



INNISFAIL BABINDA CANE PRODUCTIVITY SERVICES

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Ratoon Stunting Disease Control Program Review

2018



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Executive Summary

- Ratoon Stunting Disease (RSD) has an ongoing impact on productivity and profitability of the Innisfail Babinda Cane Productivity Services (IBCPS) local sugar industry.
- IBCPS has requested Dr Rob Magarey (Sugar Research Australia) and Dr Anthony Young (UQ) to review the current IBCPS RSD control program both on site in South Johnstone and externally in 2018.
- The review will assess the commercial effectiveness of the current program and recommend additional and/or alternative, operational feasible control practices.
- Recommendations are to be implemented before the 2019 planting and ratooning season commences.
- This work will complement IBCPS RSD work and long-term improvement in RSD.

Background

- Ratoon Stunting Disease (RSD) is a disease of sugarcane caused by a xylem-inhabiting bacterium called, *Leifsonia xyli s.sp. xyli (Lxx)*.
- RSD is a world-wide disease of recognised importance wherever cane is grown.
- The name Ratoon Stunting Disease is because it has maximum yield impact on ratoon crops but most definitely occurs in plant crops also.
- Yield losses are greatest under water stress and can result in up to 45% yield loss. If the water pipe is blocked, then water stress will make things worse.
- Infection can result in severely stunted growth and as a result poor yields, particularly in ratoons.
- The disease spreads very easily from the infected sap. The main means of transmission are:
 - Infected planting material
 - Un-sterilised machinery and equipment (Harvesters, planters, cultivation equipment, stool splitter and cane knife)
 - Planting clean material into an infected replant block
- Recommended control measures for RSD are:
 - Use of clean, disease – free plant sources (preferably from an Approved Seed Plot)
 - Hot Water Treatment of disease-free cane (50 C, 3 hours)
 - Plant source inspections (PSI) of planting materials (ELISA and Q-PCR sampling)
 - Sterilise all cutting materials and equipment (Harvester, planter, cane knife)
 - Avoid plough out replant and encourage fallow plant only.
 - Where possible, plough out or spray out infected blocks of cane and ensure volunteer cane is removed. Leave fallow for as long a period as possible before planting again.

IBCPS Current RSD Control Program

RSD Sampling and staffing

- Staffing:
 - 1 full time sampling and 2 casuals sampling.
 - All 3 sample separately to cover more ground.

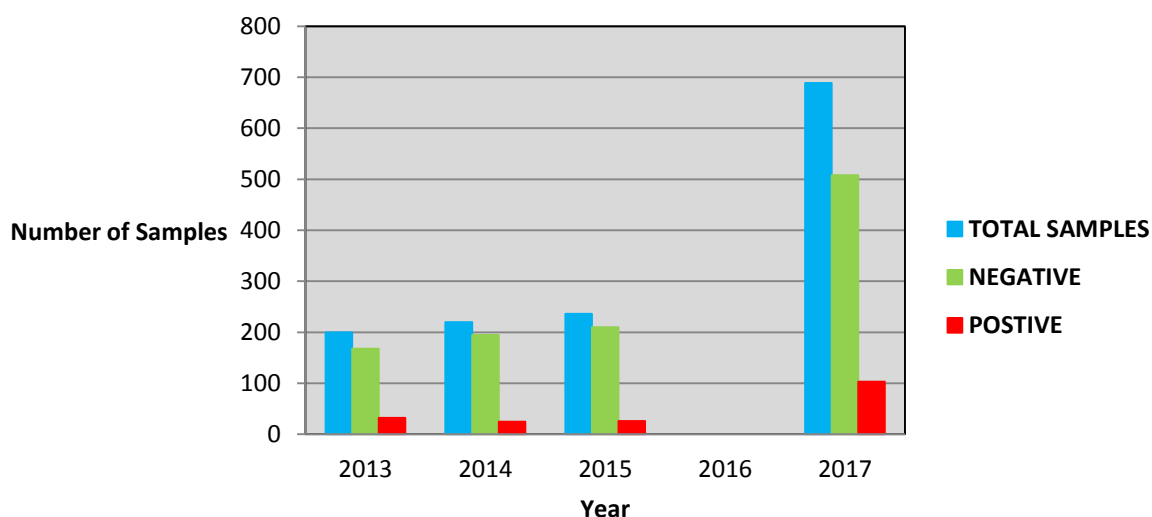
- Grower requests:
 - Growers are sent a circular each year with a Plant Source Inspection Form (*refer to appendix 1*), which must be completed and returned by a set date on the form.
 - Growers are asked to nominate their initial seed source blocks, along with their secondary choice seed blocks in case a sample returns positive to infection.
 - As of 2018, growers are also encouraged to nominate underperforming commercial blocks of cane on their farm which may be due to RSD infection.
 - Sampling is completed by sub-districts or mill zones and a grower allocates a planting month on their inspection forms to help staff prioritise farms.
 - Once results are returned from the SRA laboratories, growers are provided with a record of samples taken and the correlating results. General inspection comments are also made on this record document. (*refer to appendix 2*)
 - Growers who return positive to infection are contacted and asked to inform IBCPS where that seed was sources the previous year and are provided with advice on what to do with the current infected blocks. Those growers are then contacted again, later in the season to discuss a management plan for the infected farm/s into the future.
 - From 2018 onwards the Wet Tropics RSD Extension package will be utilised with these infected growers.
- Sampling procedure:
 - The SRA sampling procedure document is laminated and provided to staff. The casuals are trained and reminded of these procedures prior to sampling beginning each year.
 - Staff are provided with a sampling package with all of the correct tools (outlined in the SRA procedure).
 - 12-16 stalks are collected from a nominated block or variety. The bottom 30cm is used for juicing (1-2 short billets), and four tubes are filled using the extract from these selected stalks.
 - Stalk selection is based on juicing the poor looking sticks of cane in a stool.
 - All samples are kept on ice in an esky and are later stored in a freezer ready to be sent to the laboratory by express post.
 - Sample information is completed on a RSD analysis order form template proved by SRA (*see appendix 3*), this form is then emailed to Amanda Johnson at the Indooroopilly laboratory the same day samples are express posted. Amanda then emails a results form back once analysis is completed. (*see appendix 4*)
 - IBCPS was informed that all samples for CPS will be qPCR analysed only from now on.

RSD infection for the IBCPS mill area

- Prior to 2017, IBCPS had two extension staff using two different sampling methods across the mill area.
 - Northern farms (North Johnstone Bridge to Fishery Falls) were sampled through the paddock slicing and in house microscope method.
 - Southern farms (North Johnstone Bridge to Silkwood) were sampled and tested using the ELISA method.

- Due to inconsistency in sampling methods across the whole area, the 5 year data shown in this document is representative of a very small portion of samples completed correctly; nonetheless the data still provides a guide to for the current situation.
- Statistics for 2017 season:
 - 7567 ha sampled = 34% Mill Area sampled.
 - Sampled plant material only – no older commercial ratoons.
 - 689 samples were completed (Individual blocks and varieties)
 - 558 Cut and Slice under scope – (resample 2018)
 - 131 ELISA sampled
 - Overall 103 samples were POSITIVE for RSD = 16% of samples (known infection only)
 - 58 Farm Assignments infected with RSD again that equates to 16% of mill area's assignments.
- Overview over a 5 years period for IBCPS:
 - 2016 data are missing, only had ELISA results for the northern end. No results were found for the southern end (lack of recording internally with IBCPS and lack of communication with SRA laboratories that year).
 - A small scale survey was completed by staff in 2013, which showed 16% infection in those 200 ELISA samples.
 - In previous years an average of 200 samples were completed. In 2017 more than double that were completed. The aim for 2018 is to complete 1000 samples.

5 Year PSI Inspection - RSD Sampling



Data for ELISA sampling the IBCPS region over the last 5 years

- On a sub-district basis, infection rate is significantly higher in the southern mill zones compared to the northern. Clean (disease-free) seed cane uptake.

Approved Clean Seed Plots

- IBCPS currently run 4 Approved Clean Seed Plots (ASP) which host both commercial and new release varieties for local industry.

- Growers are sent a circular each year with a Clean Seed Order Form (*refer to appendix 5*), which must be completed and returned by a set date.
- In 2017 RSD was detected in the mother plot and as a result the ASP was quarantined under direction from SRA. This material has since been discarded and destroyed and the ASP has been Q-PCR sampled three more times and is now disease-free again.
- The total area under cane in ASP is 10 Ha to a 22,500 Ha mill area.
- The figures for 2017 show an approximate release of 123 tonnes out of a potential 400 tonnes of clean material.
- Material is double hot water treated (2 years in a row).
- Hand stripped, hand cut, hand loaded, HWT, stick planted.
- As there is one staff member running all four plots, the plots are open in a timetabled format. Growers are supplied with the timetable prior to plots opening and must work in with the allocated times and days.

PLOT LOCATION	APPOINTMENT DAY	TIME SLOT ALLOCATION	PLOT STATUS
Babinda Central <i>Clyde Road</i>	Thursday Only (pm)	2pm-4pm	OPEN MAY 1 st
Bartle Frere <i>Menzies Road</i>	Tuesday (am/pm) Thursday (am)	7am-9am 2pm-4pm	OPEN MAY 1 st
Martyville <i>Martyville Road</i>	Monday (am/pm) Friday (am/pm) Plant Cutter avlb Friday ONLY	7am-9am 2pm-4pm 7am-9am (PC)	OPEN MAY 1 st
Hobsons <i>Kurrimine Beach Road</i>	Wednesday (am/pm)	7am-9am 2pm-4pm	OPEN MAY 1 st

2018 timetable for ASP in the IBCPS region.

- Material collection for growers is available through three main methods:
 - Hand cutting with cane knife
 - Whole stick plant cutter (at selected plots)
 - Billet collection at final cut out (only when it works in with designated contractor at selected plots)
 - The Plant Cutter is sterilised by IBCPS staff and the contractor using Sterimax. Sterilisation stations are now available at the plots for any trailers entering for whole stick collection.
 - A mix of 70% Methylated Spirits and 30% water is used for sterilising all cane knives and files.
 - The contractors or farm owners are required to sterilise any equipment with Sterimax prior entering any of the plots for general work.
- Allocation and AS price as of 2018:
 - **Small Quotas** (New varieties or small hand cut bundles)

New Varieties are allocated quotas based on the amount of cane an ABN/total grower assignments has sent to the mill in the previous season

\$11/Quota incl GST

- **Med-Large Order** (Whole stick trailer or billet collection)

This is for commercial varieties

\$50/T incl GST

For billet collection at the final cut out, the grower pays an additional cost directly to the designated contractor. IBCPS charge for the seed only.

- **Stripping of cane**

Free of charge

Sugarcane Tissue Culture

- Tissue culture (TC) is a relatively new method for clean seed in the IBCPS region.
- Growers are sent a circular each year with a Tissue Culture Order Form (*refer to appendix 6*), which must be completed and returned by a set date.
- Prior to 2018 only one grower across the whole mill area had adopted TC as a form of collecting disease free material.
- In 2017 IBCPS promoted TC as a way of putting disease free material back into a growers farm. For the year of 2018, 13,540 seedlings have been ordered for 9 growers to plant in autumn and spring.
- This amount of seedlings equates to an estimate of 67 tonnes of disease free material planted in 2018.
- IBCPS has invested in a TC Mechanical Planter and has made alterations to make the process as simple as possible for growers. This equipment is available on a lease agreement basis to our growers at a cost of \$50 per day incl GST.
- Each grower involved in TC is provided with a detailed packed which includes; a material calculator, planting rate and seedling space calculator, a manual produced by Tully Cane Productivity Services and SRA from their three year trials with TC, which is detailed with information from planting to irrigations to herbicide recommendations. Growers also receive detailed instructions and WOHS manual for the use of the TC planter.

Hot Water Tank Treatments

- IBCPS is offering two services for heat treatment (FREE):
 - Whole stick treatment
 - Billet treatment
- Growers are sent a circular each year with a Hot Water Treatment Appointment Form (*refer to appendix 7*), which must be completed and returned by a set date.
- Growers are instructed that all cane nominated for treatment must be RSD sampled and return a negative result.
- Cane must be trash free and fit neatly onto a crate for whole stalk treatments.
- Portable billet cages currently being designed.
- An upgrade on the current tanks is currently being quoted. This upgrade will include automation and regulation of the temperature and circulation of the tank treatment. Each treatment will be logged automatically; once treatment is completed the log will be emailed

directly to an IBCPS address. This log is also provided to a grower along with their BMP record of the treatment. This is to give grower confidence in the service again.

- Statistics for 2017 treatments:
 - Total of 7 farm assignments treated
 - Total of 11.4 tonnes treated
 - 2 failed germinations HWT by IBCPS in 2017; one billet and one whole stick. The failed germinations appeared to be caused due to 1. A lack of moisture – we did not receive rainfall for approx. 40 days and 2. The grower designed its own billet cage which had four corrugated iron walls which is believed to have altered both the temperature and circulations of the water within that cage.

Fallow Management

- Not a large portion of ratoon crops are targeted for sampling. It was only in 2018 that growers were encouraged to assess older ratoon blocks on farm in addition to their seed cane blocks.
- Growers do try their best to control volunteer cane in their fallow blocks, but it is not always successful or completed as best as it could be. As a chemical shop IBCPS tries to assist with this in regards to providing herbicide recommendations for both a bare grass fallow and legume fallow.
- Percentage of legume crops really depends on the type of year the local industry is facing; growers always focus on their back pocket.
- Currently there is approximately 2150 ha of fallow versus 1877 ha replant in the South Johnstone Mill supply area.
- The current South Johnstone Mill supply contract allows for a planting allowance of anywhere from \$150 - \$200 per hectare of planted cane, subject to a cane supply agreement.

Review Aims

- The aims of the review are:
 - To assess IBCPS's current RSD control program effectiveness and make recommendations for improvement.
 - To facilitate ongoing dialogue between IBCPS, MSF Sugar, Sugar Research Australia and Anthony Young to drive improved RSD control in the IBCPS cane growing district.
- The IBCPS board consider recommendation provided from the review and agree on what changes need to be implemented.
- Once agreed on by the IBCPS board, the reviews recommendations are to be implemented before the 2019 planting and ratooning season commences.

Review Scope


- The review scope is:
 - To assess the commercial effectiveness of each element of the current program and recommend modifications as outlined below:

1. Clean seed uptake:
 - a. Clean seed availability and uptake (tissue culture, plant, first ratoon)
 - b. Volume released in each district
 - c. Methods of collection from ASP
 - d. RSD detections in each district
 - e. Breakdown of grower productivity with regards to clean seed adoption
 2. RSD testing:
 - a. What is the sampling structure and testing methodology?
 - b. How many samples are screened each year?
 - c. What is the overall detection rate?
 - d. What variation exists amongst varieties and crop classes?
 - e. Number of staff sampling in the paddock
 3. Fallow management:
 - a. Number of ratoon crops targeted
 - b. Replant vs fallow plant
 - c. Volunteer control
 - d. Rotation crops available
 - e. Identify the amount of fallow plant versus replant in mill area
 4. Sterilisation Methods:
 - a. Knowledge of how to prepare steriliser and how long it last for
 - b. Thoroughness of sterilisation of farm equipment, especially planting and harvester equipment.
- To provide clear recommendations for any additional and/or alternative, operationally feasible control practices included but not limited to:
- At-factory juice analysis for RSD.
 - Active selection of 'resistant' varieties for planting.
 - A change in the planting allowance through MSF Sugar. Different payment based on if it is fallow versus replant planting.
 - Formatting of grower maps; providing a 'disease status' map to growers outlining known infected, ASP planting with year, HWT planting with a year.
 - Look at the way crop class is represented in mill data and on a farm map; i.e., Pl, 1R 2R vs RP, 1RR, 2RR.
 - A calculation of the estimated economical loss to local industry based on the current status of the mill area. Assess a draft in field calculator produced for growers.

For any additional information of data required for the review from either IBCPS or MSF Sugar please contact Bianca Spannagle (0428 774 922).

Appendix

Appendix 1 – Plant Source Inspection Form


 INNISFAIL BABINDA CANE PRODUCTIVITY SERVICES				
2018 IBCPS Plant Source Inspections				
Bianca Spannagle (Extension Officer/IBCPS Manager) Mobile: 0428 774 922 Bianca.Spannagle@ibcps.com.au		Joshua Brook (Chemical Retail & Sales) Mobile: 0427 632 230 Joshua.brook@ibcps.com.au		Rick Ericson (Pest Management Officer) Mobile: Rick.Ericson@ibcps.com.au
South Johnstone Office Ph: 4064 3300 Japoon Road, South Johnstone Babinda Office Ph: 4067 1266 156 Howard Kennedy Drive				
Please nominate <u>ALL POSSIBLE</u> Plant Source Material. Slicing in the paddock will no longer be offered therefore, failure to return this form by Friday 20th April, 2018 will strictly result in NO Plant Inspection.				
Grower/Trading Name:			Contact Number:	Month of Planting:
Farm No	Block	Variety	Crop Class	Would you like to be present for the inspection Y/N

Appendix 2 – Plant Source Inspection Grower Record

2018 IBCPS Plant Source Inspection <u>RECORD</u>						
<u>This form is provided to the Grower as a record of any Plant Source Inspection and testing that was performed by IBCPS, as requested by the Grower.</u>						
Grower Name: UNKNOWN		Contact Number:		Month of Inspection: APRIL	Barcode: #1035	
Farm No	Block	Variety	Crop Class	Date Of Inspection	Results (POSITIVE/NEGATIVE)	
	12-A	Q208	PL	27/04/2018	NEGATIVE	
	3-A	Q208	PL	27/04/2018	NEGATIVE	
	3-A	Q253	PL	27/04/2018	NEGATIVE	
	13-A	Q200	PL	27/04/2018	NEGATIVE	
	14-A	Q240	PL	27/04/2018	POSITIVE	
	9-A	Q208	PL	27/04/2018	NEGATIVE	

- Comments:**
- Farm 212, Block 13-A, Q240, has returned a POSITIVE result to RSD infection.
 - All samples are now qPCR analysed (DNA tested) therefore a re-sample will not be completed.
 - IBCPS will contact you to sample previous year's source of the current year's positives.
 - Please let your contractors know of infection on your farm for hygiene purposes.
- All other sample returned NEGATIVE for RSD infection. Material is fine to use for planting.

Appendix 3 – RSD analysis Sample Order Form


Sugar Research Australia™

SRA RSD Diagnostic Laboratory

Bar Code #		1048	
Box ID	IBCPS #1048	Sample Numbers	
Supply Date		Test Date	
Organisation Name	Innisfail Babinda Cane Productivity Services (233)		
Requester Name	BIANCA SPANNAGLE		
Requester Email	Bianca.Spannagle@ibcps.com.au		
Telephone No	0428 774 922		

ID	Column	Row	Name	Farm No	Block No	Variety	Crop Class	ELISA Result
A2	A	2			6A	SRA7	PL	-
B2	B	2				SRA7	PL	-
C2	C	2			ASP 17	Q253	PL	-
D2	D	2				Q253	PL	-
E2	E	2			9A	Q200	1R	-
F2	F	2				Q200	1R	-
G2	G	2				Q200	1R	-
H2	H	2				Q200	1R	-
A3	A	3			13	Q251	RP	-
B3	B	3				Q251	RP	-
C3	C	3				Q251	RP	-
D3	D	3				Q251	RP	-
E3	E	3			9	Q250	1R	-
F3	F	3				Q250	1R	-
G3	G	3				Q250	1R	-
H3	H	3				Q250	1R	-
A4	A	4			8	Q200	5R	-
B4	B	4				Q200	5R	-
C4	C	4				Q200	5R	-
D4	D	4				Q200	5R	-
E4	E	4			1	Q208	1R	-
F4	F	4				Q208	1R	-
G4	G	4				Q208	1R	-
H4	H	4				Q208	1R	-
A5	A	5			4A	Q200	4R	-
B5	B	5				Q200	4R	-
C5	C	5				Q200	4R	-
D5	D	5				Q200	4R	-
E5	E	5			7B	Q200	4R	-
F5	F	5				Q200	4R	-
G5	G	5				Q200	4R	-
H5	H	5				Q200	4R	-
A6	A	6			26	Q200	1R	-
B6	B	6				Q200	1R	-
C6	C	6				Q200	1R	-
D6	D	6				Q200	1R	-
E6	E	6			21	Q186	RP	-
F6	F	6				Q186	RP	-
G6	G	6				Q186	RP	-
H6	H	6				Q186	RP	-
A7	A	7			19	Q208	RP	-
B7	B	7				Q208	RP	-
C7	C	7				Q208	RP	-
D7	D	7				Q208	RP	-
E7	E	7			12	SRA7	RP	-
F7	F	7				SRA7	RP	-
G7	G	7				SRA7	RP	-
H7	H	7				SRA7	RP	-
A8	A	8			12	Q252	RP	-
B8	B	8				Q252	RP	-
C8	C	8				Q252	RP	-
D8	D	8				Q252	RP	-
E8	E	8			15	Q208	2R	-
F8	F	8				Q208	2R	-
G8	G	8				Q208	2R	-
H8	H	8				Q208	2R	-
A9	A	9			7	Q200	3R	-
B9	B	9				Q200	3R	-
C9	C	9				Q200	3R	-
D9	D	9				Q200	3R	-
E9	E	9			18	Q240	PL	-
F9	F	9				Q240	PL	-
G9	G	9				Q240	PL	-
H9	H	9				Q240	PL	-
A10	A	10			18	Q251	PL	-
B10	B	10				Q251	PL	-
C10	C	10				Q251	PL	-
D10	D	10				Q251	PL	-
E10	E	10			1	Q200	2R	-
F10	F	10				Q200	2R	-
G10	G	10				Q200	2R	-
H10	H	10				Q200	2R	-
A11	A	11			9	Q200	PL	-
B11	B	11				Q200	PL	-
C11	C	11				Q200	PL	-
D11	D	11				Q200	PL	-
E11	E	11			7	Q208	RP	-
F11	F	11				Q208	RP	-
G11	G	11				Q208	RP	-
H11	H	11				Q208	RP	-
A12	A	12			10	Q253	RP	-
B12	B	12				Q253	RP	-
C12	C	12				Q253	RP	-
D12	D	12				Q253	RP	-
E12	E	12			10	Q200	RP	-
F12	F	12				Q200	RP	-
G12	G	12				Q200	RP	-
H12	H	12				Q200	RP	-

Samples have been tested by ELISA and confirmed by Quantitative Polymerase Chain Reaction (qPCR). Results reported are to the limits of the ELISA and qPCR assay performed.

The RSD ELISA diagnostic method detects the presence of *Leffsonia xyli* subsp. *xyli*, the causal agent of Ratoon Stunting Disease. Where quantitative polymerase chain reaction (qPCR) is used to confirm ELISA results, this is shown in the results. Sugar Research Australia Limited (SRA) is not responsible for results that are below the detection limit of the assays. The results provided by SRA are strictly limited to the samples provided by the client. Clients should not represent or imply that the results apply other than to the actual samples provided for assay. The client releases and indemnifies SRA in respect of any loss or liability incurred as a consequence of any such representations, which remain at all times the sole responsibility of the client. SRA assumes no liability.


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Appendix 4 – qPCR Sample Results


Sugar Research Australia
SRA RSD Diagnostic Laboratory

Bar Code #		1042	
Box ID	IBCP5 #1042	Sample Numbers	
Supply Date		Test Date	
Organisation Name Innisfail Babinda Cane Productivity Services (233)			
Requester Name BIANCA SPANNAGLE			
Requester Email Bianca.Spannagle@ibcps.com.au			
Telephone No 0428 774 922			

ID	Column	Row	Name	Farm No	Block No	Variety	Crop Class	qPCR Result
A2	A	2			21A	Q240	PL	-
B2	B	2				Q240	PL	-
C2	C	2				Q240	PL	-
D2	D	2				Q240	PL	-
E2	E	2			8	Q208	RP	-
F2	F	2				Q208	RP	-
G2	G	2				Q208	RP	-
H2	H	2				Q208	RP	-
A3	A	3			8	Q250	RP	-
B3	B	3				Q250	RP	-
C3	C	3				Q250	RP	-
D3	D	3				Q250	RP	-
E3	E	3			14A	SRA10	PL	-
F3	F	3				SRA10	PL	-
G3	G	3			ASP17	SRA10	PL	-
H3	H	3				SRA10	PL	-
A4	A	4			14A	SRA7	PL	-
B4	B	4				SRA7	PL	-
C4	C	4			ASP 17	SRA7	PL	-
D4	D	4				SRA7	PL	-
E4	E	4			14A	SRA3	PL	-
F4	F	4				SRA3	PL	-
G4	G	4			ASP 17	SRA3	PL	-
H4	H	4				SRA3	PL	-
A5	A	5			11A	Q208	PL	-
B5	B	5				Q208	PL	-
C5	C	5				Q208	PL	-
D5	D	5				Q208	PL	-
E5	E	5			11A	Q252	2R	-
F5	F	5				Q252	2R	-
G5	G	5				Q252	2R	-
H5	H	5				Q252	2R	-
A6	A	6			11A	Q208	2R	-
B6	B	6				Q208	2R	-
C6	C	6				Q208	2R	-
D6	D	6				Q208	2R	-
E6	E	6			3	Q208	1R	-
F6	F	6				Q208	1R	-
G6	G	6				Q208	1R	-
H6	H	6				Q208	1R	-
A7	A	7			11A	Q253	2R	-
B7	B	7				Q253	2R	-
C7	C	7				Q253	2R	-
D7	D	7				Q252	2R	-
E7	E	7			3	Q200	1R	-
F7	F	7				Q200	1R	-
G7	G	7			(B)	Q200	1R	-
H7	H	7				Q200	1R	-
A8	A	8			3	Q252	1R	-
B8	B	8				Q252	1R	-
C8	C	8				Q252	1R	-
D8	D	8				Q252	1R	-
E8	E	8			3	Q200	1R	-
F8	F	8				Q200	1R	-
G8	G	8			(A)	Q200	1R	-
H8	H	8				Q200	1R	-
A9	A	9			3A	Q252	RP	-
B9	B	9				Q252	RP	-
C9	C	9				Q252	RP	-
D9	D	9				Q252	RP	-
E9	E	9			1B	Q200	2R	-
F9	F	9				Q200	2R	-
G9	G	9				Q200	2R	-
H9	H	9				Q200	2R	-
A10	A	10			10C	Q200	1R	-
B10	B	10				Q200	1R	-
C10	C	10				Q200	1R	-
D10	D	10				Q200	1R	+
E10	E	10			10B	Q208	1R	-
F10	F	10				Q208	1R	-
G10	G	10				Q208	1R	-
H10	H	10				Q208	1R	-
A11	A	11			20	Q200	RP	+
B11	B	11				Q200	RP	+
C11	C	11				Q200	RP	+
D11	D	11				Q200	RP	+
E11	E	11			6A	Q200	PL	+
F11	F	11				Q200	PL	-
G11	G	11				Q200	PL	+
H11	H	11				Q200	PL	-
A12	A	12			5C	Q208	5R	-
B12	B	12				Q208	5R	-
C12	C	12				Q208	5R	-
D12	D	12				Q208	5R	-
E12	E	12			6	Q200	1R	+
F12	F	12				Q200	1R	+
G12	G	12				Q200	1R	+
H12	H	12				Q200	1R	+

Samples have been tested by ELISA and confirmed by Quantitative Polymerase Chain Reaction (qPCR). Results reported are to the limits of the ELISA and qPCR assay performed.

The RSD ELISA diagnostic method detects the presence of *Lethaeus xyl* subsp. *xyl*, the causal agent of Ratoon Stunting Disease. Where quantitative polymerase chain reaction (qPCR) is used to confirm ELISA results, this is shown in the results. Sugar Research Australia Limited (SRA) is not responsible for results that are below the detection limit of the assays. The results provided by SRA are strictly limited to the samples provided by the client. Clients should not represent or imply that the results apply other than to the actual samples provided for assay. The client releases and indemnifies SRA in respect of any loss or liability incurred as a consequence of any such representations, which remain at all times the sole responsibility of the client. SRA assumes no liability.

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Appendix 5 – Clean Seed Collection Order Form

IBCPS APPROVED SEED COLLECTION ORDER FORM 2018 DUE BACK BY FRIDAY 4TH MAY, 2018

Please complete spaces provided below, circle the appropriate options, along with the completion of your Approved Seed Collection ORDER FORM and drop into the **IBCPS Babinda or SJ office, email back OR Post to IBCPS PO Box 25, South Johnstone, 4859.**

Grower Name/Trading Name: _____

ALL Farm Numbers to determine quota allocation: _____

Mobile/Landline Number (Best Contact): _____

Email Address: _____

Payment Method (Please circle appropriate option number):

1. Payment via deduction from my **CANE PAY** through MSF Sugar.
Farm Number/s _____
2. **CASH** (Payment at your Babinda or SJ IBCPS Office)
3. **CHEQUE** (Make payable to IBCPS; can be delivered to your Babinda or SJ IBCPS Office of posted to IBCPS – AS ABOVE)

DECLARATION

- I agree and understand the terms and conditions of sale as set out above.
- I declare that the information provided is true and correct to the best of my knowledge.

Signature: _____ Date _____/_____/_____

Third Party Allocations: (only to be filled out if you are collecting cane on behalf of a third party)

If you are collecting cane on behalf of another party please indicate below the entity or entities that you are paying for the purchase and the preferred method of payment.

Grower Name/Trading Name: _____

ALL Farm Numbers to determine quota allocation for IBCPS distribution of new cane varieties: _____

Mobile/Landline Number (Best Contact): _____

Email Address: _____

Payment Method (Please circle appropriate option number):

1. Payment via deduction from my **CANE PAY** through MSF Sugar.
Farm Number/s _____
2. **CASH** (Payment at your Babinda or SJ IBCPS Office)
3. **CHEQUE** (Make payable to IBCPS; can be delivered to your Babinda or SJ IBCPS Office of posted to IBCPS – AS ABOVE)

IBCPS APPROVED SEED COLLECTION ORDER FORM 2018

To place your order for approved seed cane, enter the required quantity in the appropriate seed plot column (examples in light grey text). For new SRA varieties simply tick the box if you would like your allocated Quota. In 2018 there will be a plant cutter available. A final call out will be made to growers 1 week prior to final cut out in September 2018. Please indicate if you wish to collect a small tipper bin of billets at final cut out.

2018 Seed Plots and Variety Availability						Indicate Y/N		
Variety	Class	Babinda Central (Clyde Road)	Bartle Frere (Menzies Road)	Martyville (Martyville Road)	Hobsons (Kurrimine Beach Road)	Plant Cutter / Hand Cut (Y/N)	Stripped (Y/N)	Billet - Final Cut Out (Y/N)
LR-Limited Release ; TC - Tissue Culture; HCQ-Hand Cut quotas ONLY								
SRA1	PL/1R		3t					Y
SRA3	PL/1R		200 stk			Y		
SRA6	PL/1R							
SRA7	PL/1R							
SRA10	PL : (LR)							
8817	PL/1R (HCQ)							
9119	PL/1R (HCQ)							
Q186	PL/TC							
Q200	PL/1R							
Q208	PL/1R							
Q219	PL							
Q231	PL							
Q240	PL							
Q247	PL							
Q250	PL/1R							
Q251	PL/1R							
Q252	PL/1R							
Q253	PL/1R							
			Variety NOT Available at Seed Plot					
			Variety IS Available at Seed Plot					

Need help to hand cut cane?

There is currently one contractor available for hand cutting cane in the local area.

Gary Stephensen: 0415 245 474

Appendix 6 – Tissue Culture Order Form

IBCPS TISSUE CULTURAL ORDER FORM FOR 2018

PLANTING IN 2019

Tissue culture (TC) is a great way to propagate a clean source of new varieties. Some growers have embraced this new technology completely adopting this, method for all their clean seed requirements. Whilst the initial cost of the seedling seems expensive (\$2.20-\$2.35/plantlet) the real saving is in time of adopting new varieties. Currently the time to propagate a new variety sourced from IBCPS clean seed plot is about 2-3 years for the grower to have a commercial block of cane. This is because the grower is constricted by the size of allocation of a new variety depending on their farm/s size. Tissue culture allows the grower to order as many plants as they like, potentially saving them a year or more propagation. If you are interested in TC or want any more information please contact IBCPS. An order form for early April planting has now closed but, orders for early July/August planting is included in this flyer for those growers interested.

- Only approved/recommended varieties in the Northern Coastal region can be ordered (Q number or SRA number)
- **Varieties available:** SRA6, SRA7, SRA 3, SRA1, Q256, Q253, Q252, Q251, Q250, Q245, Q242, Q241, Q240, Q238, Q237, Q232, Q231, Q230, KQ228, Q219, Q208, Q200, Q183
- Refer to QCane Select Website: www.sugarresearch.com.au/QCANESelect
- **Plants will be available to the grower in early August 2018. IBCPS will contact the grower.**

IBCPS Tissue Culture Planter

IBCPS has invested in a tissue culture planter which will be available for use by IBCPS growers only. Growers will have to pick up and return the planter; the grower is responsible for any damage the planter incurs whilst it is in their care. IBCPS will rent out the Tissue Culture planter and provide ongoing agronomic support.

If using the IBCPS tissue culture planter or another mechanical planter it is recommended that your soil is worked to a fine tilt. This is to ensure that the roots of the plantlet have good contact with the soil. You should also ensure the plantlet gets a good drink at planting to help minimise transplant stock.

Calculation of Plantlets Needed

An order of 1000 plantlets planted 60cm apart will give you a total of 600 running metres (information from TCPSL). A calculator is also available on the SRA website.

More Information

For more information please contact Bianca Spannagle at IBCPS. TCPSL and SRA have completed a detailed report from a Tissue Culture project they completed with some great information available in it. You can pick up an information package from either the Babinda or SJ IBCPS offices.

IBCPS TISSUE CULTURAL ORDER FORM FOR 2018

I, Grower Business Name: _____,
 Authorise IBCPS to order the following varieties from SRA Limited and arrange
 for grow-out/hardening off.

(Minimum order of 100 plantlets per variety)

Variety	Number of Plants Ordered

Please select an order date below.

Friday 30 th June, 2018 (Autumn Planting 19)	Mon 13 th November, 2018 (Spring Planting 19)

I agree to reimburse IBCPS for the costs charged by SRA Limited (including freight) for plants received and I authorise that charges may be deducted from my Innisfail Babinda Mill Cane Pay account.

Address for SRA to bill (PO Box): _____

Grower Signature _____

Order Forms to be returned by:

Friday 30th June, 2018 (Autumn Planting 2019) - OPEN

Monday 13th November, 2018 (Spring Planting 2019) - OPEN

Options for submission:

- Deliver to IBCPS office located Japoon Road, South Johnstone or Babinda Depot, Howard Kennedy Drive.
- Post in Mail: PO Box 25, South Johnstone, QLD, 4859
- Email IBCPS: Biannca.Spannagle@ibcps.com.au



Appendix 7 – Hot Water Treatment Appointment Form

IBCPS HOT WATER TREATMENT APPOINTMENT FORM 2018

Forms must be returned by the **FRIDAY 4th MAY 2018**, to keep the tanks and heating process organised. Failure to return a form means IBCPS cannot guarantee fitting you in for HWT.

Please complete spaces provided below, mark the appropriate options in the table below, along with the completion of your Hot Water Treatment (HWT) Appointment Form and drop into the **IBCPS Babinda or SJ office, email back OR Post to IBCPS, PO Box 25, South Johnstone, QLD, 4859.**



Grower Name/Trading Name / Farm Number: _____

Mobile/Landline Number (Best Contact): _____

TRAILER DROP-OFF

A trailer of bundled whole stick may be dropped off at the beginning of the nominated week for treatment. Please have the trailer clearly labelled for IBCPS staff to ensure there are no mix ups with treatments and bundles. **MATERIAL MUST BE RSD SAMPLED AND RETURNED A NEGATIVE RESULT.**

Please **LABEL** your trailer clearly with: Grower Name, Farm Number, Variety/ies dropped off.

✓ Correct way to drop off cane ✓	X Incorrect way to drop off cane X
	

2018		Please Indicate Yes / No						
Month	Tank Dates Week Of	Select Week of Treatment (Tick)	Whole Stick (Y/N)	Billet (Y/N)	Amount to Treat (tonnes/bundles)	Varieties to be treat	Request of treatment data (Y/N)	Lend Billet Cage (Y/N)
JULY	24 th – 28 th							
AUGUST	6 th – 10 th							
	20 th – 24 th							
SEPTEMBER	3 rd – 7 th							
	17 th – 21 st							
OCTOBER	1 st – 5 th							

Signature: _____ Date _____/_____/_____