

HERBERT SUGAR INDUSTRY REPORT

2020



HCPSL
Herbert Cane Productivity Services Ltd.

wilmar

CROP PERFORMANCE 2020

Late 2019 and early 2020 was quite dry with below average rainfall. In March 2020, the crop was short and areas like Ingham Line had experienced prolonged drought conditions with ratoon crops failing to establish. Rains in May and June with a mild winter allowed the crop to grow on, especially in the Abergowrie, Lower Herbert and Central Herbert areas.

Harvesting commenced mid-June, with growers selecting higher and dry blocks to harvest because of the wet field conditions. The CCS levels were lower than expected in the first half of the crush due to rain and continued crop growth. As the harvest season progressed and conditions became dry, once again areas like Ingham Line went back into drought.

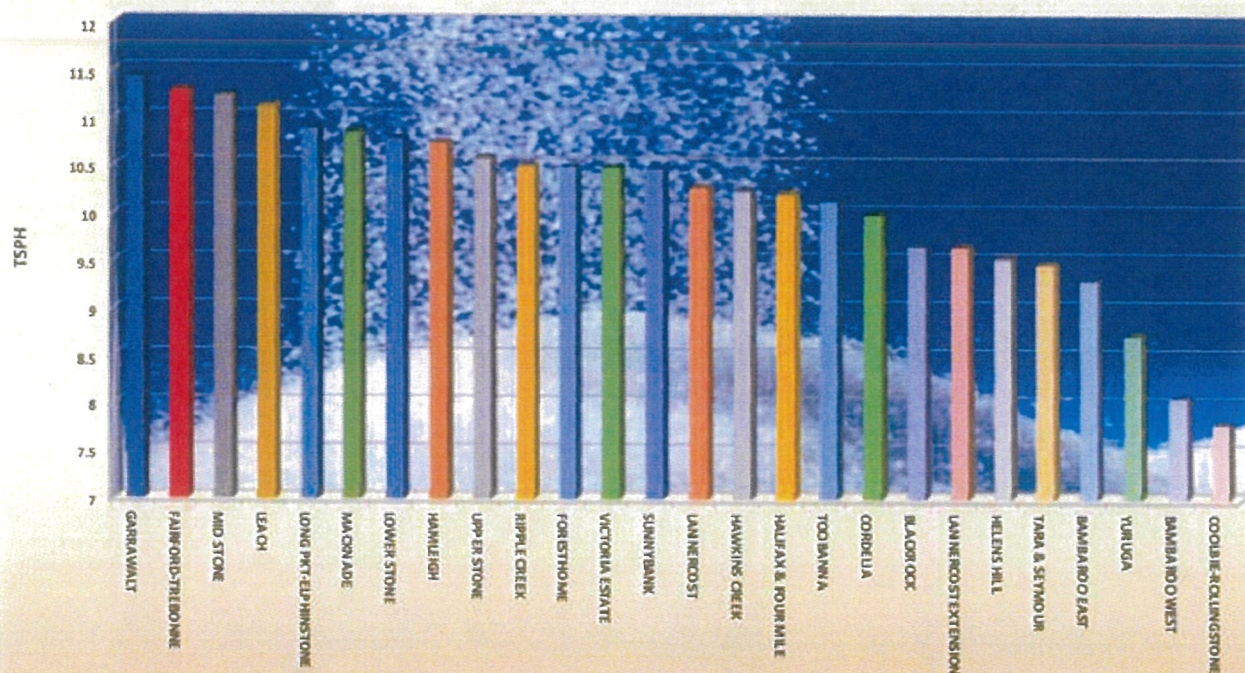
The cane harvest concluded on the 29th. November 2020. Although the crop of 4.25 million tonnes was somewhat disappointing, it was nevertheless remarkable given the poor growing conditions experienced in late 2019 - early 2020. The average district yield for 2020 was 76.97 tcph, with a district average CCS of 13.16.

HISTORICAL DATA

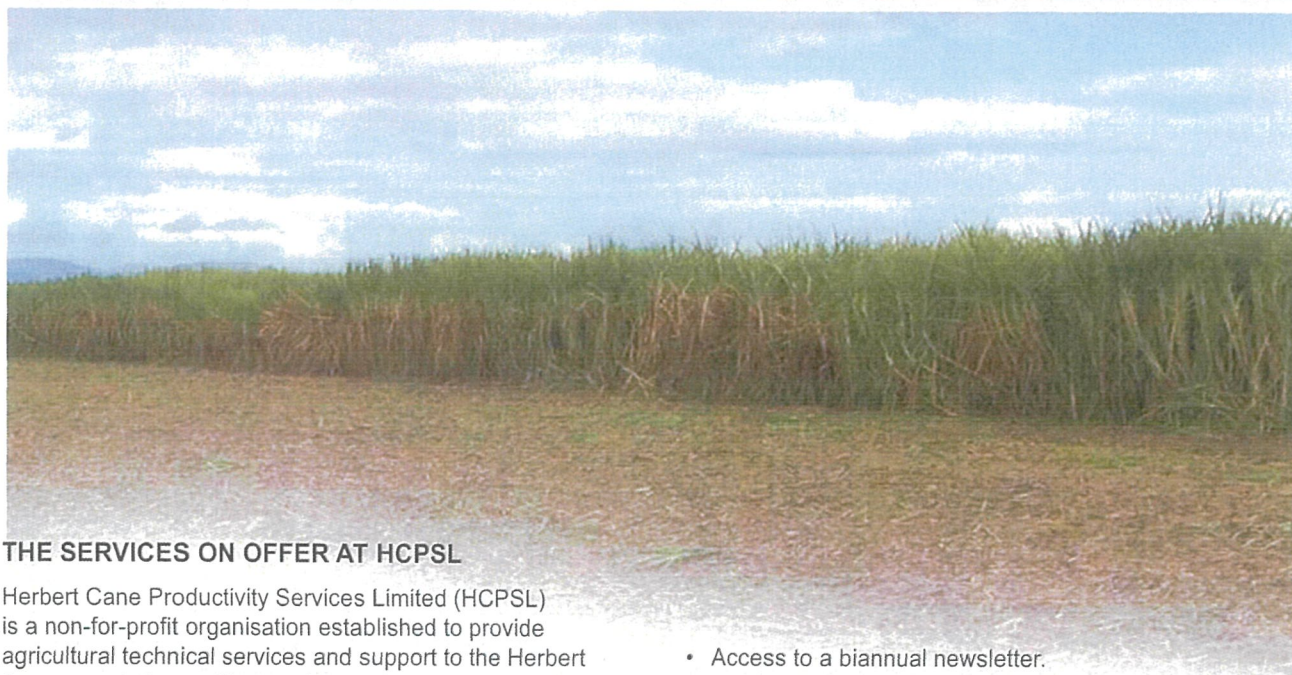
Year	Tonnes	Ha Harvested	CCS	Cane Yield	Sugar Yield	Year	Tonnes	Ha Harvested	CCS	Cane Yield	Sugar Yield
1993	3873973.78	44650.81	13.37	86.76	11.60	2007	4287010.73	57158.66	13.84	75.00	10.38
1994	3888137.31	46730.02	14.74	83.20	12.27	2008	4688595.64	55081.21	13.54	85.15	11.53
1995	4908214.85	50051.86	13.05	98.06	12.80	2009	3920941.21	51171.33	14.79	76.62	11.33
1996	5251285.67	53513.30	13.21	98.13	12.96	*2010	3274402.07	39567.98	12.85	82.75	10.64
1997	5272421.61	57328.33	13.37	91.97	12.29	2011	2920400.98	52364.64	12.89	55.77	7.19
*1998	4191272.31	48669.90	11.46	86.12	9.87	2012	3625680.08	50394.18	13.57	71.95	9.77
1999	4151741.51	59955.95	12.73	69.25	8.81	2013	4000685.4	54017.57	13.95	74.06	10.33
2000	2802049.39	58379.16	13.01	48.00	6.24	2014	4152315.8	55800.99	13.62	74.41	10.13
2001	3311004.97	56876.94	14.34	58.21	8.35	2015	4459593.58	56615.75	13.41	78.77	10.56
2002	4243591.27	54892.20	14.40	77.31	11.13	*2016	4812090.08	56166.82	12.26	85.67	10.50
2003	4051558.05	56975.69	13.90	71.11	9.89	*2017	5033395.85	57078.74	12.88	88.18	11.36
2004	4641372.86	56410.75	13.56	82.28	11.16	2018	4718178.26	57042.90	14.24	82.71	11.78
2005	5553359.05	57078.93	13.11	97.29	12.76	2019	4055701.57	56357.28	13.89	71.96	10.00
2006	4900084.45	57658.50	12.62	84.98	10.72	2020	4,250,399.37	55,224.52	13.16	76.97	10.13

*Standover Left

District Productivity



HCPSL SERVICES



THE SERVICES ON OFFER AT HCPSL

Herbert Cane Productivity Services Limited (HCPSL) is a non-for-profit organisation established to provide agricultural technical services and support to the Herbert Sugarcane industry. The key focus of the company is to drive productivity and sustainability outcomes for the local industry.

Cane farmers from the Herbert cane growing region and the local miller (Wilmar Sugar) can be members of the company. The HCPSL Board is represented by its membership, with three grower and three miller members holding positions.

HCPSL consists of two technical service groups.

Core funded - Grower services team

This team delivers activities that are funded under the membership service fee:

- Provision of clean seed through the HCPSL "Approved Clean" seed program consisting of access to cane from the plots, tissue culture program and hot water treatment facilities. This activity is resource hungry and constitutes a significant component of the HCPSL annual budget.
- HCPSL leases three farms in the Central Herbert, Lower Herbert and Stone River areas and has commercial arrangements with growers in the Ingham Line and Abergowrie areas to grow "Approved Clean" Seed cane for members.
- Cane testing of material to be used for planting by growers for Ratoon Stunting Disease (RSD).
- Provision of basic crop agronomy advice.
- Provision of basic advice on pest and disease management.
- Provision of basic advice on fallow management.
- Provision of basic advice on herbicides and pesticides.
- Provision of variety management advice.
- Access to the HCPSL GPS basestation network.
- Laser levelling and dumpy level surveys.

- Access to a biannual newsletter.
- Access to the HCPSL website.

As part of the core funding, HCPSL also funds variety development activities in the district supporting the HCPSL Ratoon Variety Trials (RVT), SRA and Wilmar plant breeding programs.

Externally funded - Technical services team

This team works on the following externally funded projects:

- Soil tests for nutrients and pathogens (like *Pachymetra* and nematodes).
- Irrigation water quality testing.
- Farm specific - Nutrient management plans.
- Farm specific - Pest and weed management plans.
- Group and mass media extension activities like:
 - Chemical use accreditation courses.
 - Training courses (like Farming 4 Cash™ and Back to Basics workshops)
 - Facebook site
- Electromagnetic soil mapping.
- Precision agriculture application maps.
- Drone mapping and other applications.
- Soil Health project activities.
- Harvesting development project activities.
- Environmental services and stewardship programs.
- Development activities associated with soil amendments, fertilisers and chemicals.

Externally funded projects are funded by Governments, SRA, the CRC for Soils, Universities and private companies.

For more information concerning services offered by HCPSL please contact the Manager

Lawrence Di Bella on 0448084252 or 47761808.

VARIETY PERFORMANCE & RECOMMENDATIONS

Two new varieties will be released from the HCPSL Approved Clean Seed Plots in 2021, being SRA26 and SRA28. Frequently asked questions, "Where can we plant these varieties?", "What soil type do they perform best in?" and the most common question "Are they any good?" Hopefully, the following information will answer some of these questions.

SRA26 (QN08-2282)

This variety has been observed to be comparable with Q208^h and Q200^h across different trial sites for yield and CCS performance. SRA26 is bench marked as being resistant to Leaf Scald, Smut, Pachymetra, Orange Rust and Red Rot, making it appealing for both performance and resistance. Throughout the trials in the Herbert it was observed to have the ability to germinate when planted in dry conditions. It also displayed tolerance to waterlogging as it was deemed to be one of the "survivors" in a trial at Yuruga which incurred lengthy waterlogging. (This trial has since been taken out as the majority of the varieties died off).

SRA28 (QS08-8776)

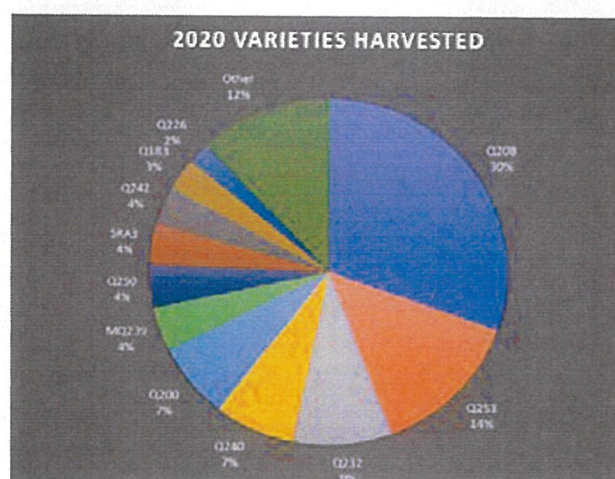
This variety is on par with Q208^h and Q200^h with yield and CCS results across a number of trial sites. It also has good disease resistance against Pachymetra, Leaf Scald and Red Rot. This variety has however been noted to have slow germination, compared to standards. Hot water treatment has been observed to have a negative effect on the success of germination. This variety has not been exposed to adverse conditions in any Herbert trials i.e. flooding and drought, so planting in these areas is not recommended at this stage.



SRA26



SRA28



DISEASE RATINGS FOR VARIETIES IN THE HERBERT

	Brown rust	Chlorotic streak	Leaf scald	Orange rust	Pachymetra root rot	RSD	Red rot	Smut	Yellow spot	
Q183 ^h	Resistant	Susceptible	Intermediate	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q183 ^h
Q190 ^h	Intermediate	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q190 ^h
Q200 ^h	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q200 ^h
Q208 ^h	Resistant	Intermediate	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q208 ^h
Q226 ^h	Intermediate	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q226 ^h
KQ228 ^h	Resistant	Susceptible	Intermediate	Resistant	Resistant	Susceptible	Intermediate	Intermediate	Intermediate	KQ228 ^h
Q231 ^h	Resistant	Resistant	Intermediate	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q231 ^h
Q232 ^h	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q232 ^h
Q238 ^h	Resistant	Susceptible	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Susceptible	Q238 ^h
MQ239 ^h	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	MQ239 ^h
Q240 ^h	Resistant	Intermediate	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q240 ^h
Q242 ^h	Resistant	Intermediate	Resistant	Resistant	Resistant	Susceptible	Intermediate	Resistant	Intermediate	Q242 ^h
Q247 ^h	Resistant	Resistant	Resistant	Resistant	Resistant	Susceptible	Intermediate	Resistant	Susceptible	Q247 ^h
Q250 ^h	Resistant	Resistant	Resistant	Intermediate	Resistant	Intermediate	Intermediate	Resistant	Intermediate	Q250 ^h
Q253 ^h	Intermediate	Resistant	Resistant	Resistant	Resistant	Susceptible	Intermediate	Resistant	Susceptible	Q253 ^h
SRA5	Resistant	Resistant	Intermediate	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	SRA5
SRA10	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	SRA10
SRA14	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	SRA14
WSRA24	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	WSRA24
SRA26	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	SRA26
SRA28	Resistant	Resistant	Resistant	Resistant	Resistant	Intermediate	Intermediate	Resistant	Intermediate	SRA28

= Resistant
 = Intermediate
 = Susceptible
 = Unknown/In Trial



Sugar Research
Australia

HERBERT VARIETY DEVELOPMENT UPDATE

For 2021, the first quarter of the year is very active for the SRA Variety Development Team in the Herbert. On wet days, our team completes trial data analysis, starts plot labelling, implements ratoon stunting disease (RSD) sampling to all blocks at the Fairford Road farm and trial sites, and plants our introgression seedlings. The data from all Final Assessment Trials (FATs) also get summarised and presented at the SRA selection meeting and the Regional Variety meeting (RVC), respectively.

This year, the RVC meeting was on March 30, and at the meeting, the max propagation clone QC05-1281 (parents: QS87-7427 x QC82-954) was released given its resistance to *Pachymetra*, leaf scald and smut. This clone also demonstrated high CCS performance across all sites, with similar sugarcane yield (in terms of tonnes of cane per hectare) compared to commercial standards in the same trials.

Another max propagation clone was released conditionally and is waiting for additional leaf scald testing results. This is the experimental clone: QA07-2978 (parents: QN80-3425 x Q142). This clone is resistant to *Pachymetra* and leaf scald, and it is intermediate resistant to smut. The CCS of this clone was similar to the standards, but the sugarcane yield and sugar yield per hectare was higher than the commercial varieties in the same trials.

The Herbert region released six SRA varieties in the last four years: the existent SRA10, SRA14, WSRA24, SRA26 and SRA28, and the above-mentioned new releases QC05-1281 and QA07-2978 (which soon will be given a variety name). More varieties mean SRA is broadening

the options for farmers to choose from, with more disease-resistant varieties.

Other activities that are expected to have a positive impact for the local industry are -

- The SRA Herbert NIR-Spectracane unit /juice laboratory has started operating, producing high-quality results for the 2020 harvest season. From now on, the Herbert juice laboratory can analyse CCS and fibre for most of the SRA Herbert trials.
- The SRA Herbert station currently held two trials where drones and specialised software and remote sensing technology are combined to perform high-throughput sugarcane phenotyping. This project aims to develop a non-invasive sampling method that can reduce the time of variety selection and capture novel traits with lesser error while reducing labour cost.
- A new Plant Breeding technician has joined the Variety Development Team: Linda Di Maggio. She was an essential member of the yellow canopy syndrome (YCS) and soil health project teams and played a lead role in developing the Soil Health Extension Toolkit. With her hands-on approach, she is an asset to the SRA Variety Development program in the Herbert.

The Variety Development team is also committed to engaging with our stakeholders. For any enquiry related to variety performance, contact Juan Briceno, SRA Variety Officer on 07 04776 8205 or email jbriceno@sugarresearch.com.au

QA07-2978



Six month plant crop. Fairford Rd, March 2021



sugarresearch.com.au

CCS: Higher than Q232 but lower than Q200, Q2308, and Q240

TCH: Similar to higher* than standards

TSH: Similar to higher than standards

Diseases:

- ° Resistant to *Pachymetra*
- ° Resistant to leaf scald
- ° Intermediate resistance to smut

Fibre:

- ° Fibre equal to Q240
- ° Okay Fibre quality

Floc: Okay

Requires more leaf scald tests

* TCH differences to stds were significant at Crystal Crk, Helens Hill, Fairford Rd, Cordelia, Lannercost Extension, and Long Pckt, and highly significant at Crystal Crk, and Helen Hill

QA05-1281



Six month plant crop. Fairford Rd, March 2021



sugarresearch.com.au

CCS: Higher* than standards

TCH:

- ° Similar to standards
- ° Higher than standards at the Fairford Rd trial

TSH:

- ° Similar to standards
- ° Higher than standards at Fairford Rd

Diseases:

- ° Resistant to smut
- ° Resistant to *Pachymetra*
- ° Resistant to leaf scald

Fibre: Okay fibre quality

Floc: Okay

* CCS differences to stds were significant at Coolbie, and Lannercost Ext, and Fairford Rd trials; and highly significant at Crystal Crk, and Helens Hill trials

CLEAN SEED CANE



The Who, What, When, Where & How of the 2021 HCPSL Seed Plots

Central Plot

Address: Hamleigh Rd

Varieties Available: SRA28, Q219, SRA26, Q250, Q242, Q200, Q183, Q253

Open Day: Tuesday 7.30 am

Whole stalk cutter:: Available on open day. Trailer drop off prior to 7.30 am Tuesday.

Billets: Please call in advance so a billet Harvester can be organised.

Staff Member: Staff Member: Sam Sellick 0417 622 129

Ingham Line

Address: Hechts Rd Bambaroo

Varieties Available: WSRA24, Q232, Q253, Q208, Q250, SRA26, SRA14, Q240, Q183, Q200

Open Day: Thursday 7.30 am

Whole stalk cutter:: Available on open day. Trailer drop off prior to 7.30 am Thursday.

Billets: Available on open day with notice.

Staff Member: Tony McClintock 0447 304 963

Abergowrie Plot

Address: Abergowrie Rd

Varieties Available: Q253, Q200, Q240, Q208, WSRA24, SRA14, SRA26, Q208, Q252, Q247, KQ228.

Open Day: Wednesday 7.30 am

Whole stalk cutter:: Available on open day. Trailer drop off prior to 7.30 am Wednesday.

Billets: Please call in advance so a billet Harvester can be organised.

Staff Member: Sam Sellick 0417 622 129

Macknade

Address: Macknade TFD

Varieties Available: VWSRA24, SRA28 Q253, Q208, Q200, SRA26, Q231, Q232.

Open Day: Friday 7.30 am

Whole stalk cutter:: Available on open day. Trailer drop off prior to 7.30 am Friday.

Billets: Please call in advance so a billet Harvester can be organised.

Staff Member: Tony McClintock 0447 304 963

Stone River

Address: Stone River (Wilmar Site)

Varieties Available: Q250, KQ228, Q208, Q253, Q219, SRA26, Q232, Q253, Q200, WSRA24, MQ239, SRA10, Q250, Q240, SRA14, Q138, Q238, Q215, SRA5, Q247, Q226, Q231.

Open Day: Wednesday 7.30 am

Whole stalk cutter:: Available on open day. Trailer drop off prior to 7.30 am Wednesday.

Billets: Not available from plant Crop.

Staff Member: Sam Sellick 0417 622 129

SHOWCASING OUR INDUSTRY

HERBERT SUGAR INDUSTRY AWARDS PRESENTED IN 2020

Award	Recipient
Grower of the Year (Sponsored by HCPSL)	Pace Farming
Young Grower of the Year (Sponsored by QSL)	Chris Butler
Mangrove Jack Award (Sponsored by Herbert River Catchment Group)	Herbert Water Quality Monitoring Program
Harvesting Efficiency Award (Sponsored by Sugar Research Australia)	Roveda Harvesting
Innovation Award (Sponsored by Rabobank)	Carta Engineering
Farm Presentation for Harvesting Award (Sponsored by CAMECO)	Roblea Investments P/L
Improved Farm Layout Award (Sponsored by Canegrowers Herbert River)	Rodney Robino
Consistent High Productivity (Sponsored by QSL)	Celotto A & A Family Trust ASM Earthmoving C Zatta G & AJ Boscato RO & JA Finlayson JT & Mrs VR Russo Farming Pty Ltd
R&D On-farm Co-operation Trust (Sponsored by HCPSL)	Motti Enzo Discretionary Morellini P Rivellini A & S Accornero Family Trust T/A Accornero Farming Co
Lifetime Achievement Award (Sponsored by HCPSL)	Robert Quabba Joe Girgent Orazio Marino Frank White

Grower and Industry forums

Like most planned activities in 2020, COVID-19 prevented them from occurring. With the COVID-19 shut down in early 2020, the March and April shed meetings and industry forum were cancelled.

The planned annual HCPSL Herbert Walk and Talk Day was cancelled due to flooding in March.

Better herbicide management a key to farming - shed meetings.

"Better managing herbicides in a tropical environment," was the topic of the mid October Herbert Cane Productivity Services Limited (HCPSL) shed meetings.

University of Queensland Associate Professor Michael Warne introduced the new Pesticide Decision Support Tool, developed by DES and DAF, to the growers who attended the workshops.

With the introduction of Reef Regulations many growers have been asking – "What herbicide options do I now have?"

Professor Warne introduced growers to a decision support tool that had been developed to make it practical and easy for farmers and advisors to use. Farmers got the opportunity to use the tool first-hand during the workshop. The tool will be made available to farmers and advisors in early 2021.

During the workshop SRA and HCPSL staff working on the Cane to Creek project reported on the latest results from recent rainfall simulation trials assessing different herbicides in relation to loss and runoff.

Farmers also got their hands dirty and were involved in a demonstration comparing different herbicides and pesticides in relation to how they move in the soil. The demonstration explained how herbicide solubility plays an important role in the management of off-site run off and crop safety.

HCPSL staff discussed variety sensitivities to various herbicides and how to minimise crop phytotoxic impacts when using herbicides.

Eighty- eight farmers attended the five shed meetings from across the Herbert River district.

The event was funded by the Queensland Government Reef Water Quality program and supported by HCPSL, Sugar Research Australia (SRA), the University of Queensland (UQ) and the Queensland Departments of Environment and Sciences (DES) and Agriculture and Fisheries (DAF).



Andrew Carr (grower), Dr. Michael Warne (UQ) and Brian Adams (grower) pictured at the shed meeting

RESEARCH AND DEVELOPMENT

GREEN WASTE TRIAL

A small scale green mulch trial from Townsville City Council was applied in December at Pace Farming property Bambaroo. The green waste mulch was applied at 15t/ha into open furrows and covered on 19/12/2019. Legumes were planted early January. The crop treated with the green mulch showed better growth than the control (untreated). No biomass assessment was conducted due to rain and wet conditions. The crop was terminated (sprayed) first week of April. Alan Pace mentioned



Applying green mulch into furrows and covering



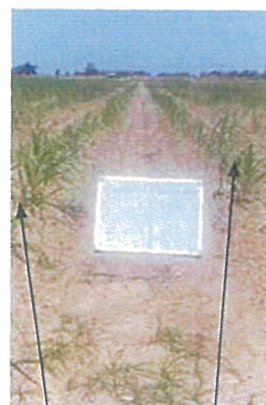
Left - green mulch Right - controlled

Second Green Mulch "v" Poultry Bio-Digester "v" Mill Mud/Ash "v" Control

A green waste / Poultry Bio-digester / Mill Mud/Ash pre-plant trial at Pace Farming property Bambaroo was established. This trial was applied on 16/7/2020 into furrows and covered. Rates were determined on standard practice of Mill Mud/Ash at 95 t/ha. This cost was then related back to same value of Green Waste (25t/ha) and Poultry Bio-digester material (9t/ha). Planting was carried out using a dual double disc opener on 18/7/2020. The initial results on the 21/9/2020 showed the Mill Mud to have had the best germination closely followed by the green waste and a disappointing germination on the poultry bio-digester material. Results on the 15/10/2020 after an irrigation showed a general improvement in the germination. The Mill Mud and green waste still in front of the poultry bio-digester material.



Poultry Manure
9 T/ha



"v" Mill Mud/Ash
95 T/ha



Control Manure
Nil

"v" Poultry
9 T/ha

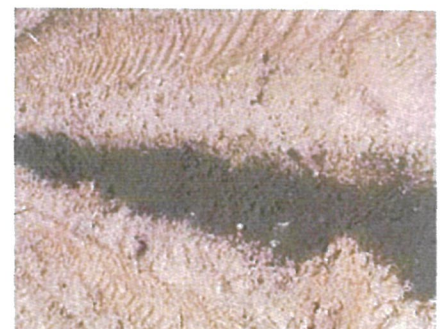
Green Mulch "v" Control
25 T/ha Nil

Third Green Mulch "v" Mill Mud/Ash Trial

Green mulch "v" Mill Mud trial was established at Gino Zatta's farm on the 21/10/2020. Product was applied subsurface and mounded over top. This trial consists of two rates of green mulch at 15 and 30 t/ha and Mill Mud/Ash at 15 and 30 t/ha and a combination of both green mulch and mill mud/ash at both rates plus the farmers standard application rate of 75 t/ha of mill mud/ash and a control of no product applied. These plots have been planted to legumes early December. Cane planting will be carried out around May /June 2021.



Green mulch applied into furrows @ 30 T/ha



Mill Mud/Ash applied into furrows @ 30 T/ha



RESEARCH AND DEVELOPMENT



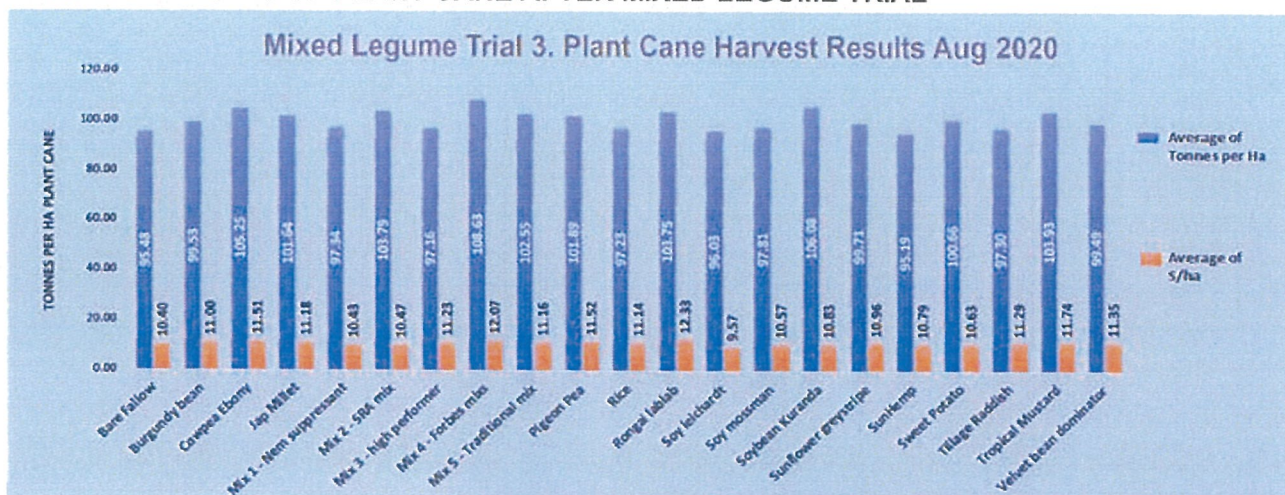
PROJECT CATALYST is a partnership between Innovative Qld cane growers, NRM groups, Australian Government, GBRF, WWF and the Coco Cola Foundation. It aims to support sugarcane growers and to promote innovative farming practices that will improve sustainability and water quality from farmland.

Project Catalyst (PC) initial focus was, innovative farm practices and over the last four years, HCPSL with PC have trialled several different projects, some with success and others without. PC believes no trial is a failure because it can then be used as a learning tool for the rest of the sugarcane community.

In 2020, PC opened the innovative platforms and began to support a broader adoption concept of new farming practices to improve cane yield sustainability and water quality run-off across the Wet Tropics. The subjects that were adopted and supported across the Herbert district last year were: Implementation of EM mapping, managing sodic soils with variable rates of amendments, mixed legume fallow cropping and weed control using drones. PC is still trialling innovative trials such as variable rates phosphorus, variable rates of Imidacloprid, and carbon field sausages to reduce pesticide runoff from cane block to drain.

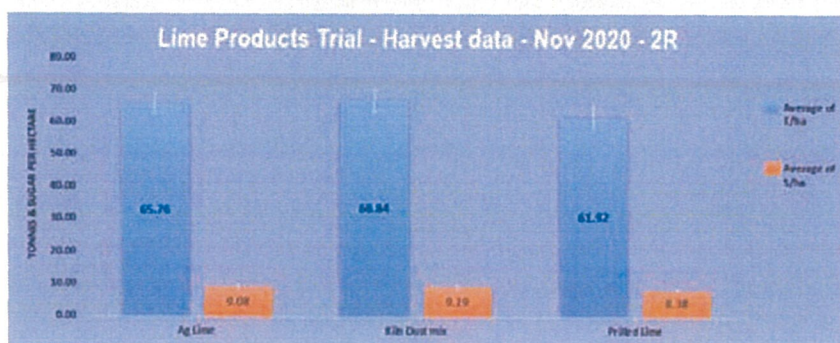
During harvest season 2020, there were several trials getting cut and analysed. The mixed legume trial was one of these to

HARVEST RESULTS OF PLANT CANE AFTER MIXED LEGUME TRIAL



be analysed after harvest of plant cane. This plant cane was fertilised with a total of 40kg/ha of N after a mixed legume trial. Further sampling of nematodes and soil health were also analysed.

Another trial PC has been following since 2016 has been the Lime Products trial. Focus has been on soil pH levels and Cane yield. The **2020 Harvest Results** are pictured right.



Project Catalyst yearly forum is coming up at the end of February 2021. There will also be several BBQ shed meetings coming up this year to discuss with growers how to adopt some of these newer farming practices, so keep an eye on this space. If you would like to know more about what Project Catalyst has been up to across the Wet Tropics please feel free to check out the website at www.projectcatalyst.net.au

		Lab results		*Note Lime was put down in July 2017				
		Starting pH value @ baseline soil sample 26/12/2016	pH meter reader Average for 13/11/2017	Average for 20/12/2017	Average for 30/01/2018	Average for 30/08/2018 After Harvest	Average for 28/10/2019 After Harvest	Average for 02/12/2020 After Harvest
Treatment 1	Centre of row for Ag Lime	5	5.62	5.97	6.00	6.35	6.02	6.43
Ag Lime	Shoulder of row for Ag Lime	5	5.73	5.78	5.87	6.23	6.40	5.96
Treatment 2	Centre of row for Kiln Dust	5	5.32	5.12	5.40	5.58	5.93	5.69
Kiln Dust 20% mix	Shoulder of row for Kiln Dust	5	5.28	5.35	5.33	5.66	5.85	5.70
Treatment 3	Centre of row for Prilled Lime	5	4.88	4.98	4.83	5.50	5.76	5.94
Prilled Lime	Shoulder of row for Prilled Lime	5	4.87	4.92	4.72	5.23	5.75	5.01

RESEARCH AND DEVELOPMENT



The Herbert River Catchment Landcare Group (HRCLG) undertook the following activities in 2020. Like most organisations throughout the world, COVID-19 had a significant impact on activities undertaken in 2020 and the HRCLG was no different.

The annual NRM forum, Ingham Show display and numerous meetings were cancelled due to COVID-19 restrictions.

The group continued or completed the following projects:

- Riparian revegetation and weed control in the Palm Creek system.
- Involvement in the Hinchinbrook Community Feral Pig Management Program.
- Continued support for the eradication of declared weeds in the shire.
- Undertook the Beyond the Block project, which undertook water quality monitoring (both surface and sub-surface) and investigate opportunities to improve water quality throughout a landscape.
- Supported the Community garden.

There has been a steady increase in the number of members throughout the year in the Lower Herbert sub-group, while the Upper Herbert sub-group remains in caretaker mode.

The Herbert River Catchment Group Landcare Group is always seeking new members. Please do not hesitate to contact Lawrence Di Bella on 0448084252 or Frank Scardamaglia on 0475818800, if you are interested in being involved in Landcare.

HERBERT RP161

Tailored nutrient and farm management solutions for the Herbert catchment area

In 2020, the Herbert RP161 project entered its second year of delivery, increasing its grower intake from 53 farms to over 80. Under Herbert RP161, three HCPSL extension staff were able to deliver tailored whole farm nutrient and crop plans and on-farm advice to Herbert growers throughout 2020.

The Herbert RP161 project assists Herbert growers to make

more informed decisions concerning nutrient and farm management practices that will lead to positive productivity, profitability, and environmental outcomes.

HCPSL project extension staff engaged with 84 farms in 2020 to deliver positive outcomes including improved nutrient uptake by the crop and minimised water quality impacts through tailored nutritional plans and improved farm management practices.

These outcomes have been achieved through improvements in crop nutrition, soil health, variety selection, pests and disease management, and management of soil constraints such as sodic, magnesic and saline soils.

In February and November 2020, Dr. Andrew Wood (Tanglewood Agricultural Services) joined HCPSL project staff to deliver four Farming 4 CASH® workshops for growers taking part in the Herbert RP161 project. The workshops focused on improving soil health, better nutrient utilisation, and legume fallow management.

HCPSL staff and project partners wish to thank project growers for their participation in the Herbert RP161 project and look forward to providing further agronomic advice in 2021.



HCPSL extension agronomist Ellie McVeigh discusses nodulation and the effects of lime on legumes during a Farming 4 CASH™ workshop



Herbert RP161 growers discuss how to get the most from their soil samples with Dr Andrew Wood during one of the Farming 4 CASH™ workshops.

This project is funded through the Queensland Government Reef Water Quality Program and the Australian Government's Reef Trust.



RESEARCH AND DEVELOPMENT

CANE TO CREEK 2.0 PROJECT

SRA's Cane to Creek 2.0 project worked with local sugarcane communities to join the water quality dots from cane fields to local creeks and beyond while investigating farming practices that can practically improve outcomes. In the Herbert region SRA and HCPSL work together to deliver Cane to Creek, with a focus on the Abergowrie district in the upper catchments, and some demonstration sites further afield.

The project aimed to build knowledge around certain practices and extend that information to the wider community. In its first year eight demonstration sites were established which involved, rainfall simulations, chemical, fertiliser and mill mud trials.

Due to increasing government scrutiny of imidacloprid, and grower interest, some chemical trials had a strong focus on the insecticide, mainly around the depth of placement, with the goal of achieving the 100mm below ground surface requirement stipulated on the label. Initial results from the first year of trials showed achieving the 100mm depth, reduced not only imidacloprid losses but also had a large effect on nitrogen fertiliser losses. This was captured through the in-field monitoring systems set up in three of the trials.

Other trials include fertiliser reduction in late ratoon, pre-emergent chemical trials – testing new v old chemicals, fertiliser application (surface v subsurface) and mill mud trials.

An accounting for mill mud nutrients demonstration was run in the Lower Herbert sub-catchment, with mill by-products applied to a block of Q200A and fertiliser rates adjusted to account for nutrients in the mud on one treatment and left at the full SIX EASY STEPS on another treatment. Treatments were replicated across the block.

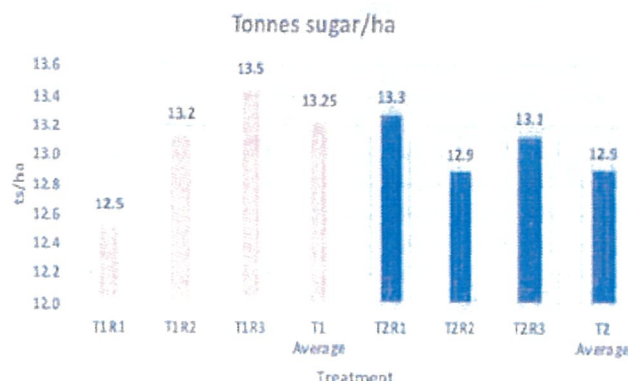
Treatment 1 - No Discount for Mud	Treatment 2 - 25% Discount for mud applied
N:120kg/ha P:21kg/ha K105kg/ha S:0kg/ha	N:90kg/ha P:0kg/ha K:90kg/ha S:0kg/ha

Leaf tests were taken and showed no difference between the two treatments. Zinc was slightly deficient, and it can be assumed that this is due to the high calcium content in mill mud which can sometimes induce zinc deficiency for a short period of time. This trial along with many others are continuing in 2021.

Extensive sub-catchment monitoring is another component of the Cane 2 Creek program. Eight monitoring sites were selected based on position in the landscape, from beginning of the sub-catchment to the end of the sub-catchment. These sites were sampled once every 1-2 weeks or whenever there was a major rainfall event (if access was possible!). During an average wet season that was experienced early in 2020, data from testings showed that majority of losses are seen in the early flushes (January 2021).



YIELD RESULTS FOR 2020



T = Treatment R = Replicate

LEAF TEST RESULTS

Third leaf assay	Unit	Critical level of assay	SIX EASY STEPS + MUD (FULL)	SIX EASY STEPS - MUD (DISCOUNTED)
Nitrogen (N)	%	March to	1.80	1.90
Phosphorus (P)	%	0.19	0.27	0.24
Potassium (K)	%	1.1	1.10	1.10
Calcium (Ca)	%	0.2	0.49	0.55
Magnesium (Mg)	%	0.08	0.16	0.16
Sulfur (S)	%	0.13	0.13	0.14
Copper (Cu)	mg/kg	2	4.2	4.6
Zinc (Zn)	mg/kg	15	12.0	14.0
Manganese (Mn)	mg/kg	15	150.0	160.0
Boron (B)	mg/kg	1	1.3	2.3
Molybdenum (Mo)	mg/kg	0.08	1.40	1.50
Silicon (Si)	%	0.7	-	-



Rainfall Sim used to simulate heavy rainfall to capture information on how certain chemicals behave under typically wet conditions

EXTENSION

FALLOW MANAGEMENT

Spray / Cultivation Options - Do's and Don'ts

This past year has had many challenges, first with the dry harvest with very little rainfall only to change to a full-on wet season in a matter of a few days at the end of December.

One of the challenges faced was having enough soil moisture to plant legumes into our fallows and as a result most of the fallows are basically of a heavy grass nature. The challenge will be to control the grass and volunteer cane as early as possible to reduce the seed bed concentration.

We have two main options to consider, do we spray or cultivate our fallows.

- There are two different ways to terminate your fallow legume or grassy fallow block.
- Termination by spraying out. The herbicide used would be Glyphosate (Wipe-Out 450 etc) based products at **4-5 L/ha** to control your volunteer cane, grasses, sedges and legumes. The addition of Fluroxypyr (Starane® Advanced etc) at **0.8 L/ha** is recommended as these two products are compatible and will aid in terminating your fallow crop. You may also add 2,4-D at **0.8 L/ha** to the mix however it **must be compatible with Glyphosate**. Refer to Glyphosate label, **2,4-D Advance 700** is compatible with the above two products. The addition of a wetting agent is recommended and LI 700 at 250-500 mls/100L will give the best results. Do not use spray oils with Glyphosate products or mixes as they are not compatible.
- Another product to consider will be Haloxyfop (Verdict®520). This product will only control grasses therefore the addition of a broadleaf/vine herbicide needs to be added. Fluroxypyr (Starane® Advanced) is compatible with Verdict®520 as a broadleaf/vine controller. **2,4-D products are not compatible with Verdict®520 and should not be mixed together. If you have Sedges (Nut grass, Swamp sedge or Navua sedge) Verdict®520 and Fluroxypyr (Starane® Advanced etc) will not control these weeds, giving you a very poor result.** If these weeds are present, Glyphosate mixes (as above) will give you the best results. A point to remember, if you have a successful spray out the decaying weed residue will hold moisture and take longer to dry before you can do mechanical cultivation.
- Alternatively, mechanical cultivation like discing, speed tillers, slashing/mulching and rotary hoeing can be used to terminate and incorporate crop residue prior to planting.
- Be mindful that mechanical incorporation may cause legume nitrogen losses/tie-up as bacteria require nitrogen to break down the residue from the legumes/grassy fallow.

- Incorporated legume crops and grassy fallows may also attract Symphylla as they help in the residue break down process. Symphylla can cause germination and growth problems in young plant cane. To control Symphylla, at planting apply Lorsban @ 2.0 L/ha.
- A good crop of legumes can supply additional nitrogen. When side dressing plant cane, consider reducing nitrogen rates following a legume crop. Refer to SRA 6 Easy Steps as a guideline for Nitrogen reduction.

For additional advice and information contact HCPSL extension team or Richard Hobbs on 0400 544 301

The Wet Tropics Sugar Industry Partnership

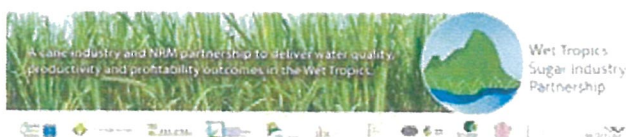
As of November 2020, the Wet Tropics Sugar Industry Partnership (WTSIP) has come to an end. The focus of the Partnership and the projects it included was to look at farm productivity and profitability around farming systems, new practices, nutrient management, and funding and assisting with innovation. This partnership, which HCPSL was a part of, was funded through Reef Trust 3 and GBRF. The people involved assisted growers through nutrient management plans, the Reef Trust 3 grower grants, and assisted with the Reef Trust 4 grower grants. WTSIP would like to thank everyone involved; growers, extension officers and industry partners and hope to have a lasting legacy into the future.



One of the mounding implements funded through Reef Trust 3



Megan Zahmel soil sampling which is an integral part of nutrient management



EM MAPPING

During 2020 the CoVid-19 pandemic severely limited activities of HCPSL for quite a lot of the year. As such, less area than usual has been mapped using the drone or EM mapping.

While electromagnetic conductivity (EM) mapping does not produce a soil map, it establishes the bulk electrical conductivity of the soil at sampling points (using GPS) beneath the instrument over the surveyed area. There are many physical and chemical soil attributes that are known to influence ECa (apparent electromagnetic conductivity) including: percent of clay and texture, salinity, moisture content, CEC, mineralogy, porosity, organic matter, soil depth and temperature. However, clay, moisture and salinity have the largest influence.

Collection and subsequent analysis of soil samples is essential to understand the soil being measured, and why the EM readings vary. Soil samples should be taken as close to the EM survey time as possible to minimise changes in the effects of variables such as soil moisture or temperature.

The EM maps created by HCPSL show the variation in ECa values across the block surveyed. The maps show areas of high ECa and low ECa and are only relative to the block surveyed. Comparing EM maps of adjacent blocks surveyed at different times is problematic, unless the time between surveys is short, so soil moisture and soil temperature would not have had time to change sufficiently.

Satellite Imagery

An alternative to EM mapping is the use of satellite imagery and the analysis of spectral indices. This is when the bands (spectrums of light) collected by the satellite are

mathematically calculated with and against each other, providing an insight into the health and vigour of the plant. One of the best known of these indices is NDVI (see The Cane Stalk, September 2020, page 6: link from the HCPSL website homepage).

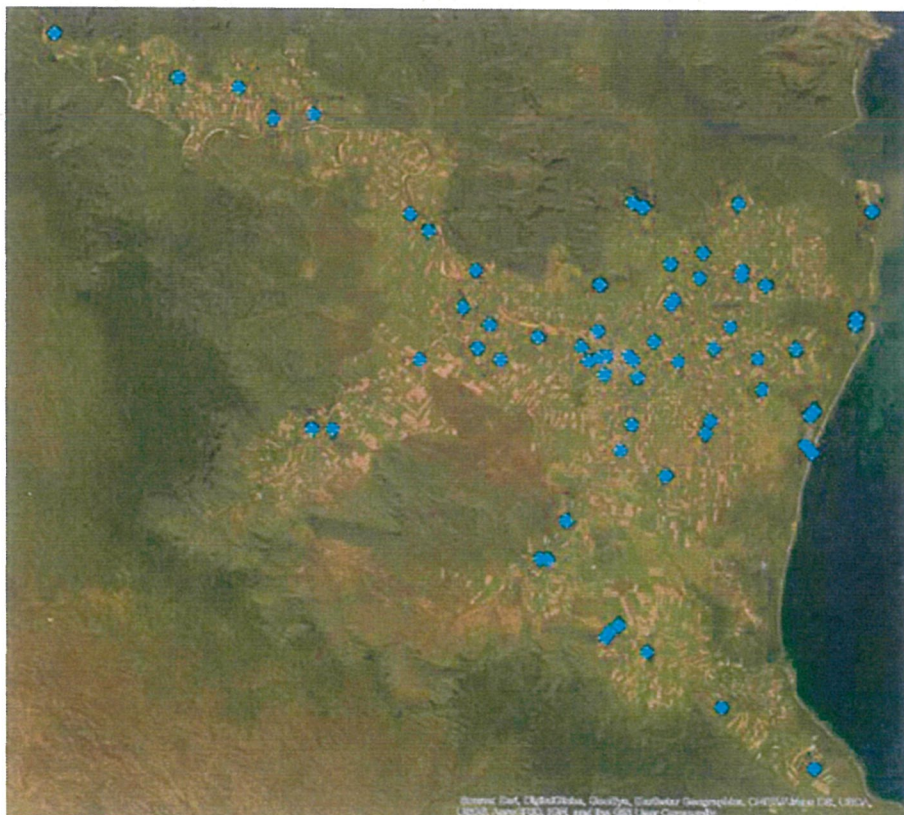
Note that satellite imagery is looking at the cane leaf rather than the soil. The cane plant, and leaf will respond to different stimuli otherwise and therefore may not reflect the same results as EM mapping. For example, the application of fertiliser and/or water (rain or irrigation) may elicit a response in the plant (leaf) which does not reflect the EM data.

As the cane plant matures the leaves senesce, that is, as they age, they will lighten in colour and this change in the shade of green is detected by the satellite imagery and hence, shows up in the NDVI analysis. Heavily flowering varieties also affect the results of NDVI analysis, the colour of the cane flowers shadowing the leaves on the cane. This however may be interpreted as maturing cane. This effect has been known to influence a grower to harvest or not to harvest particular blocks.

Weather Stations

The number of privately owned, internet capable, automated weather stations around the Herbert district has been increasing recently. Owners may grant access to weather groups like Weather Underground, which display the weather station data on their website, which is then accessed via their web-map portal. While not official Bureau of Meteorology weather stations, they contribute to the understanding of weather conditions around the Herbert region.

In January 2021 there were 65 of these scattered around the Herbert that provide data to Weather Underground. The portal, Wundermap, is an interactive portal which displays data from weather stations from around the world (<https://www.wunderground.com/wundermap>). From the home page, you can pan around the map to find the district and a close weather station to your home. Click on the Station ID and it will take you to the station home page. The home page contains some dashboards showing current conditions, and, scrolling further down the page, there is ability to look at historical data from the station.

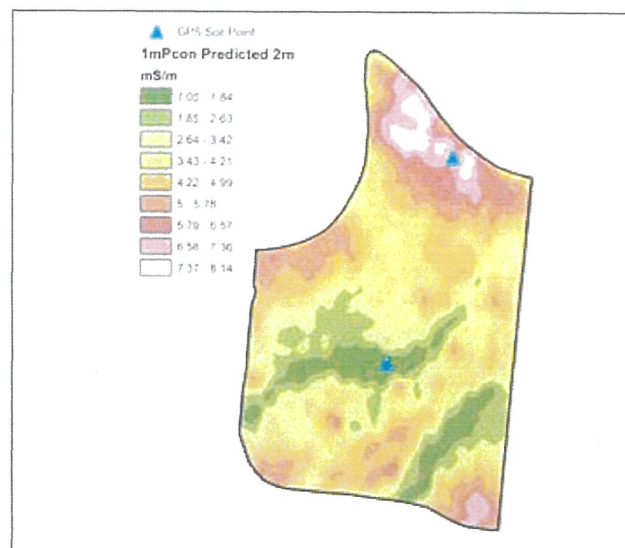
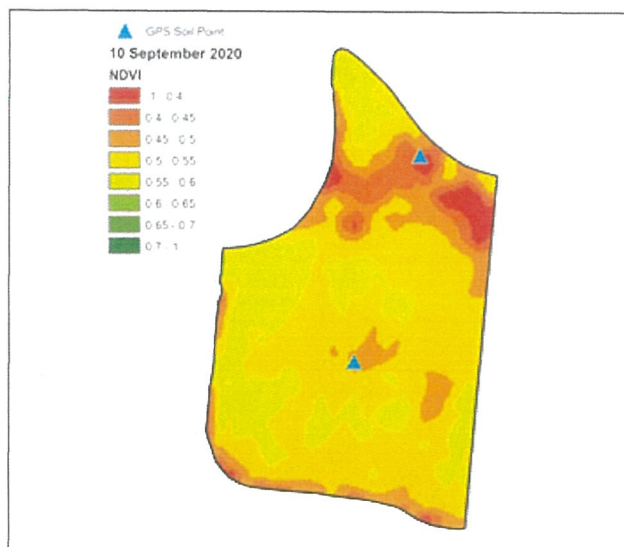


PRECISION AGRICULTURE

VARIABLE RATE SYSTEMS

HCPSL has created several variable rate (VR) maps and data for use in tractor GPS systems where a grower or contractor has a VR controller on a fertiliser box. Variable rate maps applications of lime, gypsum, lime and gypsum, imidacloprid and have been produced for several nutrient trials. While the number of VR capable fertiliser boxes is slowly increasing, the availability of VR data which tells the controller how much of a product to put where, is in limited

supply. Variable rate maps and data can be created in several of the farm management software packages brought out by GPS system manufacturers, such as Trimble's Vantage or Farmworks or John Deere's Apex or Operations Centre. Third party systems like Proagrica also have this functionality. Alternatively, GIS can also be used to create the necessary prescription data after consultation with an agronomist.



Two maps showing the potential difference between NDVI (satellite imagery – left) and ECa (apparent electromagnetic conductivity or EM – right).

Name	Location	Status	Channel #	Frequency MHZ	Activity
J. Irvin shed	Warrens Hill Road	Base (BMS Lasersat)	0	465.2750	Operational
V. Russo shed	Trebonne	Repeater (BMS Lasersat)	0	465.2750	Operational
Zatta's Hill	Abergowrie	Base (Russo and Vella)	1	465.3750	Operational
R. Lyon shed	Kandeer	Repeater (Russo and Vella)	1	455.3750	Operational after June 2021
Gino Zatta	Mt Abswold	Base	2	462.8000	Operational
R. Pace shed	Bambaroo	Repeater	2	452.8000	Operational
A. Pace shed	Mutarnee	Base	3	464.3500	Operational
Castellani shed	Abergowrie	Base	4	464.9000	Operational
W & J Russo shed	Abergowrie	Repeater	4	454.9000	Operational
C.Carey shed	Dalrymple	Repeater	4	454.9000	Operational
G. Accornero shed	Foresthorne	Base	5	463.0750	May cease operation January 2022
Guy shed	Bogotto's Hill	Base	6	463.6750	Operational
Lyons shed	Top of Stone	Repeater	6	453.6750	Operational
S. Patane shed	Lannercost	Repeater	6	453.6750	Operational
Warren's Hill	Warren's Hill	Base	7	466.1000	Operational after April 2021
Water Tower	Halifax	Repeater	7	456.1000	Operational after April 2021
N. Reid	Pinnacle Hill	Base	8	464.8500	Operational
M. Pappin shed	Pappin's Road	Repeater	8	454.8500	Operational

PESTS & DISEASES

RATOON STUNTING DISEASE (RSD)

RSD is a significant concern across the district with 9% of fields inspected for use as plant source infected with the disease. Yield losses up to 50% can be experienced in some varieties, so the disease can have a significant impact on crop viability and ratoon length.

In 2020, Q253 attributed to 68% of the infections found, with high rates of infection also found in Q242, SRA5 and Q240.

RATOON STUNTING DISEASE (RSD) and CHLOROTIC STREAK DISEASE (CSD) THROUGH "APPROVED CLEAN" SEED USE.

The district continues to manage RSD and CSD through the HCPSSL Approved "Clean" Seed plot and plant tissue culture programs. HCPSSL offers farmers the opportunity to obtain "Approved Clean" Seed from its plots, tissue cultured cane plants and hot water treatment of cane.

The data below showcases the number of tonnes through these programs over the past five years and the alignment with **Target 85** objectives.

Year	Approved Seed sales (t)	Tissue culture sales (# of plants)	Cane hot water treated (t)
2016	1200	2500	73
2017	1169	-	104
2018	1183	200	90
2019	980	-	201
2020	1088	9400	142

HCPSSL staff undertook over 1200 seed inspections for growers in 2020 prior to planting. Data and trials both show that the use of clean seed can increase average farm yields by 11% of tonnes of cane/ha.

Don't assume the cane you get from your neighbour is disease free. Get it tested before you use it!

Get "Approved Clean" seed cane from HCPSSL annually - this is the simplest and easiest way to increase cane yields on your farm.



William Tento at the Hot Water Treatment Tanks

NEMATODES

HCPSSL funded a nematode survey across the district in 2019-20. SRA Pathology staff supported the survey by analysing the soils sent.

The results from the survey clearly indicated that lesion nematodes (*Pratylenchus zeae*) were present in large numbers in almost all sugarcane fields surveyed. The survey results confirm previous research findings that root-lesion nematodes are the most common parasitic nematodes associated with sugarcane and can cause significant production loss.

Nematodes can be managed in a sugarcane farming system through the following ways:

- Variety selection
- High carbon inputs - Research undertaken in the past four years in the Herbert, through Project Catalyst and the CRC for Soils also found that high carbon inputs to the soil (like some cover crops) can significantly increase the numbers of beneficial nematodes, which in turn prey on the parasitic nematodes.
- Use of nematicides like Nimitz™

HCPSSL offers a soil testing service to assess soils for the incidence of nematodes.

PACHYMETRA ROOT ROT

Following the HCPSSL district wide survey for *Pachymetra* and the extension of results, many growers are now undertaking routine *Pachymetra* testing of soil before planting.

This disease is of serious concern to industry and has been directly linked to reduced productivity of some fields, ratoon failure and posing a crop stress, which in turn leads to the crop being more susceptible to YCS.

Growers are urged to continue sampling soils for *Pachymetra*, prior to planting. The only option for controlling *Pachymetra* is the use of resistant varieties.

In 2020 90 *Pachymetra* soil samples were sent away to the SRA Tully lab for analysis through the HCPSSL office.

A significant number of samples have *Pachymetra* levels above the economic threshold where yield losses can be expected and this is very concerning.

HCPSSL offers a soil testing service to assess soils for the incidence of *Pachymetra*.

CANEGRUBS

Levels of canegrub damage were very low in historically impacted areas due to a combination of good farming practices and the significant use of imidacloprid products.

PESTS & DISEASES



RATS

Rat damage levels were down in 2020 due to the short wet season and dry harvest.

In 2017, HCPSSL, Mackay Area Productivity Services (MAPS) and CANEGROWERS

Brisbane worked together to secure an aerial baiting permit to apply Rattoff® through the use of a helicopter or UAV. This permit was extended to other cane growing regions in 2018 through SRA activities. No aerial baiting was undertaken in 2020.

Farmers working together can achieve control synergies by strategically baiting neighbouring farms simultaneously.



FERAL PIGS

Feral pig numbers continue to remain static and crop damage at historical lows since the inception of the Hinchinbrook Community Feral Pig Management Program (HCFPMP), 12 years ago. The cane industry through

HCPSSL, Hinchinbrook Shire Council (HSC), Forestry industry and Queensland Government currently fund the activities of the program.

Herbert Tonnes Pig Damage	
Years	Tonnes lost
2012-13	32059
2013-14	12599
2014-15	6044
2015-16	6373
2016-17	5576
2017-18	10837
2018-19	15299
2019-20	11580

The HCFPMP has been successful in getting numbers of feral pigs down with 761 feral pigs being taken out in 2020.

The HCFPMP utilises trapping, aerial shooting and 1080 baiting to manage feral pig numbers. Dogging has been found to be less effective and tends to disperse pigs across a landscape with very limited effect. Approximately 60% of the feral pigs euthanised by the program has been through 1080 baiting activities.

Growers are advised to get actively involved and assist with the baiting and trapping program. Growers needing assistance with trapping and baiting activities are urged to contact:

David Bacchiella
Feral Pig Management Officer with the HSC
Mobile: 0458 764 660
Phone: (07) 47764607

Images of Feral Pigs captured on the outdoor cameras in the Lannercost area in 2020



VARIETY PERFORMANCE & RECOMMENDATIONS

After local trial work, commercial observations and using the SRA HERBERT guide as a baseline, the following variety recommendations are made to the Herbert industry.

Green = Variety recommended in most cases

Yellow = Niche varieties for specific situations

Red = With specific constraining factors (like low CCS, poor

Q138 Parentage QN58-829 x QN66-2008

Niche variety only suited to sodic and saline Soils. Good germinator with average flood tolerance. Pachymetra resistant, but susceptible to Smut. (Parent to Q226).

Q183 Parentage Q124 x H56-752

This variety is Pachymetra resistant, which has seen the popularity increase in the recent years. It is a non-flowering variety which is fast germinating and can become brittle when actively growing. The variety has responded well in commercial situations and trials to crop ripeners to increase early CCS. The variety is susceptible to Pokkah Boeng, (does not affect the yield) during rapid growth stages. The variety is also sensitive to some herbicides (like Asulux).

Q200 Parentage QN63-1700 x QN66-2008

Suited soil types for this variety are Terrace Loamy, Clay and Clay Loams. Soils with good calcium levels are recommended to get the best from this variety. Good CCS throughout the year, especially late in the season. The variety is a strong ratooner where soil calcium levels are adequate. The variety is also tolerant to RSD when compared to other varieties. Is a parent to SRA14.

Q208 Parentage Q135 x QN61-1232

Q208 is a major variety in the Herbert district sitting at approx 30%. This is an overall reduction compared to previous years. When we look into the Sub District areas this is how they are sitting - Abergowrie 23%, Central 25%, Ingham Line 39%, Stone River 33%, Wet Zone 19%. Some districts are still very reliant on this variety. Good CCS throughout the season (especially early in the season). Reliable ratooner under most situations. The variety is also tolerant to RSD when compared to other varieties.

Q215 Parentage QN58-978 x QN67-1691

Niche variety, nick named "Yuruga Special" is suitable for sodic soils and some lighter clay soils. The variety has performed well at Yuruga, the back of Lannercost and Seymour areas. It is a strong ratooner, with CCS being mid-late, and only average to the standards. Through trials it has shown improvements in CCS when ripeners have been applied. (This variety would be chosen over Q226 on sodic soils).

Q219 Parentage QC73-214 x QN75-1681

Niche variety, nick named "Barbed Wire Cane", this variety performs in waterlogged soil. Resistant to Pachymetra, RSD and Red Rot. Mid - Late CCS.

Q226 Parentage Q138 x CP57-614

Niche Variety. Early but average CCS. The variety is suited to Sodic soils. Flowers early, so not suited to crop ripening. It has been observed that the variety can be a "Lazy Cane" (stool tips and lodges).

KQ228 Parentage QN80-3425 x CP74-2005

This variety has early CCS and is suited to well drained alluvial soils in the Herbert. The variety can flower profusely, hence the variety does not respond to crop ripeners. The variety is susceptible to cane grubs, as well as Chlorotic Streak.

VARIETY PERFORMANCE & RECOMMENDATIONS

Q231 Parentage QN85-1647 x QS80-7441

The variety is resistant to Pachymetra root rot. Other positive attributes are fast germinator, responds well to crop ripeners, has good trash cover and is a strong ratooner. Average flood tolerance. It has been observed the variety is sensitive to Balance™ (herbicide) and needs good soil moisture. Q231 has a thin stalk with a large stool. It responds well to lime applications, similar to Q200.

Q232 Parentage QN80-3425 x QS72-732

Flowers heavily early although CCS has been observed to be best mid-season. The variety is sensitive to Flame™ herbicide. In commercial crops it has been observed that the variety can be prone to stool tipping, especially at high nitrogen rates.

Q237 Parentage Q120 x CP57-614

This variety has early to mid CCS. The variety is a s reliable germinator and good ratooner. The variety is susceptible to Pachymetra and Smut. It has been observed to stool tip in commercial crops.

Q238 Parentage Q138 x Q155

The variety is resistant to Pachymetra & Smut, with average CCS all year. It is highly susceptible to Chlorotic Streak Disease and care is required when planting in low lying areas. It has shown good results in drier areas. It has also been observed to be sensitive to Diuron, Velpar™ and Flame™ herbicides when soils become waterlogged.

MQ239 Parentage Q96 x MQ77-340

This is a niche variety, which is high yielding but produces low CCS. Its best CCS levels are achieved at mid - late season. The variety is also tolerant to RSD when compared to other varieties and has good water logging tolerance. It was originally thought that SRA5 would phase this variety out, although approximately 4.% of the Herbert area is still under MQ239.

Q240 Parentage QN81-289 x SP78-3137

This is a high yielding variety with good CCS early to midseason on soils with good moisture holding capacity. It is resistant to smut and germinates well after planting. The variety is sensitive to Balance™, Bobcat Imaxx™ and Flame™ applications. This variety is not suited for dry or sandy soils!! The variety makes up approximately 7% of the districts cane supply, with the highest popularity in the Central, Wet and Abergowrie Zones

Q242 Parentage Q170 x Q150

This variety performs well in dry zones. It is a low CCS high yielding cane. Highly susceptible to Symphylla and RSD. Some crank handling has been observed when sprayed during the rapid growth periods. Stone River and Ingham Line are the only areas that have over 5% of this variety.

Q247 Parentage Q138 x Q155

This is a minor variety in the Herbert originally brought in from the Burdekin. It is Pachymetra resistant. Recommended for a mid to late harvest with an average CCS and yield. In the past it has been recommended for better soil types, although in the North they are finding it has the ability to handle the poorer soils (just not pure sand). Has been observed to have slow germination in plant and ratoons.

Q250 Parentage QN97-183 x QN89-1043

Good early to mid CCS, with moderate yields achieved. Climbing rats and pigs have been observed to be a problem in commercial crops. Some concerns have risen regarding the decline in yield after 3R. Q250 also needs reasonable soil calcium levels for the variety to reach its full potential. In the North they observed better strike rates when the seed cane used was less than 12mths

VARIETY PERFORMANCE & RECOMMENDATIONS

Q252 Parentage Q208 x Q96

Niche variety. Intermediate for Smut and Pachymetra. Looks a lot like its parent Q208, free trashing. In the Herbert we have had Smut issues and trouble ratooning. In the North they have found an improvement in the ratoons if the crop is harvested from August onwards with the harvest base cutters set higher than usual. (May be worth a try for those wishing to grow the variety commercially).

Q253 Parentage QN80-3425 x Q209

This is fast becoming a major variety in the Herbert with 14% of the Herbert area harvested in 2020 being Q253. The biggest issue with Q253 is that it is susceptible to RSD. Good farm hygiene is a must where this variety is concerned. The variety performs well for yield and CCS. Mid harvest appears to be the optimum time of harvest, although it has surprised growers with good CCS results early in the season also. Late season suckers tend to appear, which can have a negative effect on CCS. Brown Rust is a common occurrence on the leaves of Q253, although it does not appear to affect the yield.

SRA5 Parentage H72-8597 x QN89-109

Niche variety. High yielding, low CCS variety. SRA5 responds well to crop ripeners. Poor germination has been experienced on Sodic soils, or dry late plant blocks. The variety is tolerant to most herbicides. Generally, there are better varieties available on most soils.



SRA10 Parentage QN92-157 x QN91-3898

Good early-mid CCS, low yielding variety. In the North they have increased the planting rates to accommodate for soft eyes, preventing a poor strike. In the North it appears to ratoon better if cut after August (when a bit warmer) with base cutters set a bit higher. In ripener trials it was observed SRA10, has the ability to be ripened if needed.

VARIETY PERFORMANCE & RECOMMENDATIONS

SRA14 Parentage Q200 x QN91-295

This variety has mid -late CCS. The variety is Pachymetra resistant and has been observed to handle some flood water. These attributes make it good for the rich river flats. When it was first released it was named "Q200 on steroids". It is relatively free trashing with a moderately thick barrel and a prominent eye. The damaging of the eye is still a concern for some billet planters. Through a crop ripener trial it was observed that SRA14 is responsive.



Abergowrie Block - Both varieties are 1R and harvested at the same time

SRA26 Parentage QN97-2122 x Q146

Approved for the Herbert in 2020, to be released from plot in 2021. Released in 2020 in the North/Tully areas. In Herbert trials, SRA26 yields and CCS performance were standards. SRA26 is resistant to Pachymetra, Smut, Leaf Scald and Red Rot. It is a promising variety in the North and high hopes are held for its commercial performance in the Herbert.

SRA28 Parentage Q233 x Q135

Approved for the Herbert in 2020, to be released from Plots in 2021. Limited local knowledge for this variety. In the North it has appeared to be a good striker, with good tonnes and CCS peaking mid to late season. In HCPSL and Northern Productivity Board plots it has been observed to have a poor strike after hot water treatment. Resistant to Pachymetra, Orange Rust, Leaf Scald and Red Rot. Its Smut rating is currently resistant-intermediate

WSRA24 Parentage QN80-3425 x BN61-1123

Approved in the Herbert in 2019 and released from HCPSL plot in 2020. In trials it has performed with average to above average yield, and average to below average CCS. It usually has a large thick stalk, but a low stool count. Resistant to Leaf Scald, Pachymetra and Smut. This variety has shown to perform best in well drained fertile soil types. (River flats where Pachymetra

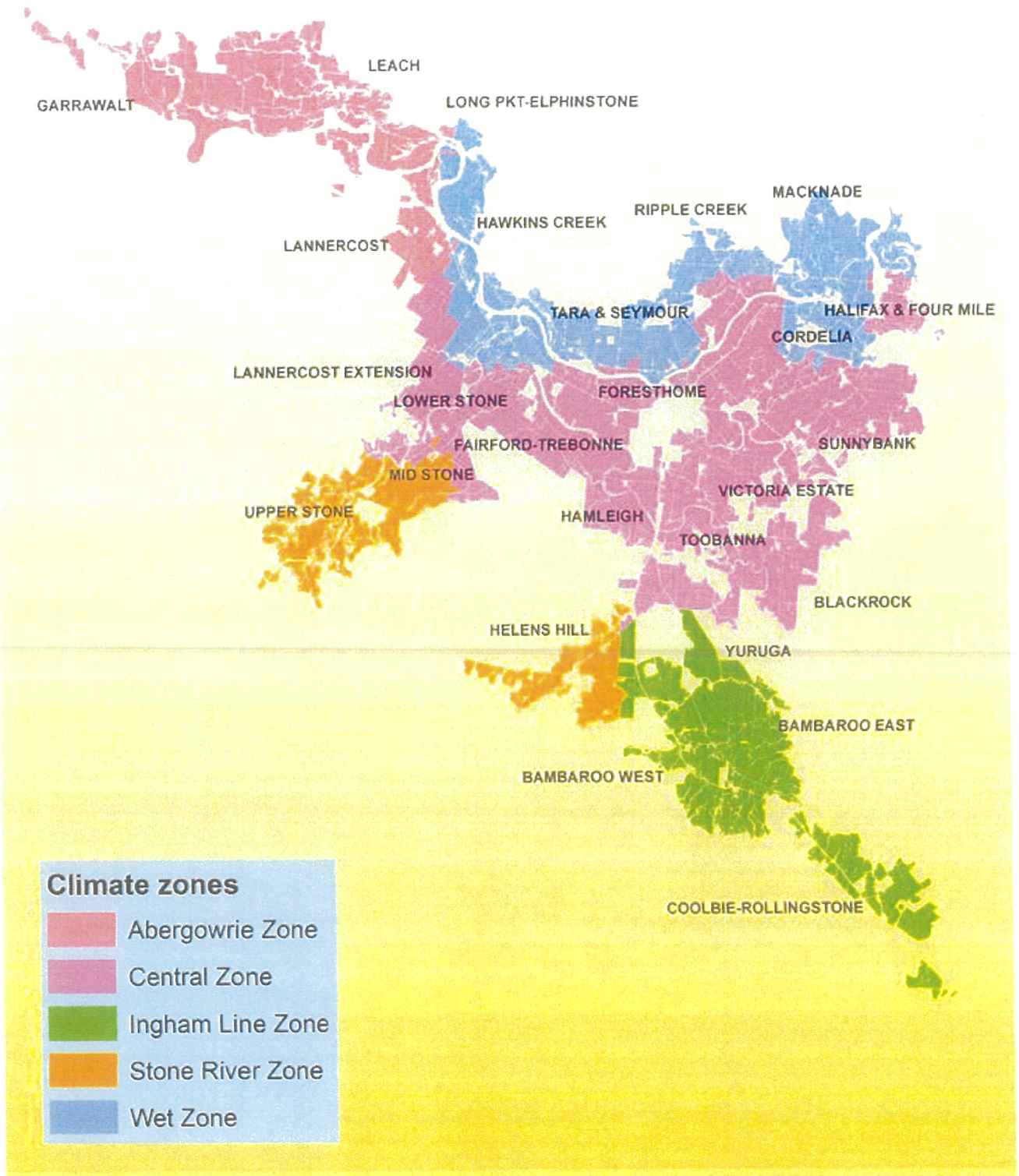
TISSUE CULTURE

Tissue cultured seed cane is becoming more popular as a way of propagating clean seed for the farm. For more information concerning tissue culture cane, please contact HCPSL Field Agronomy staff.



Mark Zatta in front of his tissue culture cane

CLIMATE ZONES



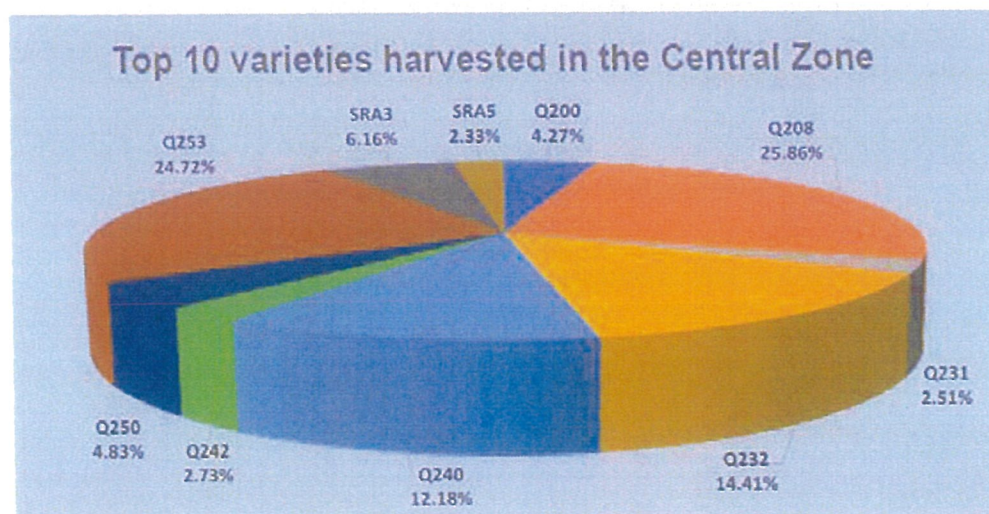
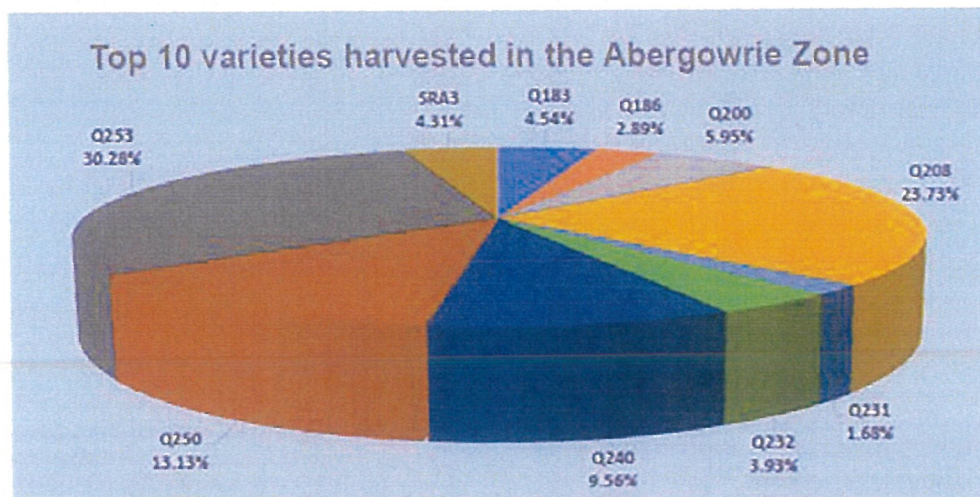
CLIMATE ZONES

In the Herbert there are 26 productivity zones and 6 subdistricts. These productivity zones and subdistricts vary in productivity, climate and soil types. Recent research used annual climate data from 1975-2016 to determine sub-regional climatological differences within the Herbert River mill area. Five climate zones were identified which can be described geographically as:

1. Wet Zone (blue): This zone includes part of the Wet belt and northern reaches of the Lower Herbert productivity region.
2. Abergowrie Zone (pink): This zone mainly consists of the Abergowrie productivity zone.
3. Stone River Zone (orange): This zone includes the Stone River productivity region and the area around Helens Hill that is considered part of the Ingham Line.
4. Ingham Line Zone (green): This includes the Ingham Line productivity region as well as the southern parts of the central productivity region.
5. Central Zone (purple): This includes parts of every productivity zone but the majority of the Central and Lower Herbert productivity zones.

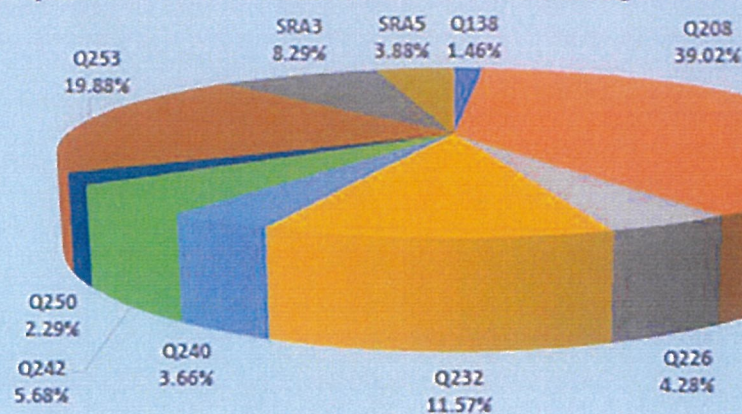
The Wet zone had the highest rainfall in summer, autumn and winter. The Abergowrie and Stone River zones have the lowest spring and summer rainfall. However, the Stone River and Ingham Line zones had the lowest autumn and winter rainfall, with the Abergowrie zone having higher rainfall than either. This difference in rainfall in autumn is one of the main reasons for differentiating the Abergowrie and Stone River zones. Summer rainfall in the Central zone is more similar to the Wet and Ingham Line zones than the low summer rainfall associated with the Abergowrie and Stone River zones. The spatial variation in radiation was lower than the spatial variation in rainfall both within and between climate zones. The most evident difference was high radiation in the Ingham Line zone in each season and the low solar radiation in the Abergowrie zone in summer. There were little obvious differences between the climate zones when the maximum daily temperature was considered. However, the Abergowrie and Stone River zones had the lowest maximum daily temperatures.

Q208 and Q253 are the major varieties in all climate zones. Q240 is suitable to wetter climate zones, but generally does not handle the drier conditions experienced in the Stone River and Ingham Line zones. Q232 is also grown widely across the district, except in the Abergowrie zone, with Q250 being the third most popular variety in this zone.

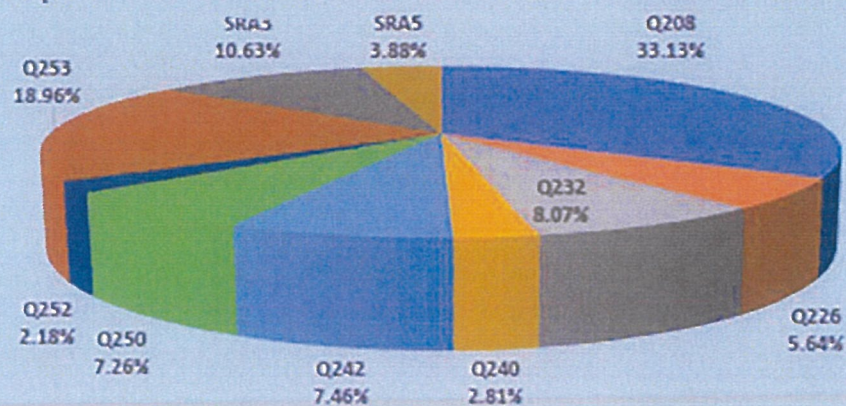


CLIMATE ZONES

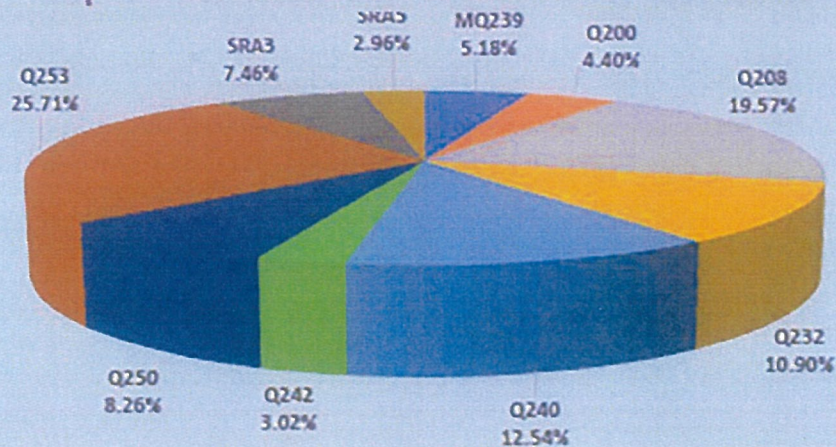
Top 10 varieties harvested in the Ingham Line Zone



Top 10 varieties harvested in the Stone River Zone



Top 10 varieties harvested in the Wet Zone



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