new commercial varieties, use is made of resistant parents. All varieties are screened for resistance before release, and highly susceptible varieties are not considered for commercial production in badly affected districts.

Refer to pages 4 & 5 for resistance ratings for approved varieties in the Herbert.

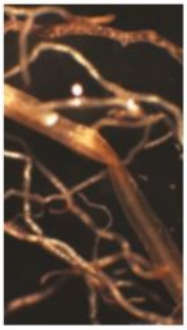
Short-term fallows (<12 months) have minimal effect on Pachymetra root rot; exposing soil to direct sunlight also has a minimal effect on Pachymetra. Pachymetra spores are long lasting and can survive for more than five years in the soil. Rotation crops such as soybean do not directly affect Pachymetra but have other beneficial effects on soil health. No fungicides are effective against Pachymetra at economical rates.

Pachymetra can spread from field to field in soil carried on machinery or attached to stalks of cane. If your farm or district is free of Pachymetra you should wash down machinery before it enters your. Unlike other Peronosporomycetes, Pachymetra is not carried long distances in water.

HCPSL
Herbert Cane Productivity Services Ltd.

Sugar Research Australia

Typical effect of Pachymetra root rot on the thicker sugarcane roots.



Pachymetra root rot is caused by a fungus that principally affects the primary and secondary roots of the cane plant, giving rise to a watery rot.

Some Faces of HCPSL!

Hello, my name is Ellie McVeigh and I am an Extension Agronomist at HCPSL. I began my role at HCPSL in April, as part of the Queensland Farmers Federation Ag Extension Program. I grew up on dryland cotton property near Jimbour, on the Darling Downs. In 2018 I completed Bachelors of Agribusiness and Agronomy at UQ Gatton. After graduation I looked for an opportunity to gain knowledge and experience in an Ag sector I was unfamiliar with.

In the relatively short time I have been at HCPSL I have experienced various aspects of the cane industry – from CCS and biomass sampling, to EM mapping and nutrient management plans. Over the past few months, I have been assisting with the Herbert RP161 project. As part of this project I have been assiting in the completion of nutrient management plans. In the coming months I will begin work on a district wide nematode survey. Throughout the year I'll have the opportunity to work on multiple other projects with various members of the HCPSL team. I look forward to getting to know producers in the district and advancing my knowledge of cane farming systems into the future!

Ellie McVeigh

Shannon O'Brien

Hello, my name is Shannon O'Brien. I moved up from Brisbane and started working at HCPSL in March 2018 as an Extension Agronomist. I completed a Bachelor of Environmental Science with Honours at the University of Queensland. I previously worked DSITI (DES) under Phil Moody and Diane Allen's supervision, working on soil nutrition projects.

I am currently involved in several projects primarily focusing on crop nutrition and developing spatially allocated nutrient management plans. Working on several projects gives me a lot variation in my work. You may see me supervising an EEF60 harvest at 2am or helping Adam develop nutrient management plans for Herbert RP161 project. I am also looking after Project Catalyst, a Silica field trial and am the CRC Innovation manager for this district. Through these projects, I aim to improve productivity and sustainability through enhancing knowledge of holistic soil management.

My name is Rod Nielson and I am the GIS officer at HCPSL. GIS stands for geographical information systems and includes creating, managing, storing and analysing information/data which relates a geographical location. I am also HCPSL's drone pilot and fly drones over trials and this year, over a lot of flood damaged cane blocks. I have been working in the GIS field for over 20 years now, having spent time working with Girringun Aboriginal Corporation, several NRM groups in Queensland and at the HRIC (Herbert Resource Information Centre) before it closed.

My work includes collecting data with HCPSL's DualEM 421S which measures apparent electromagnetic conductivity (EC_a) of the soil and producing maps of the interpolated points. This helps identify places to take soils samples from for testing. This data, along with the results from soil tests are used to create zonal maps for variable rate ameliorant application, and possibly nutrient in the future. I download free satellite imagery provided by the European Space Agency and perform NDVI analysis when there is a cloud-free image. HCPSL has used this technique after the March 2018 and the 2018/19 summer flooding to identify areas of crop damage and to see where the crop has recovered over the months since. The drone has been used to collect photos of the flood damage for record. It has also been used in mapping trials in the Herbert for HCPSL and SRA. I trial and review various emerging technology solutions for HCPSL to assess their viability for use by HCPSL and possibly to the sugar industry.

AGRICROP
Products for Plants

*info*note
Steri-maX cane smut 07/06

Using Steri-maX Biocide to control Sugarcane Smut* on equipment and appliances

Introduction

Sugarcane smut is one of the most serious diseases of sugarcane. Affected cane is severely stunted and production losses of 30-100% are common in susceptible varieties. The disease is caused by a fungus, *Ustilago scitaminea* Sydow. The fungus infects plants through the buds on standing stalks or germinating buds in the soil. The fungus grows in the plant in close association with the growing points or meristems.

Symptoms

Sugarcane smut is easily identified by the black whip-like structure that forms from the growing point of the sugarcane plant. This whip replaces the spindle leaf.

Spread

Sugarcane smut is primarily spread by wind dispersal of the spores or by planting infected or contaminated cane cuttings. The spores usually spread only a short distance, 10-15 m. However in gale force winds or cyclones spores can travel many kilometers. Movement of spores on machinery and shoes is also possible.

Control

Resistant varieties are widely used for control in countries where the disease is present. Hot water treatment of cane can be used to eliminate smut from infected planting material. For further information on these forms of control see the BSES information sheet ISO6006.

Equipment and appliance hygiene

are also essential to prevent the spread of spores to surrounding fields or properties. Smut spores are microscopic and where there is dust there may be spores. Spores can be trapped in inaccessible parts of a machine and freed to infect during transport, use or repairs in the field. Spores can remain viable for up to a year. Therefore all plant material, sugarcane smut spores and soil should be removed before transporting sugarcane equipment

Once cleaned the equipment should then be sprayed with a 1% solution of **Steri-maX Biocide.** The equipment/appliance should be ideally kept damp for a period of 5 minutes.

Efficacy Trials

Trials conducted by the BSES concluded that Steri-maX Biocide is 100% effective in killing sugarcane smut spores when applied at a rate of 1% solution with water. Further studies are being conducted to ascertain whether contact times of less than 5 minutes are as effective.

Acknowledgment:-

Agricrop wishes to acknowledge some of the above material was referenced from the BSES information sheet on Sugarcane smut (ref.—ISO6006).

**The APVMA have granted an emergency use permit (PER9440) for the use of Steri-maX Biocide in controlling the spread of sugarcane smut spores on equipment and appliances.*

STERI-MAX BIOCIDE—CONDENSED DIRECTIONS FOR USE:

SITUATION	RATE	CRITICAL COMMENTS
For control of the spread of Sugarcane Ratoon Stunting Disease	100 mL/10L water (1% solution)	Clean equipment of all debris, soil and sugar sap. Immerse or spray with solution for a minimum of 5 minutes making sure equipment is completely covered. Dispose of unwanted solution safely – refer to disposal statements as shown on the product label.
General disinfection of cold rooms, packing sheds, tunnels, seed trays & other hard surfaces.	100 mL/100L water (0.1% solution)	First remove all organic matter from surfaces and keep wet with Steri-maX solution for over 10 minutes for best results.
Aid in the control of the spread of **Sugarcane smut** *(Ustilago scitaminea)* **In sugarcane production areas**		APVMA Permit Number PER9440
Appliances (Any vehicle, machinery, equipment or apparatus of any kind)	100 mL/10L water (1% solution)	Apply to appliances that are clean and free of detergent. Apply to all parts of the appliance and keep the surfaces wet for a minimum of 5 minutes
Prior to leaving a property Equipment *includes* hats, plastic bags (used to enclose, for example, GPS equipment and folders), footbaths, immersion containers, spray equipment	100 mL/10L water (1% solution)	Apply to appliances that are clean and free of detergent. Apply by spraying a 1% solution on all parts of the equipment. Keep the surfaces wet for a minimum of 5 minutes. Alternatively, immerse the equipment in the solution (e.g. a footbath) for a minimum of 5 minutes
General hygiene measures for vehicles	100 mL/10L water (1% solution)	Remove visible soil and plant material from vehicle and tyres. Spray tyres with a 1% solution to run-off.
Disposal		Dispose of used treatment solutions (from footbaths/ immersion containers) on to ground before leaving the property.

NOT TO BE USED FOR ANY PURPOSE OR IN ANY MANNER, CONTRARY TO THE LABEL OR THIS PERMIT UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

GENERAL INSTRUCTIONS:

- Effective against a range of fungi and bacteria pathogens.
- Stays active as long as it is in solution (does not oxidize).
- Under heavy agitation, foam may form and a defoaming agent (food grade) may be useful.
- Steri-maX has wetting characteristics, so a wetting agent does not need to be added.

For more information on this product contact:
Agricrop +61-7-3348 4113
sales@agricrop.com.au or visit www.agricrop.com.au

AGRICROP
Products for Plants

Herbert Cane Productivity Services Ltd

Website: www.hcpsl.com

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Feral Pig Management Officer

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