Sugar Research Australia

VARIETY GUIDE 2023/2024

Northern Region

HOW TO USE THIS GUIDE

This guide is designed to help growers in the Northern canegrowing region with their agronomic considerations when selecting new varieties to plant and trial on their farms. The information comes from the best available data of regional variety performance and disease ratings. ***The information in the tables on the following pages will help you understand:***

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WANT TO KNOW WHAT IS HAPPENING IN THE OTHER REGIONS?

You can find all the regional variety guides on the SRA website.
Visit sugarresearch.com.au or scan the QR code.

(Cover page) *Thirty-two thousand seedlings await transplanting.*
(Left) *Transplanted seedlings being irrigated.*

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NEW AND RECENT VARIETIES AVAILABLE IN THE NORTHERN REGION

Variety Recommendation and Release Process

Regional Variety Committees (RVCs) have replaced Variety Approval Committees (VAC) in line with changes to Queensland biosecurity legislation. With membership drawn from growers, millers and productivity service groups specific to the region, the RVCs are responsible for variety release decisions. SRA supports these groups with secretariat support and the provision of technical information to assist the committee making decisions on particular varieties.

RVCs are composed of voting and nonvoting members to ensure transparency in the decision making process.

The Northern RVC (Sugarcane Biosecurity Zone 1) membership consists of 1 grower and 1 miller representative from each of the Mossman, Mulgrave, South Johnstone, Tully and Tablelands regions.

The Northern RVC requires a majority vote for progression of a variety through the breeding program and a unanimous vote for the release of a variety.

If you would like more information on new variety releases and regional variety committees, visit the SRA website: ***sugarresearch.com.au or scan the QR code.***

Presented below are the results of trials conducted in the Northern region. Cane yield (TCH) and commercial cane sugar (CCS) for each new variety are compared with the trial results of various standard varieties. Results of SRA27, SRA25Ф and SRA16Ф can be found in the 2022-2023 Northern Variety Guide.

Variety: SRA9Ф QC97-2432 — ***Parentage:*** *QN81-289 x Q166* **/** ***Summary:*** *Higher tonnes cane; lower CCS.*

TRIAL HARVEST YEAR		CROP CLASS	YIELD (TCH)				CCS				# OF HARVESTS
			SRA9Ф	Q200	Q208Ф	SRA26Ф	SRA9Ф	Q200	Q208Ф	SRA26Ф	
(2017 series FATs):	2018	Plant	115	97	95	107	16.9	17.0	17.2	17.2	4
	2019	1R	96	86	89	90	15.5	16.9	16.5	16.9	4
	2020	2R	115	94	108	104	15.3	16.3	15.9	16.3	4
(2019 series FATs):	2020	Plant	94	80	81	86	15.3	16.0	15.6	15.9	4
	2021	1R	117	89	89	100	15.2	15.3	15.1	15.5	4
	2022	2R	112	90	92	101	15.5	15.9	15.7	16.0	4
(2021 series FATs):	2022	Plant	93	77	78	84	15.3	16.3	15.5	17.0	4
	2022	1R	107	97	99	93	15.6	16.5	15.9	16.8	4
(2021 series FATs):	2022	Plant	112	96	96	100	15.3	16.0	15.4	16.0	4
Overall Performance			**107**	**90**	**92**	**96**	**15.5**	**16.2**	**15.9**	**16.4**	**36**

Available from 2022 to order as tissue culture for a 2023 delivery and in 2023 as whole stalk

Comments:

SRA9Ф is a recent Central variety which has shown an impressive 14% sugar yield advantage over Q208Ф in SRA field trials in the Far North. SRA9Ф's yield advantage is consistent across crop classes in all Northern coastal trial locations tested since 2017. SRA9Ф is a lower CCS variety with a low propensity to arrow and sucker, and will keep growing throughout the season which may make it a good candidate for crop ripeners. SRA9Ф is a more profitable variety choice especially for growers with higher Pachymetra spore counts and provides good weed competition.

SRA9Ф is a fast and reliable germinator when compared to Q208Ф. It has tall and moderate to high stalk numbers of average diameter at maturity. It is a vigorous variety and will often stand erect providing good harvester presentation even in high yielding crops. SRA9Ф has a more erect canopy than SRA26Ф, but it still provides better canopy closure than Q208Ф for good weed competition. Smut levels observed in SRA9Ф through natural infection in the wet tropics suggest it's resistance to smut is more similar to Q208Ф than Q200. Smut can still be found in SRA9Ф if the crop is stressed or is under high smut pressure from neighbouring crops.

Data from the 2020 and 2021 FAT series are still being collected.

Variety: SRA32Ф QS09-8404 — ***Parentage:*** *QN80-3425 x QN86-2168* **/** ***Summary:*** *Higher tonnes cane; lower CCS.*

TRIAL HARVEST YEAR		CROP CLASS	YIELD (TCH)				CCS				# OF HARVESTS
			SRA32Ф	Q200	Q208Ф	SRA26Ф	SRA32Ф	Q200	Q208Ф	SRA26Ф	
(2019 series FATs):	2020	Plant	96	80	81	86	14.9	16.0	15.6	15.9	4
	2021	1R	111	89	89	100	14.4	15.3	15.1	15.5	4
	2022	2R	110	90	92	101	14.7	15.9	15.7	16.0	4
(2021 series FATs):	2022	Plant	114	96	96	100	14.6	16.0	15.4	16.0	4
Overall Coastal FAT Performance			**108**	**89**	**90**	**97**	**14.6**	**15.8**	**15.4**	**15.9**	**16**

TRIAL HARVEST YEAR		CROP CLASS	YIELD (TCH)			CCS			# OF HARVESTS
			SRA32Ф	Q208Ф	KQ228Ф	SRA32Ф	Q208Ф	KQ228Ф	
(2019 series RVT):	2020	Plant	117	103	105	13.0	13.6	14.7	1
	2021	1R	138	125	127	13.4	14.4	15.3	1
	2022	2R	129	129	126	15.8	16.3	16.7	1
(2020 series RVT):	2021	Plant	103	99	94	13.4	13.4	13.8	1
	2022	1R	123	128	134	15.3	15.5	15.2	1
Overall Tableland RVT Performance			**122**	**117**	**117**	**14.2**	**14.6**	**15.1**	**5**

Available from 2022 as whole stalk on the Tablelands, to order as tissue culture on both the Coastal and Tableland regions for 2023 delivery, and from 2023 as whole stalk on the coast

Comments:

SRA32Ф is a recent Burdekin variety that has shown an impressive 14% sugar yield advantage over Q208Ф in the coastal Far North and is competitive with KQ228Ф on the Tableland. These yield advantages have been consistent across all plant to second ratoon coastal and Tableland trials. SRA32Ф is a vigorous but low CCS variety with a moderate propensity to arrow and sucker.

SRA32Ф is a reliable germinator and similar in speed to Q208Ф. Its early growth is rapid and vigorous producing early biomass relative to other commercial varieties. SRA32Ф has an open stool of moderate to thick stalks at maturity, and some lodging may be experienced in larger crops. SRA32Ф arrows similar to Q200 on the coast, and KQ228Ф on the Tableland. It is also a moderate suckering variety like Q253Ф. It has large eyes covered by moderate trash. Side-shooting has been observed in SRA32Ф on exposed ends and outside rows of the crop but generally not within the crop itself.

Initial maturity sampling of SRA32Ф suggests it is best harvested mid or late in the season. Maturity testing prior to use of crop ripeners will help maximise its CCS returns as it is a low CCS variety compared to other major commercial varieties. SRA32Ф is a profitable variety choice for Northern coastal growers with a low Pachymetra and smut risk, and a competitive variety option on the Tableland to complement KQ228Ф where SRA32Ф is as a mid-late season replacement for Q208Ф and Q232Ф.

Data from the 2020 RVT and 2021 FAT series are still being collected.

Variety: SRA37Ф QS09-7559 — ***Parentage:*** *QC82-663 x Q205* **/** ***Summary:*** *Equal to higher tonnes cane; similar CCS.*

TRIAL HARVEST YEAR		CROP CLASS	YIELD (TCH)				CCS				# OF HARVESTS
			SRA37Ф	Q200	Q208Ф	SRA26Ф	SRA37Ф	Q200	Q208Ф	SRA26Ф	
(2016 series FATs):	2017	Plant	102	104	99	-	15.5	15.5	15.6	-	4
	2018	1R	92	84	88	-	16.9	16.9	17.0	-	4
	2019	2R	90	84	81	-	16.5	16.7	16.6	-	4
(2019 series FATs):	2020	Plant	89	80	81	86	15.5	16.0	15.6	15.9	4
	2021	1R	120	89	89	100	15.0	15.3	15.1	15.5	4
	2022	2R	117	90	92	101	15.3	15.9	15.7	16.0	4
(2020 series FATs):	2021	Plant	82	77	78	84	15.4	16.3	15.5	17.0	4
	2022	1R	101	97	99	93	15.8	16.5	15.9	16.8	4
(2021 series FATs):	2022	Plant	103	96	96	100	15.3	16.0	15.4	16.0	4
Overall performance			**100**	**89**	**89**	**-**	**15.3**	**16.1**	**15.8**	**-**	**36**

Available from 2022 as both whole stalk and to order as tissue culture

Comments:

SRA37Ф has shown an 13% sugar yield advantage over Q208Ф in SRA field trials. This yield advantage is more noticeable in ratoons, as SRA37Ф's cane yield is comparable to Q208Ф and the relative yield advantage increases with crop class. This trend has been consistent across all Northern coastal trial locations since it was first tested in 2016.

SRA37Ф is a rapid and reliable germinator and is quick to produce multiple tillers for early crop establishment. At maturity it has a moderate stalk population which sometimes display pale green and red candy stripes. It has an erect growth habit for good presentation to the harvester. SRA37Ф has more of an erect canopy than SRA26Ф, but it still provides better canopy closure than Q208Ф for good weed competition. SRA37Ф is very sparse to non-arrowing and does not sucker readily. It will continue to grow steadily throughout the autumn and winter months, similar to SRA26Ф. Limited maturity testing suggests SRA37Ф follows a similar maturity curve as Q200 and SRA26Ф and is best harvested mid or late in the season. Maturity testing prior to use of crop ripeners is recommended if SRA37Ф is being considered for early harvest.

SRA37Ф will provide growers with improved ratooning ability and disease resistance for smut and Pachymetra compared to Q200 and Q208Ф.

Data from the 2020 and 2021 FAT series are still being collected.

NEW AND RECENT VARIETIES AVAILABLE IN THE NORTHERN REGION (CONT)

Variety: SRA28Ф Q508-8776		***Parentage:** Q233Ф x Q135 / **Summary:** Equal to higher tonnes cane; equal CCS.*								
TRIAL HARVEST YEAR	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
		SRA28Ф	**Q200**	**Q208Ф**	**SRA26Ф**	**SRA28Ф**	**Q200**	**Q208Ф**	**SRA26Ф**	
(2015 series FATs): 2016	Plant	126	126	124	-	15.3	15.1	15.0	-	4
2017	1R	122	119	123	-	15.4	15.0	14.9	-	4
2018	2R	100	95	98	-	17.5	17.3	17.3	-	4
(2018 series FATs): 2019	Plant	82	82	83	81	16.2	16.5	16.3	16.8	4
2020	1R	103	95	100	91	16.0	16.3	16.0	16.4	4
2021	2R	91	92	90	91	15.2	15.8	15.7	16.5	4
(2019 series FATs): 2020	Plant	89	80	81	86	16.0	16.0	15.6	15.9	4
2021	1R	111	89	89	100	15.3	15.3	15.1	15.5	4
2022	2R	111	90	92	101	16.4	15.9	15.7	16.0	4
(2020 series FATs): 2021	Plant	92	77	78	84	15.6	16.3	15.5	17.0	4
2022	1R	106	97	99	93	16.1	16.5	15.9	16.8	4
(2021 series FATs): 2022	Plant	110	96	96	100	16.4	16.0	15.4	16.0	4
Overall Performance		**103**	**95**	**96**	**-**	**16.0**	**16.0**	**15.7**	**-**	**48**
Contact your local productivity service organisation for whole stalk availability and to order as tissue culture										
Comments:	SRA28Ф has achieved a 13% sugar yield advantage over Q208Ф in SRA field trials, and has shown broad adaptability across diverse growing environments across the Northern coastal, Tableland and Herbert regions. SRA28Ф is a reliable germinator but problems have been observed with mature or older planting material, so material 11 months of age or younger is a priority. It can also be sensitive to hot water treatment. Its initial growth and tillering can be slower than other commercial varieties, but this is not a reflection of its yield potential. SRA28Ф has a moderate stalk population with good diameter, a distinctive purple leaf sheath, and is moderate trashing. It has a clean green canopy with good closure for weed competition. SRA28Ф has a compact stool with an erect habit providing good harvester presentation. Suckers in SRA28Ф are obvious due to their purple colour and number, but trial data suggests suckering is variable with similar levels to Q240Ф, Q250Ф and Q253Ф. Arrowing is similar to Q200 in an average year, but when conditions are favourable arrowing can be profuse. SRA28Ф has rapid growth after rainfall, similar to Q253Ф, so maturity testing or avoiding harvest soon after heavy rain is recommended to maximise CCS. SRA28Ф has an excellent disease resistance profile and is a more profitable variety choice especially for growers with higher Pachymetra spore counts. SRA28Ф exhibits stronger ratooning ability to Q200 and Q208Ф. Data from the 2020 and 2021 FAT series are still being collected.									

Variety: SRA15Ф Q506-9119		***Parentage:** QS91-7008 x Q200 / **Summary:** Equal tonnes cane; equal CCS.*								
TRIAL HARVEST YEAR	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
		SRA15Ф	**Q200**	**Q208Ф**	**SRA26Ф**	**SRA15Ф**	**Q200**	**Q208Ф**	**SRA26Ф**	
(2017, 2018 and 2019 series FATs)	Plant	85	86	86	92	16.8	16.5	16.4	16.6	12
	1R	95	90	93	94	15.9	16.1	15.9	16.3	12
	2R	101	92	97	99	15.9	16.0	15.8	16.3	12
Overall Performance		**94**	**90**	**92**	**95**	**16.2**	**16.2**	**16.0**	**16.4**	**36**
Contact your local productivity service organisation for whole stalk availability and to order as tissue culture										
Comments:	While SRA15Ф has 60 results from FATs planted in 2013, 2016, 2017, 2018 and 2019, the data presented here is only from the 2017, 2018 and 2019 FAT series where SRA26Ф was also planted for direct comparison. In these trials SRA15Ф was competitive with the commercial standards for both cane yield and CCS across all sites and crop classes, and is a good option for early CCS. SRA15Ф is a moderate to profuse arrowing variety with protruding eyes and can side-shoot when heavily arrowed; ideal to use plant source less than 12 months of age. SRA15Ф is resistant to leaf scald, intermediate-resistant to Pachymetra, and intermediate-susceptible to smut. Smut may be found in SRA15Ф under moderate to high spore-load when grown in the drier areas of the wet tropics. Performance of SRA15Ф by FAT series can be found in the 2021/2022 Northern Variety Guide available on sugarresearch.com.au.									

Variety: SRA26Ф QN08-2282		***Parentage:** QN97-2122 x Q146 / **Summary:** Equal tonnes cane; equal to higher CCS.*								
TRIAL HARVEST YEAR	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
		SRA26Ф	**Q200**	**Q208Ф**	**Q250Ф**	**SRA26Ф**	**Q200**	**Q208Ф**	**Q250Ф**	
(2014 series FATs): 2015	Plant	103	101	103	99	15.4	15.5	15.5	16.1	4
2016	1R	123	116	128	108	15.8	15.6	15.4	15.8	4
2017	2R	104	99	109	88	15.4	15.1	15.1	15.7	4
(2017 series FATs): 2018	Plant	107	97	95	92	17.2	17.0	17.2	18.0	4
2019	1R	90	86	89	81	16.9	16.9	16.5	17.6	4
2020	2R	104	94	108	92	16.3	16.3	15.9	16.7	4
(2018 series FATs): 2019	Plant	81	82	83	72	16.8	16.5	16.3	17.3	4
2020	1R	91	95	100	84	16.4	16.3	16.0	16.9	4
2021	2R	91	92	90	74	16.5	15.8	15.7	16.6	4
(2019 series FATs): 2020	Plant	86	80	81	78	15.9	16.0	15.6	16.6	4
2021	1R	100	89	89	81	15.5	15.3	15.1	16.3	4
2022	2R	101	90	92	80	16.0	15.9	15.7	16.5	4
(2020 series FATs): 2021	Plant	84	77	78	74	17.0	16.3	15.5	17.0	4
2022	1R	93	97	99	82	16.8	16.5	15.9	16.9	4
(2021 series FATs): 2022	Plant	100	96	96	93	16.0	16.0	15.4	16.6	4
Overall Performance		**97**	**93**	**96**	**85**	**16.3**	**16.1**	**15.8**	**16.7**	**60**
Contact your local productivity service organisation for whole stalk availability and to order as tissue culture										
Comments:	SRA26Ф has shown equal tonnes cane and ratooning ability to Q208Ф with a 4% sugar yield advantage over Q208Ф in SRA field trials through an improvement in CCS. This is consistent across all Northern coastal trial locations since testing begun in 2014. SRA26Ф is a reliable germinator with a semi-prostrate early growth habit, often up to and including at fill-in stage. The yield potential of SRA26Ф is not typically affected if tiller damage occurs when filling in as it is a moderate to high tillering variety. SRA26Ф will straighten up to stand erect providing good harvester presentation. SRA26Ф has internodes of even length and protected eyes making it an ideal variety for billet planting, but if whole-stalk planting SRA26Ф be wary as it is very hairy. Preliminary experimental results and initial commercial experience suggest SRA26Ф's RSD sensitivity is higher than Q208Ф but less than Q253Ф. SRA26Ф is a very sparse arrowing variety, is moderate to tight trashing and does not sucker readily. It will continue to grow steadily throughout the autumn and winter months and provides excellent canopy closure even on wider rows. We recommend it is harvested mid- to late-season to maximise its CCS, similar to Q200. However, if SRA26Ф is targeted for harvest early in the season then maturity testing prior to use of crop ripeners are advised. Its excellent disease resistance profile makes it an attractive option for growers looking to minimise their risk of yield loss due to smut and Pachymetra. SRA26Ф continues to dominate approved seed sales of Productivity Service organisations across the Northern coastal region. Data from the 2020 and 2021 FAT series are still being collected.									

Variety: SRA6Ф QN05-507		***Parentage:** QN80-3425 x QH93-1197 / **Summary:** Equal tonnes cane; lower CCS.*								
TRIAL HARVEST YEAR	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
		SRA6Ф	**Q200**	**Q208Ф**	**SRA26Ф**	**SRA6Ф**	**Q200**	**Q208Ф**	**SRA26Ф**	
(2014 and 2017 series FATs)	Plant	96	99	99	105	15.7	16.3	16.4	16.3	8
	1R	106	101	108	107	15.1	16.2	16.0	16.3	8
	2R	102	97	109	104	14.8	15.7	15.5	15.9	8
Overall Performance		**101**	**99**	**105**	**105**	**15.2**	**16.1**	**16.0**	**16.2**	**24**
Contact your local productivity service organisation for whole stalk availability and to order as tissue culture										
Comments:	While SRA6Ф has 60 results from FATs planted in 2011, 2014, 2015, 2016 & 2017, the data presented here is only from the 2014 and 2017 FAT series where SRA26Ф was also planted for direct comparison. In comparison to commercial standards, SRA6Ф's cane yield was equal to or above-average, and CCS on average 0.5 units lower. SRA6Ф showed equally good performance over different soil types where tested, but early indications are that SRA6Ф may be less suitable to poor/dry conditions. Initial germination is rapid and reliable, with slow early crop growth followed by accelerated growth from Autumn. SRA6Ф has a dense and larger stalk population relative to other varieties, but the height of the crop is often shorter; however, its yield potential is greater than what its height suggests. It is also a sparse arrowing variety with a spiky upright canopy which is often clean of leaf diseases. SRA6Ф has an excellent disease profile with resistance to all major diseases including smut, Pachymetra and leaf scald. Performance of SRA6Ф by FAT series can be found in the 2020/2021 Northern Variety Guide available on sugarresearch.com.au.									

SRA9(Φ)

SRA32(Φ)

SRA37(Φ)

SRA28(Φ)

SRA26(Φ)

SRA15(Φ)

SRA6(Φ)

For more information on *variety field trials* contact:
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DISEASE RESISTANCE

Disease has the potential to lower the performance of varieties on your farm. This table will help you select varieties that will perform well given the diseases that may be present on your farm. White indicates unknown.

Northern Coastal and Tableland Disease Ratings

VARIETY	REGION*	SMUT	PACHYMETRA	LEAF SCALD	CHLOROTIC STREAK	ORANGE RUST	BROWN RUST	RED ROT	YELLOW SPOT	FIJI LEAF GALL	MOSAIC
SRA37(Φ)	N, T	R	I-R	R			R*	R		R	R
SRA32(Φ)	N, T	I	I	R			R*	I	I-R*	I-R	R
SRA28(Φ)	N, T	I-R	R	R		R	R*	R	R	I	R
SRA27	T	I-R	I-S	R		R	R	I		R	R
SRA26(Φ)	N, T	R	R	R		R	R*	R	R	I-R	S
SRA25(Φ)	N, T	I-S	R	R		R	R*	S	I-R	S	S
SRA16(Φ)	N, T	R	R	R		R	R*	R		S	R
SRA15(Φ)	N, T	I-S	I-R	R		R	R*	R	I-R*	R	R
SRA14(Φ)	N	I-R	R	R		R		R	I	S	R
SRA10(Φ)	N, T	I	I-R	R		R		I	R	S	S
SRA9(Φ)	N, T	I	R	R		R		I-R	I-R	I	R
SRA7(Φ)	N, T	I-R	I	R		R		R	R	I	R
SRA6(Φ)	N, T	R	R	R		R		I	I-R	I	R
SRA5(Φ)	N	I-R	I	I-R		R	R	R		I	R
SRA3(Φ)	N, T	I	I-R	I		R	R	I-R	I-R	S	R
Q256(Φ)	T	I	I-S	R		R		I	R	R	R
Q253(Φ)	N, T	R	R	R		R	I-S	I	S	S	R
Q252(Φ)	N, T	I-R	I	R		R		R	I	I	R
Q251(Φ)	N	I-S	R	I-S		R		I-S	I-R	R	R
Q250(Φ)	N, T	R	I	R		I		I	I-R	I-S	R
Q247(Φ)	N	I-R	R	R		R		R	S	R	R
Q242(Φ)	N	I-R	R	R	I	R		I-R	R	R	R
Q240(Φ)	N, T	R	I	R	I-R	R		R	I	I-S	R
Q238(Φ)	N, T	R	R	R	S	R	R	I-R	S	I-R	R
Q232(Φ)	N, T	I-R	I	R	R	R		I-R	R	I	R
Q231(Φ)	N, T	R	R	I-R		R		R	I	S	R
KQ228(Φ)	N, T	I	I	R	S	R	R	R	I	I	R
Q219	N	R	R	R		R		R		S	I-S
Q208(Φ)	N, T	I-R	I	R	R	R	R	R	R	I-S	R
Q200	N, T	I	I	R	I	R	R	R	I-R	R	R
Q183	N, T	R	R	I	S	R	R	I	I-S	R	R

* Region recommended

Rotation of Varieties

Rotation of varieties for each crop cycle is important in the management of diseases. Arrange for your local productivity services officer to inspect your farm for disease. The *Diseases of Australian Sugarcane Field Guide* provides information on diseases including how to identify and manage them.
The guide is available on the SRA website.
Visit sugarresearch.com.au or scan the QR code.

NOTE: You will note that Ratoon Stunting Disease (RSD) resistance ratings are not included in this variety guide. Varietal resistance is not one of the three pillars of RSD disease management; growers should continue to ensure that approved seed cane is used to establish crops, that crops are planted into volunteer-free land and the equipment is decontaminated regularly.

No sugarcane varieties are resistant to RSD: they can all become infected, suffer yield losses, and further spread the disease.

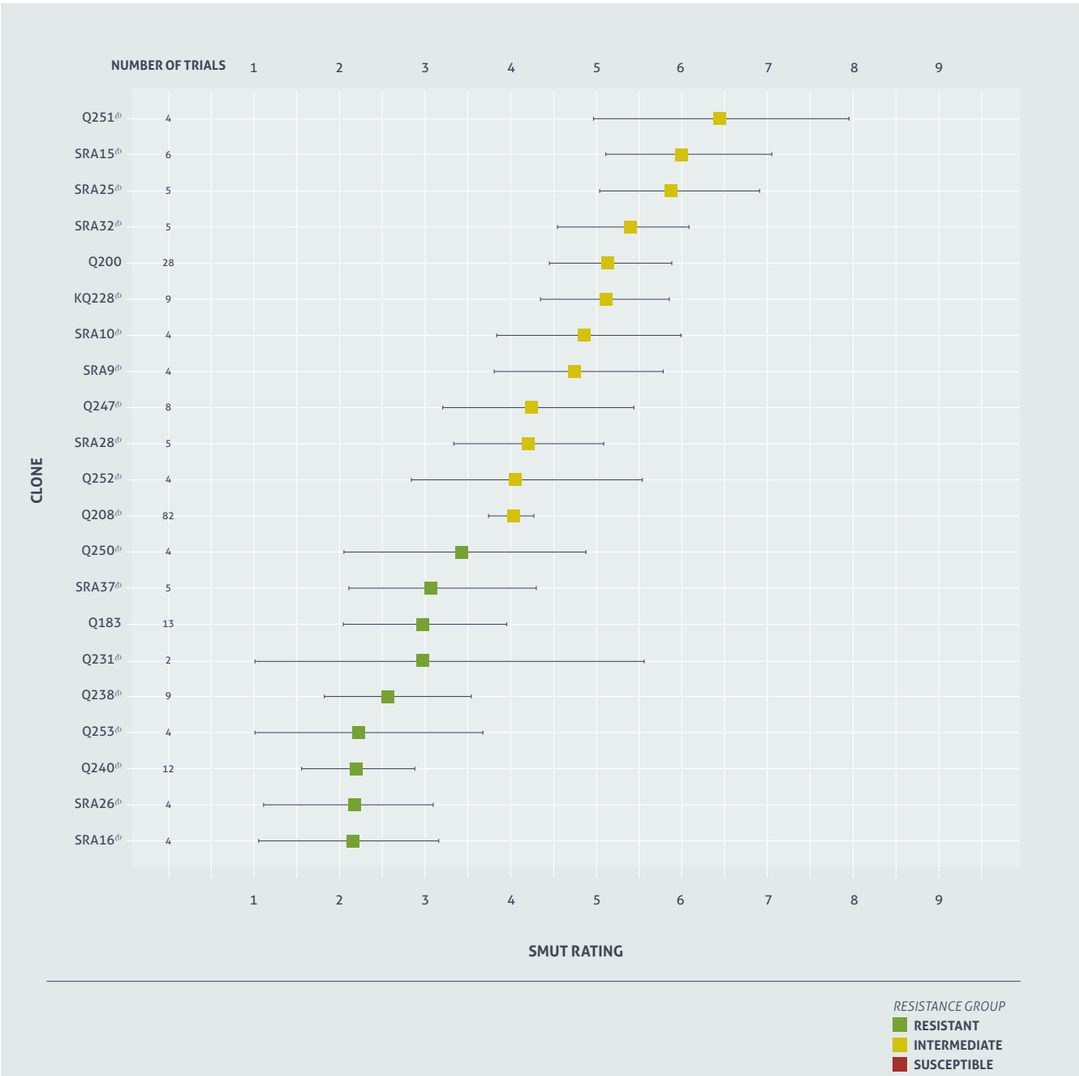
Some varieties are more sensitive to RSD and carry significantly higher levels of the bacteria. In situations where RSD is a high risk and hygiene measures are not guaranteed, it may be appropriate to avoid varieties such as KQ228(Φ) and Q253(Φ).

- RESISTANT (R)
- PROVISIONAL RATING (R*)
- RESISTANT - INTERMEDIATE (I-R)
- INTERMEDIATE (I)
- INTERMEDIATE- SUSCEPTIBLE (I-S)
- PROVISIONAL RATING (I-S*)
- SUSCEPTIBLE (S)

N NORTHERN COASTAL
T TABLELAND

SMUT RATINGS

Smut resistance ratings are calculated from the incidence and severity of infection compared to standard varieties in inoculated field trials. The graph below includes the rating and the 95% confidence interval for each variety. The confidence interval is influenced by factors such as the number of trials and the uniformity of smut infection. For example, the variety Q200 has been tested in 28 trials and has a narrow confidence interval from 4.4 to 5.9 while the new variety SRA37(ᵇ) has only been tested in 5 trials and ranges from 2.1 to 4.3. Rating confidence will improve as more data is collected.



PACHYMETRA RATINGS

Pachymetra resistance ratings are calculated from the severity of infection in a test clone compared to standard varieties in inoculated bench trials. The graph below includes the rating and the 95% confidence interval for each variety. The confidence interval is influenced by factors such as the number of times a variety has been tested and variability of Pachymetra infection within each trial. For example, the variety Q200 has been tested in 34 trials and has a narrow confidence interval from 4.4 to 5.3 while the new variety SRA37(ᵇ) has only been tested in 8 trials and ranges from 2.7 to 5.2. Rating confidence will improve as more data are collected.

HARVEST MANAGEMENT

Growers are encouraged to select varieties for a harvest plan that can be followed to maintain maximum CCS throughout the year. The charts below indicate early, mid or late sugar varieties.

Northern Coastal harvest management

VARIETY	EARLY SUGAR	MID SUGAR	LATE SUGAR	TRASHING	SUCKERING	LODGING
SRA37(ф)	Average	Good	Good	Free-Average	Light	Good
SRA32(ф)	Poor	Average	Average	Average	Moderate	Average
SRA28(ф)	Average	Good	Good	Average	Moderate	Good
SRA26(ф)	Average	Good	Good	Average-Tight	Light	Good
SRA25(ф)	Poor	Average	Average	Average-Tight	Light-Moderate	Average
SRA16(ф)	Average	Average	Average	Free-Average	Light	Good
SRA15(ф)	Average	Good	Good	Average	Light	Average
SRA10(ф)	Good	Good	Good	Average-Tight	Light-Moderate	Average
SRA9(ф)	Poor	Average	Average	Free-Average	Light	Good
SRA7(ф)	Poor	Average	Poor	Free-Average	Light-Moderate	Average
SRA6(ф)	Average	Average	Average	Tight	Light	Good
SRA3(ф)	Poor	Average	Average	Average	Light	Average
Q253(ф)	Average	Average	Average	Free-Average	Moderate	Good
Q252(ф)	Average	Good	Average	Free	Light	Good
Q251(ф)	Average	Good	Average	Free-Average	Light-Moderate	Good
Q250(ф)	Good	Good	Good	Free-Average	Moderate	Average
Q247(ф)	Average	Good	Good	Free-Average	Light	Average-Poor
Q242(ф)	Poor	Average	Average	Average-Tight	Moderate	Average-Poor
Q240(ф)	Average	Good	Good	Average	Moderate	Average
Q238(ф)	Average	Average	Average	Free-Average	Light	Average
Q232(ф)	Poor	Good	Poor	Average	Light-Moderate	Average
Q231(ф)	Average	Average	Poor	Tight	Light-Moderate	Average
KQ228(ф)	Good	Average	Poor	Tight	Moderate	Average
Q219	Poor	Average	Good	Free-Average	Light	Average
Q208(ф)	Average	Good	Good	Free	Light-Moderate	Average
Q200	Average	Good	Good	Free	Light	Average
Q183	Poor	Poor	Average	Free-Average	Light	Good

Maximise your profit at harvest: Selecting varieties for specific sugar maturity profiles, planting and harvesting them for optimal CCS maturity at time of harvest can make a significant difference in the profit your crop can make for you. Making harvest decisions based on in-field maturity maximises profit making decisions.

GOOD
AVERAGE
LOW / AVERAGE-POOR
POOR
UNKNOWN

TRASHING
FREE
FREE-AVERAGE
AVERAGE
AVERAGE-TIGHT
TIGHT

SUCKERING
LIGHT
LIGHT-MODERATE
MODERATE

Tableland harvest management

VARIETY	EARLY SUGAR	MID SUGAR	LATE SUGAR	TRASHING	LODGING
SRA37(ф)	Average	Average	Average	Free-Average	Good
SRA32(ф)	Poor	Average	Average	Average	Average
SRA28(ф)	Good	Good	Good	Average	Good
SRA27	Poor	Average	Average	Free	Average
SRA26(ф)	Average	Good	Good	Average-Tight	Good
SRA25(ф)	Poor	Average	Average	Average-Tight	Average
SRA16(ф)	Average	Average	Average	Free-Average	Average
SRA15(ф)	Average	Average	Average	Average	Good
SRA10(ф)	Good	Good	Good	Average-Tight	Average
SRA9(ф)	Good	Good	Good	Free-Average	Good
SRA7(ф)	Poor	Poor	Poor	Free-Average	Average
SRA6(ф)	Poor	Poor	Poor	Tight	Good
SRA3(ф)	Poor	Poor	Poor	Average	Average
Q256(ф)	Poor	Poor	Poor	Free-Average	Poor
Q253(ф)	Average	Average	Average	Free-Average	Good
Q252(ф)	Average	Good	Average	Free	Good
Q250(ф)	Good	Good	Good	Free-Average	Average
Q247(ф)	Average	Good	Good	Free-Average	Average
Q240(ф)	Average	Average	Average	Average	Good
Q238(ф)	Average	Average	Poor	Free-Average	Average
Q232(ф)	Poor	Good	Poor	Average	Average
Q231(ф)	Average	Poor	Poor	Tight	Good
KQ228(ф)	Good	Good	Average	Tight	Good
Q208(ф)	Average	Average	Average	Free	Average
Q200	Poor	Average	Average	Free	Average
Q183	Poor	Poor	Average	Free-Average	Good

GOOD
AVERAGE
LOW / AVERAGE-POOR
POOR
UNKNOWN

TRASHING
FREE
FREE-AVERAGE
AVERAGE
AVERAGE-TIGHT
TIGHT

VARIETY BY HERBICIDE SCREENING TRIALS

Sugarcane varieties are known to have variable responses to herbicides with some being more impacted than others. As a result, data outlining susceptibility is critical to optimise productivity outcomes.

Since 2014, SRA has conducted trials following a two-step process to obtain reliable data for the susceptibility of varieties to herbicide. This process is:

- a fully randomised replicated pot trial in year one to shortlist the most susceptible combinations of varieties and herbicides
- a fully randomised replicated field trial in year two to confirm that the shortlisted combinations have an impact on yield.

In year three, the two-step process starts again, with new combinations of newly released varieties and herbicides.

In these trials, products are applied at their maximum label rate (and their minimum water label rate) when plant cane is at four- to six-leaf stage.

In the pot trials, weekly phytotoxicity ratings are conducted using the European Weed Research Council (EWRC) rating scale (Table 1) and the aerial plant dry biomass is measured 10 weeks after spraying.

In the field trials, plant cane yield is measured at harvest using a weigh truck.

In all trials, KQ228$^{(f)}$ is assessed and used as a susceptible reference variety to compare to other tested varieties.

Table 2 describes the phytotoxicity symptoms obtained on KQ228$^{(f)}$ and their expected severity. All varieties present identical symptoms but their severity may vary between varieties.

Tables 3, 4 and 5 summarise all phytotoxicity, biomass and yield results obtained in the pot and field trials from 2014 to 2022.

These tables are updated yearly to include newly tested combinations of varieties by herbicides.

For more information contact:
Emilie Fillols, Weed Scientist
T 07 4056 4510

TABLE 1 EWRC selectivity rating scale

SCORE	SELECTIVITY
1	No effect
2	Very slight effects. Some stunting and yellowing just visible
3	Slight effects. Stunting and yellowing obvious, effects reversible
4	Substantial chlorosis and or stunting, most effects probably reversible
5	Strong chlorosis/stunting, thinning of stand (50% loss)
6	Increasing severity of damage (70% loss)
7	Increasing severity of damage (85% loss)
8	Increasing severity of damage (90% loss) a few plants survive
9	Total loss of plants and yield

TABLE 2 Summary of phytotoxicity ratings and symptoms obtained on the reference susceptible variety KQ228$^{(f)}$

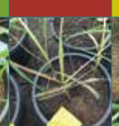
	2,4-D	AMETRYN	AMETRYN+ TRIFLOXY SULFURON	AMICARBAZONE	ASULAM	DIURON	FLUMIOXAZIN	METOLACHLOR	METRIBUZIN	MSMA
DESCRIPTION OF SYMPTOMS	Small white spotty discolorations	Yellowing of the whole plant	Slight yellow blotching	Small white spotty discolorations	Bright yellow blotching	Slight yellowing of the whole plant	Large necrotic lesions	Small necrotic lesions	Slight yellowing of the whole plant	Large necrotic lesions
PHOTOGRAPH OF SYMPTOMS										
SYMPTOM SEVERITY ON KQ228$^{(f)}$	Mild	Medium to severe	Mild	Mild	Medium	Mild	Severe	Medium	Mild	Medium to severe
KQ228$^{(f)}$ PHYTO RATING RANGE	1.2 to 2.3	1.8 to 3.2	1.3	1.3 to 1.8	1.1 to 2.6	1.8 to 2.0	3.9 to 4.1	1.1 to 2.8	1.2 to 2.0	1.7 to 3.8

TABLE 3 Herbicide symptoms severity on the cane foliage for all testing varieties. (Legend: refer to table 1 on the left)

VARIETY	2,4-D	AMETRYN	AMETRYN+ TRIFLOXY-SULFURON	AMI-CARBAZONE	ASULAM	DIURON	FLUMIOXAZIN	METOLACHLOR	METRIBUZIN	MSMA
KQ228$^{(f)}$	**1.6**	**1.9**	**1.7**	**1.3**	**1.9**	**1.3**	**3.6**	**2.1**	**1.5**	**3.0**
Q208$^{(f)}$	1.5		1.6		1.8			2.0	1.4	2.9
Q240$^{(f)}$	1.6		1.7		1.8			2.1	1.5	2.9
Q250$^{(f)}$	1.6		1.8		1.9			2.2	1.6	3.0
Q252$^{(f)}$	1.6		1.7		1.8			2.1	1.5	3.0
Q253$^{(f)}$	1.7		1.8		1.9			2.2	1.6	3.0
SRA6$^{(f)}$	1.8	2.1		1.5	2.1	1.5		2.3	1.7	3.2
SRA7$^{(f)}$	1.6	1.9			1.9			2.2	1.6	3.0
SRA9$^{(f)}$	1.4	1.7		1.1	1.7		3.4	2.0	1.3	2.8
SRA10$^{(f)}$	1.5	1.8		1.2	1.7		3.5	2.0	1.4	2.8
SRA15$^{(f)}$	1.3	1.7		1.0	1.6		3.4	1.9	1.3	2.7
SRA16$^{(f)}$	1.7	2.0		1.4	2.0		3.7	2.2	1.6	3.1
SRA26$^{(f)}$	1.6	2.0		1.4	1.9	1.4		2.2	1.6	3.0
SRA28$^{(f)}$	1.7	2.0		1.4	1.9	1.4		2.2	1.6	3.0
SRA32$^{(f)}$	1.5	1.8		1.2	1.8	1.3		2.1	1.5	2.9
SRA37$^{(f)}$	2.0	2.3		1.7	2.2	1.7		2.5	1.9	3.3

The predicted EWRC scores and associated colour code are presented for each tested combination of herbicides by variety. The predicted EWRC scores derive from the average EWRC scores for each trial series, using KQ228$^{(f)}$ as reference variety, in an attempt to harmonise trial variations as symptom severity can vary between trials: weather conditions at application, and/or during the trial can alter cane growth and herbicide response. Predicted EWRC scores derive from average EWRC scores across the 10-week assessment period, which means higher symptoms intensity and scores could have been observed during the assessment period.

TABLE 4 Percentage sugarcane dry biomass reduction in the pot trial (10 weeks after spraying) compared to the untreated control. (Legend: bottom of page)

VARIETY	2,4-D	AMETRYN	AMETRYN+ TRIFLOXY-SULFURON	AMI-CARBAZONE	ASULAM	DIURON	FLUMIOXAZIN	METOLACHLOR	METRIBUZIN	MSMA
KQ228$^{(f)}$	**-19%**	**-46%**	**-55%**	**-15%**	**-16%**	**-14%**	**-36%**	no reduction	**-25%**	**-21%**
Q208$^{(f)}$	-29%		-33%		-12%			-51%	-21%	-50%
Q240$^{(f)}$	-36%		-28%		-41%			-7%	-21%	-37%
Q250$^{(f)}$	-49%		-53%		-66%			-56%	-20%	-63%
Q252$^{(f)}$	-38%		-11%		no reduction			-6%	-20%	-26%
Q253$^{(f)}$	-29%		-49%		-52%			-18%	-51%	-54%
SRA6$^{(f)}$	-22%	-46%		-58%	-5%	-66%		no reduction	-30%	-42%
SRA7$^{(f)}$	no reduction	-7%		no reduction	no reduction			no reduction	no reduction	-9%
SRA9$^{(f)}$	-13%	-22%		-29%	-37%		-43%	no reduction	-2%	-28%
SRA10$^{(f)}$	no reduction	-3%		-6%	no reduction		-29%	-4%	no reduction	-3%
SRA15$^{(f)}$	no reduction	-73%		-67%	-3%		-74%	-53%	-25%	-60%
SRA16$^{(f)}$	-12%	-54%		-36%	-36%		-40%	-31%	no reduction	-46%
SRA26$^{(f)}$	-35%	-44%		-26%	-27%	-21%		-12%	-34%	-47%
SRA28$^{(f)}$	-69%	-90%		-66%	-71%	-29%		-104%	-75%	-103%
SRA32$^{(f)}$	-84%	-41%		-36%	-134%	-61%		-32%	-46%	-53%
SRA37$^{(f)}$	-31%	-31%		-7%	-33%	-25%		no reduction	-35%	-40%

The predicted biomass reduction in the pot trials is represented in a green-to-red scale. The predicted biomass reduction is derived from the biomass reduction for each trial series, using KQ228$^{(f)}$ as reference variety, in an attempt to harmonise trial variations: weather conditions at application, and/or during the trial can alter cane growth and herbicide response. Predicted biomass reduction compared to the untreated is indicated in the table. The derived predicted biomass reduction values differ from the observed biomass reduction values in each trial series and should only be used as indicators to compare the severity of the treatments on cane growth across all varieties (in some cases the predicted values exceed 100% biomass reduction. It does not mean the death of the treated plant). Severe biomass reductions recorded 10 weeks after spraying are typical, as the plant metabolism has just been diverted into detoxifying the applied herbicide to the detriment of its growth. Usually yield loss by harvest time is less severe as the plant has had more time to recover from its growth delay.

TABLE 5 Percentage yield reduction in the field trial (at harvest) compared to the untreated control. (Legend: bottom of page)

The predicted yield reduction in the field trials is represented in a green-to-red scale. The predicted yield reduction is derived from the yield reduction for each field trial series. The percentage value compared to the untreated is indicated in the table (a negative value indicates a yield reduction compared to the untreated).

VARIETY	2,4-D	AMETRYN	AMETRYN+ TRIFLOXY-SULFURON	AMI-CARBAZONE	ASULAM	METO-LACHLOR	METRI-BUZIN	MSMA
KQ228$^{(f)}$	**0%**	**-11%**		**-7%**	**-1%**		no reduction	**-1%**
Q250$^{(f)}$			-1%			no reduction	-1%	-5%
SRA6$^{(f)}$					-6%		-1%	-6%
SRA7$^{(f)}$					no reduction		no reduction	no reduction
SRA9$^{(f)}$					-3%			
SRA15$^{(f)}$		-9%						
SRA16$^{(f)}$	-4%	-2%			-5%			

Legend

% VALUE = BIOMASS/YIELD REDUCTION (-%) OR GAIN (+%) IN THE POT/FIELD TRIAL COMPARED TO THE UNTREATED

COMBINATION OF HERBICIDE BY VARIETY NOT TESTED

SLIGHT BIOMASS/YIELD REDUCTION IN POT/ FIELD TRIAL COMPARED TO UNTREATED

SEVERE BIOMASS/YIELD REDUCTION IN POT/ FIELD TRIAL COMPARED TO UNTREATED

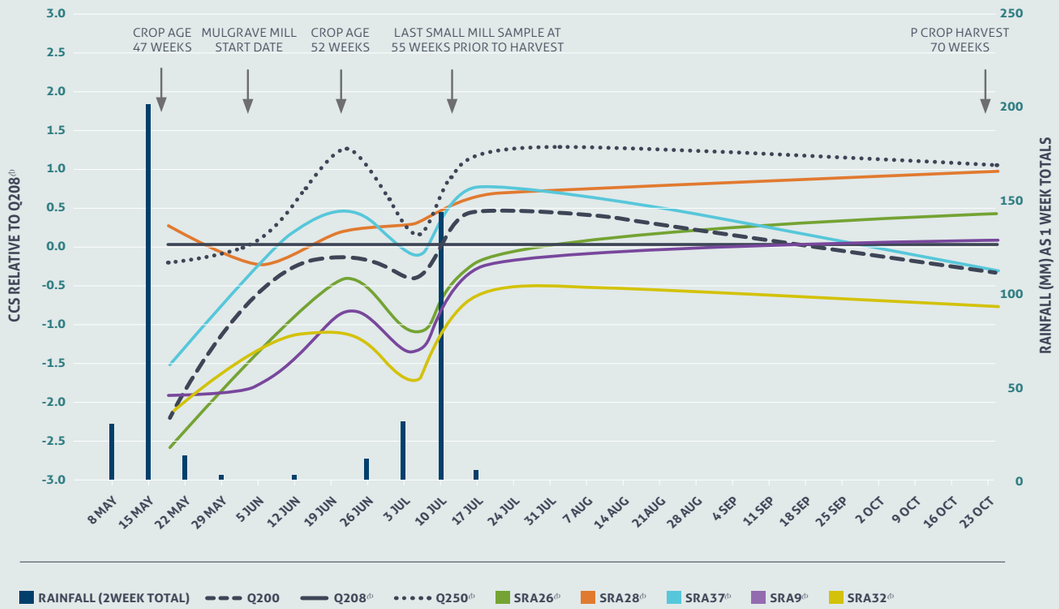
NO BIOMASS/YIELD REDUCTION IN POT/ FIELD TRIAL COMPARED TO UNTREATED

MODERATE BIOMASS/YIELD REDUCTION IN POT/FIELD TRIAL COMPARED TO UNTREATED

MATURITY PROFILES

The commercial cane sugar (CCS) values for new varieties from Final Assessment Trials (FATs) are typically harvested in August to October at 12 months of age. They are a good guide to CCS potential compared to established varieties but provide limited insight into early season sugar or response to rainfall. To provide initial information on target harvest windows for new varieties, cane was sampled from a Mulgrave trial at two-week intervals from mid-May to mid-July. CCS values from the final harvest results at 70 weeks (a later crop age than originally targeted) were added to generate maturity curves over the 2022 season. Sampling will start in May 2023 to collect further maturity data of commercial sugarcane varieties.

FIGURE 1 CCS relative to Q208ф - small mill samples from Mulgrave P Crop FAT



In Figure 1 Q208ф was used as the benchmark variety, similar to in 'the concept of' mill average, where CCS of the other varieties is expressed relative to Q208ф.

Q200 exhibited a later maturing profile with initial CCS values below Q208ф before becoming progressively more competitive as the season progressed. Q250ф showed early maturing behaviour with CCS values above Q200 throughout the season.

While Q250ф displayed a sharp decline in CCS following the rainfall events in late June/early July (rainfall totals shown on right axis), its CCS remained above that of Q200 and Q208ф. This response is indicative of varieties rapidly switching to vegetative growth (and hence diluting the CCS) before reverting back to maturation and sugar accumulation as conditions dry over the course of the season. The new varieties SRA26ф, SRA28ф, SRA37ф, SRA9ф and SRA32ф were included to continue understanding their maturity profiles. SRA26ф has a maturity profile most like Q200, although unlike the 2020 season SRA26ф had lower CCS than Q200 through the early to mid-season but ultimately achieving better CCS than both Q200 and Q208ф at harvest. This suggests harvesting SRA26ф in the first round might be avoided and similar harvest times to Q200 should be targeted.

In previous seasons SRA28ф has showed the most pronounced CCS changes in response to rainfall, though this season shows little response to the late June/early July event. SRA28ф's CCS curve follows a similar trend to Q208ф eventually becoming competitive with Q250ф at harvest.

SRA37ф's maturity profile resembles Q200 closely throughout the season indicating that harvesting during the mid-late season should be targeted. This is consistent with observations made during the 2020 season.

SRA9ф's CCS values remain below Q208ф throughout the early to mid-season, but become competitive with both Q200 and Q208ф at harvest. SRA32ф's CCS values remain lower than Q200 and Q208ф throughout the season. The maturity profile of both SRA9ф and SRA32ф suggest that they are best harvested late season and that these two varieties may respond well to crop ripeners (if applied at the correct time and crop moisture after maturity testing).

These results are from one location in one season and further data is being collected in 2023 to characterise the maturity profiles of new varieties.

VARIETY ADOPTION IN EACH MILL AREA

Use this information to assess yield performance of varieties over a number of years. Caution should be taken when comparing commercial performance of newer varieties (from plant and young ratoons) to older/established varieties (which include older ratoons).

Mossman (% TONNES 2022)

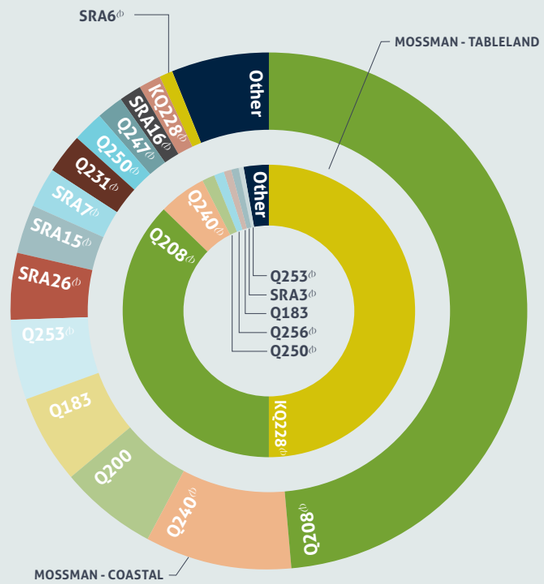
MOSSMAN COASTAL*

Varietal composition for Mossman Coastal remains similar to the 2021 harvest year, with only minimal changes of up to approximately 2% in production for most varieties. Q208ф remains the dominant variety at just over 49% of overall production driving mill average for both TCH and TSH. The biggest decrease in tonnes delivered was seen in Q240ф by approximately 2.4%, followed by Q183, Q231ф, Q250ф and SRA7ф in preference of Q253ф, SRA26ф, SRA15ф and SRA16ф. The most significant increase in production was SRA26ф, increasing by approximately 4% to almost 4.5% of overall production. Given its strong plant crop performance for both TCH and TSH in 2022, Mossman Coastal growers are likely to increase its rate of adoption. Q253ф also continued to perform strongly in 2022 as it did in 2021. The slow decline in Q183, Q231ф and Q250ф production is likely to continue in 2023 with their harvest performances for TCH and TSH over the past three years below mill average. This was in favour of newer varieties SRA6ф, SRA15ф, SRA16ф and SRA26ф whose initial productivity data are all equal to or greater than mill average for TCH and TSH. These are mostly plant, or plant and young ratoon samples of smaller size ranging from approximately 3,800 tonnes for SRA6ф up to 19,000 tonnes of SRA26ф. The only other recently released variety new in commercial production is SRA28ф with just over 900 tonnes milled with the rest being used for plants and is likely to join the mill statistics in 2023.

MOSSMAN TABLELAND*

KQ228ф has continued to increase in overall production and maintains its position as the dominant variety at 50% of overall production, up from 46% in 2021. This is largely at the expense of Q208ф, Q250ф, Q256ф and Q183. Similar to 2021, KQ228ф and Q208ф still have a combined market share of over 85% of overall production with their performance driving mill average for TCH and TSH. KQ228ф largely drives mill average during the first half of the harvest season, with Q208ф having a larger impact later in the season. Again, Q240ф has shown strong TCH results in Mossman Tableland production since the 2019 harvest year and has excellent smut resistance. Despite this, Q240ф has only increased by 1% from 2021 remaining in 3rd position for overall production. The only other varieties to exceed mill average for both TCH and TSH was Q256ф and SRA3ф but both can be affected by smut in commercial ratoon crops on the Tableland.

* Data for variety breakdown between Coastal and Tableland was supplied by Mossman Mill.



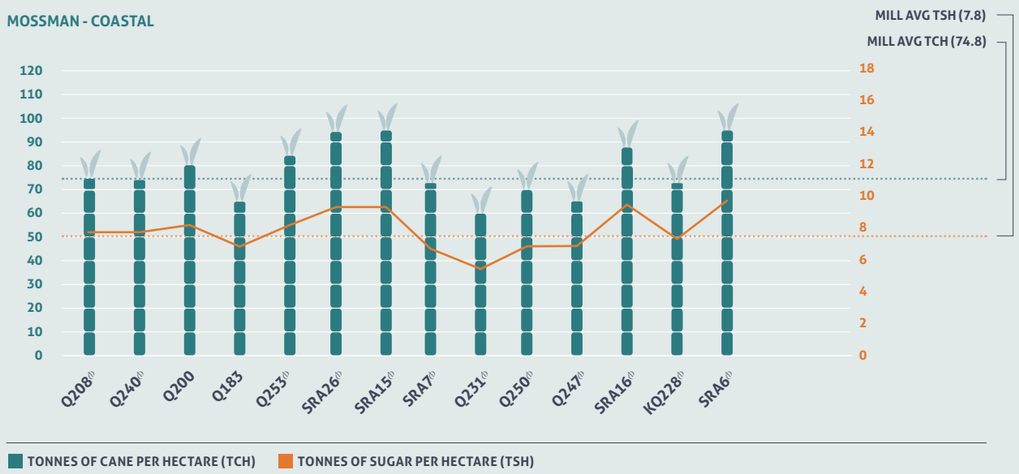
MOSSMAN - COASTAL

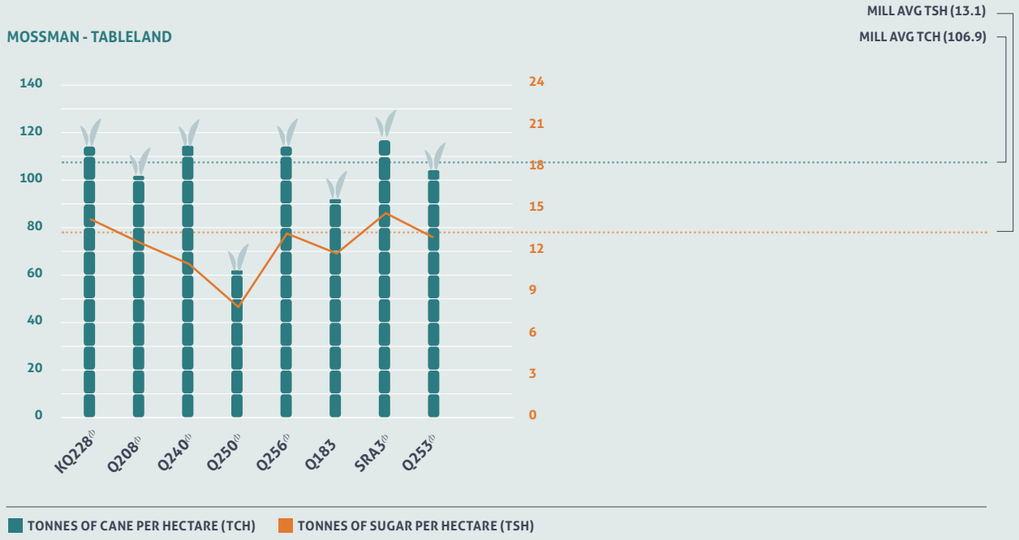
- Q208ф - 49.1
- Q240ф - 9.3
- Q200 - 5.9
- Q183 - 5.8
- Q253ф - 4.8
- SRA26ф - 4.4
- SRA15ф - 2.9
- SRA7ф - 2.7
- Q231ф - 2.5
- Q250ф - 1.9
- Q247ф - 1.6
- SRA16ф - 1.5
- KQ228ф - 1.3
- SRA6ф - 0.9
- Other - 5.4

MOSSMAN - TABLELAND

- KQ228ф - 50.1
- Q208ф - 37.2
- Q240ф - 5.2
- Q250ф - 1.4
- Q256ф - 1.1
- Q183 - 1.0
- SRA3ф - 0.7
- Q253ф - 0.6
- Other - 2.7

VARIETY ADOPTION IN EACH MILL AREA (CONT)



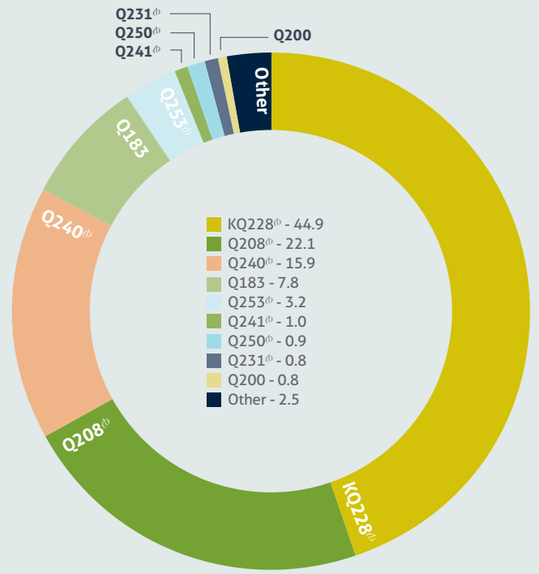


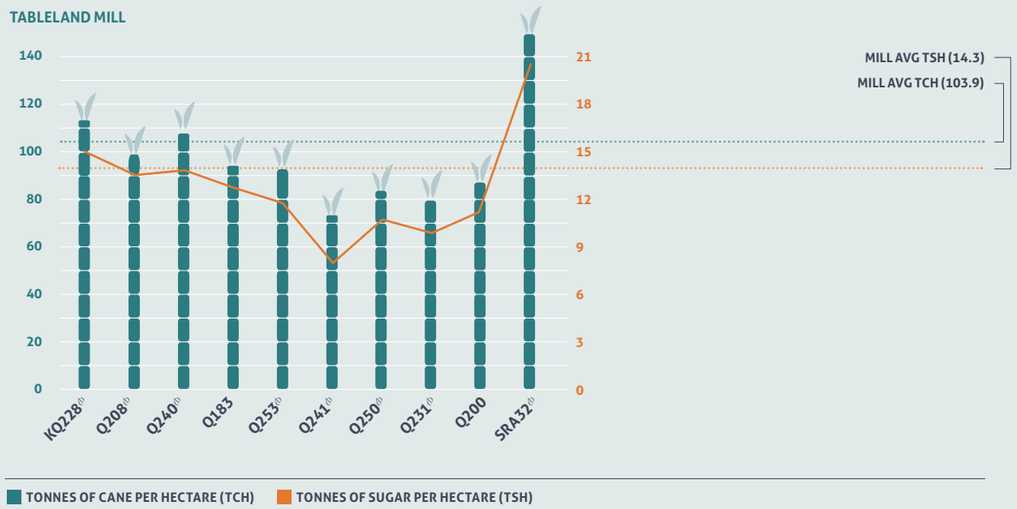
Tableland

The Tableland mill processed 559,850 tonnes of cane from 5,330 hectares in 2022. Compared to the 2021 harvest year, the average yield of 104 t/ha is a slight increase while the CCS of 13.7 is a slight decrease. This resulted in an increase in TSH to 14.3 for the 2022 harvest year.

Production of KQ228Φ increased by 4% and remains the dominant variety with 45% of tonnes delivered. Whereas Q208Φ decreased in an equal amount to be 22% of production. Market share of KQ228Φ and Q208Φ is still a combined 67% of overall production, with both varieties driving mill average. KQ228Φ was 10 t/ha and 1.2 TSH above the mill average, while Q208Φ was slightly below. Q240Φ's continued adoption has seen it increase by almost 3% to 16% of production, while Q183 has deceased in popularity contracting by 2%. Q240Φ was the only other established variety that yielded at mill average for both cane yield and TSH. Further adoption of Q240Φ has contributed to an increase in overall productivity for the Tableland region. Q253Φ's 2021 and 2022 performance was disappointing relative to the three major varieties of KQ228Φ, Q208Φ and Q240Φ.

SRA32Φ's debut on the Tableland mill statistics with its well-above mill average TCH and TSH needs to be considered with caution as only 3,100 tonnes of cane were delivered in 2022, all mostly plant crops of small sample sizes.





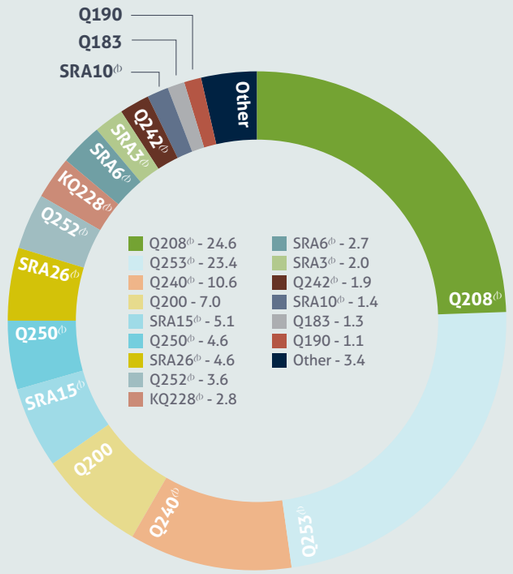
VARIETY ADOPTION IN EACH MILL AREA (CONT)

Mulgrave

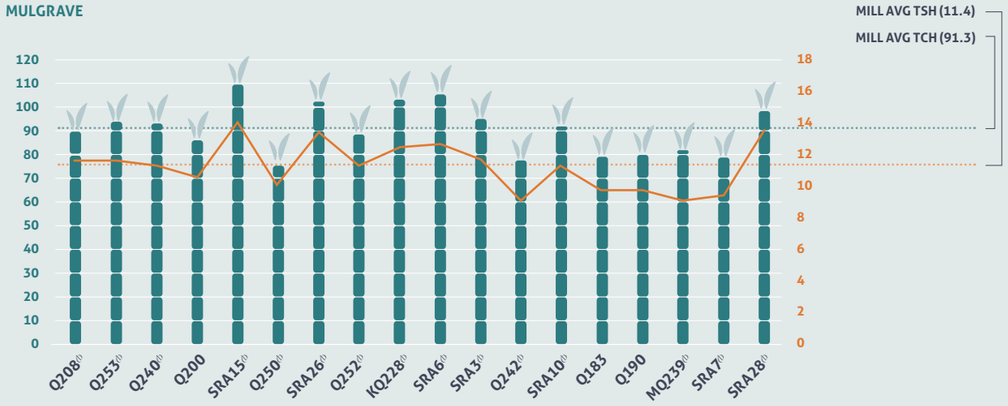
The Mulgrave mill reported a total of 1,016,543 tonnes of cane from 11,133 hectares in 2022 with an average yield of 91 t/ha and CCS of 12.3. The mill average yield for 2022 was 7 t/ha and 0.7 units above the 2021 averages. This resulted in an overall increase in average TSH from 9.8 in 2021 to 11.2 in 2022.

Q208Φ has continued to decrease in production by almost 4% and is no longer the dominant variety, with Q253Φ almost equal to Q208Φ for overall production, and both varieties combined at 48% of overall production for Mulgrave. Further reductions in varieties including Q240Φ, Q250Φ, Q242Φ and Q183 is a result of not only the continued popularity of Q253Φ, but also the continued adoption of newer varieties SRA15Φ and SRA26Φ.

Q208Φ, Q253Φ and Q240Φ all performed at or near mill average, whereas other established varieties such as Q200 and Q250Φ performed well below mill average for both tonnes cane and TSH. This is not surprising given the continued contraction of these two varieties means the average crop age of Q200 and Q250Φ increases each year. KQ228Φ is the only established variety which outperformed the mill average for both t/ha and TSH. Other recently released varieties, SRA6Φ, SRA15Φ and SRA26Φ, also performed well above the mill average for TCH and TSH; however, SRA26Φ is mostly plant crop with only a relatively small sample of young ratoon crops. Likewise, SRA28Φ's debut on the Mulgrave mill statistics with its well-above mill average TCH and TSH needs to be considered with caution as only 2,700 tonnes of cane were delivered in 2022, all mostly plant crops of small sample sizes.



MULGRAVE



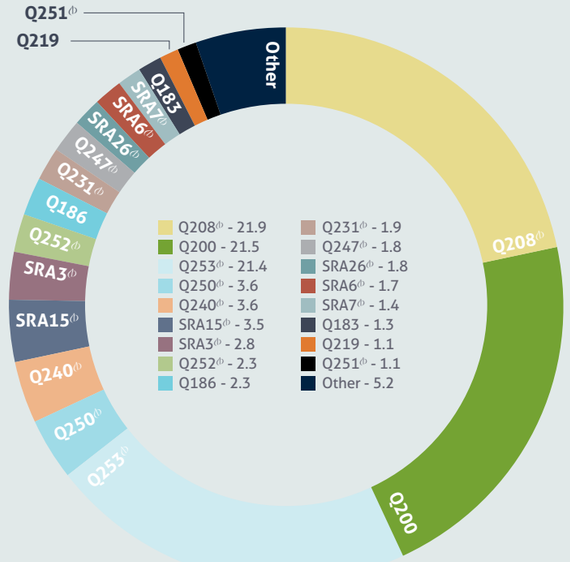
TONNES OF CANE PER HECTARE (TCH) TONNES OF SUGAR PER HECTARE (TSH)

South Johnstone

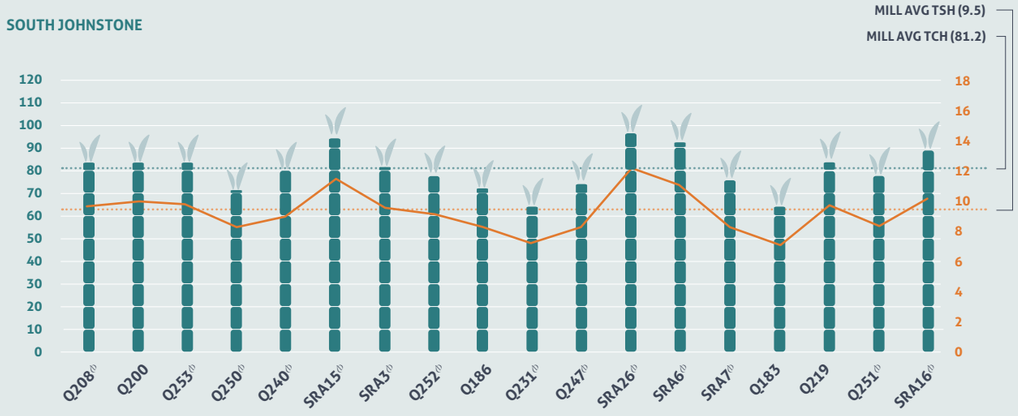
In 2022 the South Johnstone region harvested 1,708,282 tonnes from 21,040 hectares. The TCH mill average of 81 t/ha was 10 t/h higher than 2021 and similar to 2020. CCS was similar to the 2021 season at 11.6 CCS. This resulted in an overall increase in average TSH from 8.1 in 2021 to 9.5 in 2022.

Varietal composition for South Johnstone in 2022 did not vary much from 2020. Q200, Q208Φ and Q253Φ remain dominant varieties, comprising a combined 65% of production. An increase in production of Q253Φ and SRA15Φ has resulted in an equivalent decrease in Q250Φ, Q231Φ and Q186. This is not surprising given Q253Φ consistent performance for TCH and TSH over consecutive years relative to mill average and especially when compared to the three declining varieties. SRA15Φ's strong performance in 2021 relative to mill average has resulted in a doubling of its area grown in 2022.

Of the major varieties, Q200, Q208Φ, Q240Φ and Q253Φ returned production figures equal to or near mill average, with only the newly released varieties, SRA6Φ, SRA15Φ, SRA16Φ and SRA26Φ, performing well above mill average for both cane yield and TSH. However, these are mostly plant and young ratoon cane of small sample sizes, and in the case of SRA26Φ's debut of over 30,000 tonnes delivered all mostly plant cane.



SOUTH JOHNSTONE



TONNES OF CANE PER HECTARE (TCH) TONNES OF SUGAR PER HECTARE (TSH)

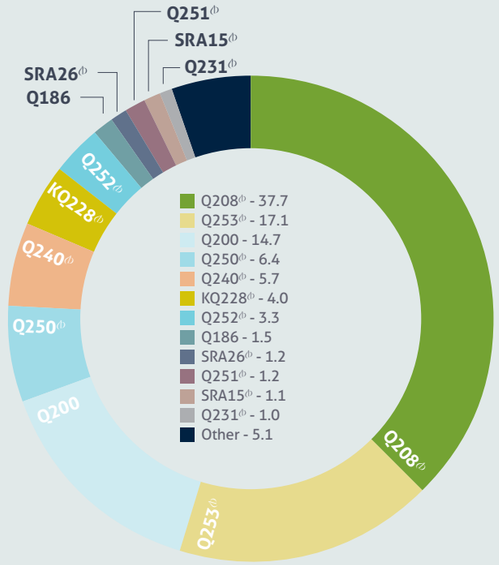
VARIETY ADOPTION IN EACH MILL AREA (CONT)

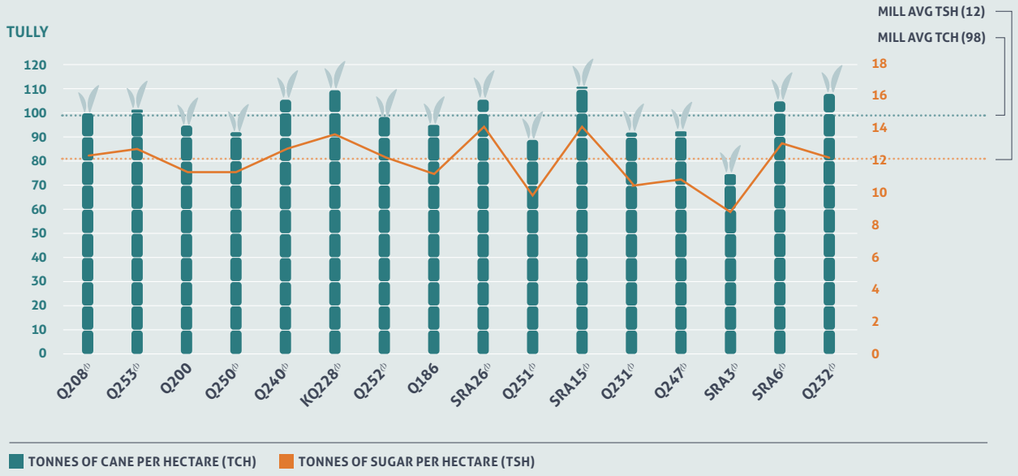
Tully

29,376 hectares were harvested in the Tully region in 2022 with a yield of 2,879,289 tonnes. The TCH result of 98 t/ha was an increase of just over 10 t/ha than the 2021 production figures with a CCS very similar at 12.3. This yield increase resulted in an increase in average TSH from 10.8 in 2021 to 12.0 in 2022.

Varietal composition for Tully has remained relatively stable over the past four years, with only minimal changes of approximately 1% in production for most varieties. The biggest decreases were seen in Q200 and Q250Φ by 1.6% and 2% respectively, while Q253Φ had the most notable increase in overall production of almost 4.5% moving it to 2nd position in overall production above Q200.

Of the established varieties, only KQ228Φ and Q240Φ outperformed the mill average for both TCH and TSH, and Q232Φ outperforming the mill average for TCH only, and Q253Φ for TSH. When comparing the new varieties SRA6Φ, SRA15Φ and SRA26Φ to mill average, all performed at or above average for TCH and TSH. These are smaller sample sizes and don't include older ratoons and collectively only make up 3% of Tully's overall cane production.





RECENT CHANGES TO THE SBZ1 PLANTING AND RATOONING LIST

Each year the Northern Regional Variety Committee (RVC) review the Northern variety list for planting and ratooning. This supports Northern growers meeting one aspect of General Biosecurity Obligation, in addition to regional disease management of major diseases for Sugarcane Biosecurity Zone 1 (SBZ1), most importantly leaf scald. No changes were made to the SBZ1 Planting and Ratooning list by the Northern RVC in 2023. Varieties with a recent changed status are shown in the table below.

Varieties removed from the planting list by the Northern RVC recently were identified to either increase the disease risk for the Northern region and/or their disease susceptibility reduces productivity below economic thresholds. These varieties are no longer available for planting and should be ratooned only. Furthermore, varieties were removed from the list completely due to no recent planting or harvesting activity in any Northern mill areas. More productive and resistant varieties are available for planting from each of the Northern productivity service organisations.

VARIETY	PLANTING AND *RATOONING	YEAR OF CHANGE	REASON FOR CHANGE
SRA37Φ	YES	2022	Approved by Northern RVC (2022).
SRA32Φ	YES	2022	Approved by Northern RVC (2022).
SRA28Φ	YES	2020	Approved by Northern RVC (2020).
SRA27	YES	2019	Approved by Northern RVC (2019) (Tableland production area only).
SRA26Φ	YES	2019	Approved by Northern RVC (2019).
SRA25Φ	YES	2019	Approved by Northern RVC (2019).
SRA16Φ	YES	2018	Approved by Northern RVC (2018).
SRA15Φ	YES	2018	Approved by Northern RVC (2018).
SRA14Φ	YES	2022	Approved by Northern RVC (2022) for specific situations – Pachymetra resistant option for El Arish growers only, however, most of the recently released Northern varieties are all Pachymetra resistant and are more productive choices.
SRA9Φ	YES	2022	Approved by Northern RVC (2022).
SRA5Φ	YES	2022	Approved by Northern RVC (2022) for specific situations – LOW CCS variety for use with crop ripeners only under direction from the Tully Variety Management Group.
SRA1Φ	*YES	2022	Unacceptable agronomic features resulting in poor harvestability and millability resulting in a reduction in productivity and profitability; more productive varieties are available.
Q246Φ	*YES	2019	Central variety with red rot susceptibility and more productive varieties available.
Q229Φ	*YES	2018	Cannot be grown due to **leaf scald susceptibility.**
Q226Φ	*YES	2022	No recent commercial plantings recorded across the Northern region and tonnes delivered reducing each year due to more productive varieties now available.
Q220	*YES	2019	Reduction in productivity and area grown due to smut susceptibility.
Q218	*YES	2019	Reduction in productivity and area grown due to smut and red rot susceptibility.
Q217	*YES	2022	No recent commercial plantings recorded across the Northern region and tonnes delivered reducing each year due to more productive varieties now available.

***RATOONING ONLY**

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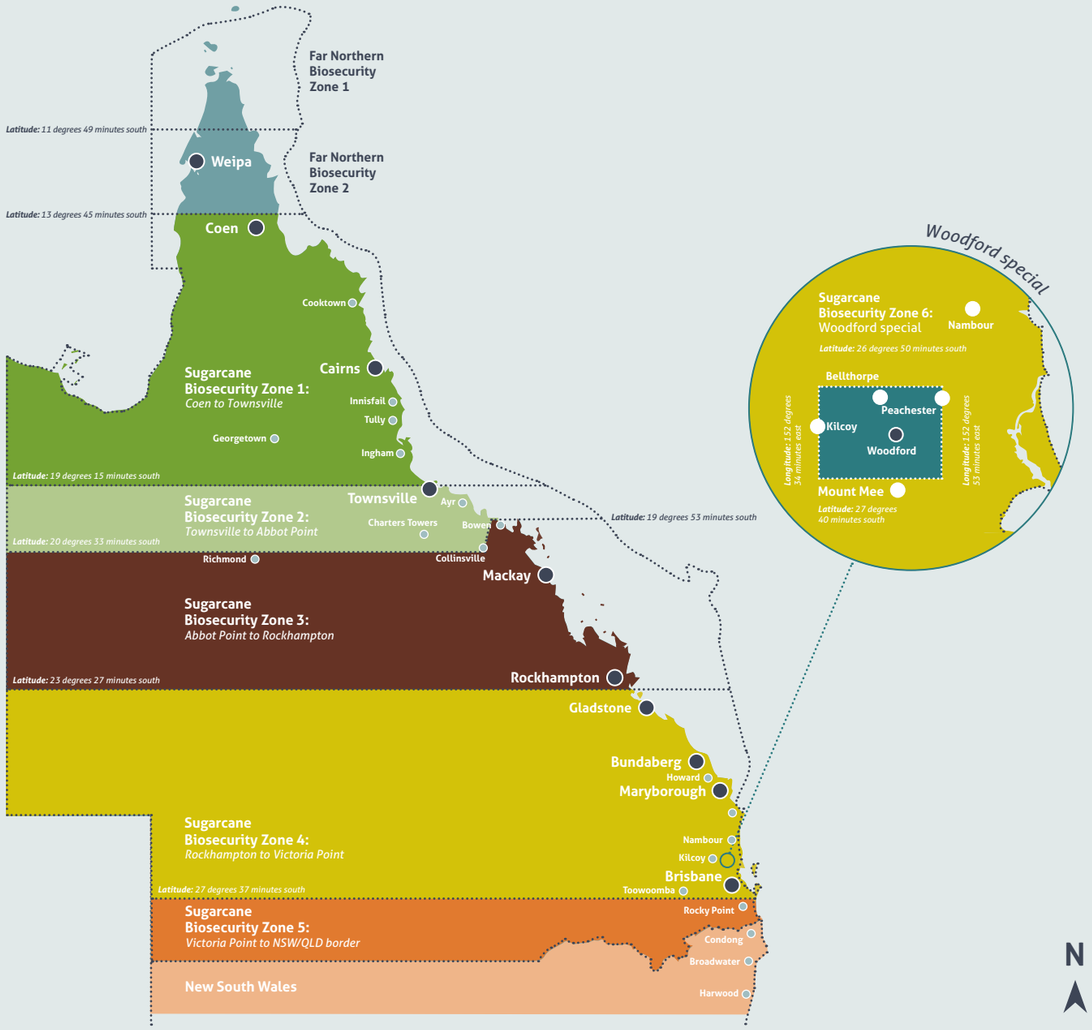
RECENT CHANGES TO THE SBZ1 PLANTING AND RATOONING LIST (CONT)

VARIETY	PLANTING AND RATOONING	YEAR OF CHANGE	REASON FOR CHANGE
Q215	*YES	2019	No recent commercial plantings recorded across the Northern region and tonnes delivered reducing each year due to more productive varieties now available.
Q204	*YES	2019	Reduction in productivity and area grown due to smut susceptibility.
Q201	REMOVED COMPLETELY	2022	No recent commercial plantings recorded across the Northern region, and no cane delivered to Northern mills over two consecutive years due to continued reduction in productivity, profitability and smut susceptibility.
Q199	*YES	2018	Cannot be grown due to **leaf scald susceptibility.**
Q198	*YES	2019	Reduction in productivity and area grown due to smut susceptibility.
Q177	*YES	2019	Reduction in productivity and area grown due to Pachymetra root rot susceptibility.
Q166	*YES	2019	Reduction in productivity and area grown due to smut susceptibility.
Q160	*YES	2019	No recent commercial plantings recorded across the Northern region and tonnes delivered reducing each year due to more productive varieties now available.
Q152	*YES	2019	Reduction in productivity and area grown due to smut susceptibility.
Q151	REMOVED COMPLETELY	2022	No recent commercial plantings recorded across the Northern region, and no cane delivered to Northern mills over two consecutive years due to continued reduction in productivity, profitability and smut susceptibility.
Q135	*YES	2022	No recent commercial plantings recorded across the Northern region and tonnes delivered reducing each year due to more productive varieties now available.
Q120	*YES	2019	Reduction in productivity and area grown due to smut and red rot susceptibility.
Q117	*YES	2018	Reduction in productivity and area grown due to smut susceptibility.
Q114	*YES	2019	No recent commercial plantings recorded across the Northern region and tonnes delivered reducing each year due to more productive varieties now available.
Q113	REMOVED COMPLETELY	2019	Reduction in productivity and area grown due to smut and chlorotic streak susceptibility.
Q96	REMOVED COMPLETELY	2022	No recent commercial plantings recorded across the Northern region and tonnes delivered reducing each year due to more productive varieties now available.

***RATOONING ONLY**

SUGARCANE BIOSECURITY ZONE MAP



- All appliances (harvesters and other sugarcane machinery) moving between sugarcane biosecurity zones must:
  - > be free of cane trash and soil
  - > be inspected by an authorised inspection person who will issue a Plant Health Assurance Certificate (PHAC)
  - > be accompanied during transportation by the PHAC.
- Machinery moving from NSW to Qld requires a Plant Health Certificate issued by NSW Department of Primary Industries.
- Machinery inspections can be arranged by contacting the local Productivity Service organisation.
- To move sugarcane plants (stalks, leaves, potted plants, etc) between biosecurity zones contact Biosecurity Queensland (13 25 23).

PROPAGATING NEW VARIETIES

Contact your local productivity services organisation for regional advice on varieties (see back page for details). They can supply approved planting material of recommended varieties and place orders for tissue culture plantlets.

Billet planting

PLANT MATERIAL FROM AN APPROVED SEED SOURCE

Approved seed provides cane growers with the highest quality planting materials in terms of disease status and being 'true-to-type'. Approved seed (stalks, billets, setts or tissue culture plantlets used for planting) is a key control measure for systemic diseases of sugarcane, including chlorotic streak, Fiji leaf gall, leaf scald, mosaic, ratoon stunting disease (RSD) and smut. Provision of approved seed in each mill area in the Australian sugar industry is coordinated by SRA, in cooperation with the local productivity services group. SRA provides DNA fingerprinted new varieties which the local productivity services group then maintains and distributes the approved seed to growers.

GROW SUGARCANE SPECIFICALLY FOR PLANTING MATERIAL

The block selected for growing plant material should be weed-free and sugarcane volunteer-free. When selecting cane for planting material the cane should be less than one year old, erect and free from damage. Plan for two or more eyes per sett when harvesting for billets or stick planting. For non-irrigated regions plants should be well watered, have adequate nutrition immediately prior to harvest for billet planting. For irrigated regions you may need to reduce fertiliser rates, withhold irrigation or plant late in the season. The cane should also have originated from an approved seed plot and therefore be no more than three years away from long hot water treatment.

The best "whole farm" disease risk minimisation and productivity strategies can be achieved through consistent access to approved seed. It is highly recommended that cane considered for use as planting material be RSD tested well in advanced of harvest so an informed choice can be made prior to planting.

SET UP THE HARVESTER FOR CUTTING HIGH QUALITY SOUND BILLETS

Rubber coating rollers and optimising the roller speeds to chopper speed will produce good quality billets with minimal split or crushed ends and damaged eyes. Reduce the speed of harvesting and maintain sharp basecutter and chopper blades for clean cutting. Disinfect the machinery used to cut and plant new varieties to limit the spread of disease and weeds.

Tissue culture

CALCULATE HOW MUCH TISSUE CULTURE TO ORDER

We've made it easier with our online tissue culture calculator. It demonstrates the speed at which large quantities of planting material can be produced from a set number of plantlets or for a set cost. Below is a look-up table including common results. The calculator is available on SRA's website. **Visit sugarresearch.com.au/calculator or scan the QR code.**

TRY TISSUE CULTURE AS AN APPROVED SEED SOURCE

Tissue culture is an excellent source of approved seed for all varieties and can help reduce the spread of serious diseases such as RSD, smut and Fiji leaf gall. Tissue-cultured plantings are more uniform and produce more sticks than conventional plantings so larger quantities of planting material are achieved the following year. This means earlier commercial-scale production of more productive new varieties can be achieved when using tissue culture.

STAGE	ORDER DEADLINE FOR SPRING PLANTING	ORDER DEADLINE FOR AUTUMN PLANTING
Grower finalises order. Productivity services group places order with SRA.	15 November	1 July
Productivity services group receives established plantlets from nursery and distributes to growers.	Delivery on agreed date between grower, productivity services group and nursery. Available in August.	Delivery on agreed date between grower, productivity services group and nursery. Available in March .

ESTIMATED COST AND TIME TO SCALE UP NEW VARIETY PRODUCTION USING TISSUE CULTURE

Yr 1	No. plantlets ordered	100	250	500	1000
	Approximate cost	$150	$375	$750	$1500
	Metre row planted @ 0.8m	80	200	400	800
Yr 2	Metre row available for planting	2400	6000	12000	24000
	Ha avail for planting @ 1.8m	0.4	1.1	2.2	4.3

For more information on *tissue culture* contact:
SRA Tissue Culture Manager **Clair Bolton** **E** cbolton@sugarresearch.com.au **T** 07 3331 3374

PLANTING AND MANAGING TISSUE-CULTURED PLANTLETS IN THE FIELD

Planting

- Prepare soil to a fine tilth to ensure good soil/root contact.
- A seedling planter can be used if one is available, although hand planting small numbers is not a huge job. Plant them deep at the bottom of a drill to prevent stool tipping.
- Fill in after early growth.
- Plant the plantlets 50cm to 1m apart. A good distance is 80cm, which will allow tillering to produce a high number of sticks.

Irrigating

- Provision of water is the most critical factor for the successful establishment of tissue culture plantlets.
- Irrigate plantlets immediately after planting and monitor them to ensure they don't dry out over the first three weeks to get the roots well established.
- If you do not have access to flood or sprinkler irrigation a simple irrigation system can be set up using cheap drip tape and an in-line filter hooked up to your garden tap or water tanker.

Weeds

Weed control is important for good establishment and growth.

- Ideally pre-irrigate the soil to germinate weeds, then apply a knock-down herbicide or cultivate just prior to planting to reduce the weed pressure on young plantlets.
- Allow at least one week after planting before applying pre-emergent herbicides, longer if planted into cold, wet soils, as the root system needs time to establish:
  - > Atradex® at 2.5kg/ha plus Dual Gold® at 1.5L/ha has been successfully applied over the top, for grass and broadleaf weed control.
  - > Do not use diuron as young plantlets are sensitive to this product.
- Sempra® at 100g/ha plus Activator at 200mL/100L for nutgrass. Both applications were sprayed over the top for nutgrass control.
- Do not use paraquat unless you have no other option and only on established plantings.

Insects

- If you expect problems with insects then an application of an insecticide drench (such as chlorpyrifos or imidacloprid) at planting will protect the young plantlets.
- In canegrub-prone areas use your standard grub control treatment.

Fertiliser

- Fertiliser requirements of the tissue cultured plantlets are the same as for billet plantings.
- If possible, plant with a planter mix to maintain good early growth, and side-dress later to avoid fertiliser burn.

Local productivity organisations and agronomy groups:

Canegrowers Tableland
Drewe Burgess
M 0418 772 317

Innisfail Babinda Cane Productivity Services (IBCPS)
Matt Tinai
M 0492 439 141

Mossman Agricultural Services Ltd (MAS)
Simon Engdahl
M 0499 221 885

MSF Sugar Ltd
T Mulgrave Mill 07 4043 3307
M Tablelands Mill (Agronomy) 0448 341 415

Tully Cane Productivity Services Ltd
Peter Sutherland
M 0429 022 702

Tully Sugar Ltd
Greg Shannon
M 0400 586 968

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