Sugar Research Australia

VARIETY GUIDE 2021/2022

Southern Region

HOW TO USE THIS GUIDE

This guide is designed to help growers in the Southern 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 will help you understand:***

WANT TO KNOW WHAT IS HAPPENING IN THE OTHER REGIONS?

You can find all the regional variety guides on the SRA website ***sugarresearch.com.au***

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NEW AND RECENT VARIETIES AVAILABLE IN THE SOUTHERN REGION

Variety Recommendation and Release Process

Regional Variety Committees (RVCs) are responsible for variety release decisions. SRA supports these groups with secretariat support and the provision of technical information to assist the committee to make decisions on particular varieties. RVCs are composed of voting members and observers to ensure transparency in the decision making process. The Southern RVC (Sugarcane Biosecurity Zone 4 and 5) voting membership consists of one grower representative, one miller representative and one Prod Services representative from Bundaberg, Isis, Maryborough and Rocky Point mill areas, in total 12 voting members. Rocky Point also sits on the RVC in NSW as an observer. The Southern RVC requires a majority vote for progression of a variety through the breeding program and a majority vote for the release of a variety.

If you would like more information on new variety release and regional variety committees, please visit the SRA website: ***sugarresearch.com.au/growers-and-millers/varieties/regional-variety-committees/***

Presented below are the results of trials conducted in the Southern region. Yield (TCH) and CCS for each new variety are compared with the trial results of various standard varieties.

Variety: SRAW33 KQ07-4897		***Parentage:** Q208 x CP74-2005 / **Summary:** High tonnes cane, moderate CCS.*								
TRIAL HARVEST YEAR	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
		SRAW33	**Q208ⓓ**	**Q240ⓓ**	**KQ228ⓓ**	**SRAW33**	**Q208ⓓ**	**Q240ⓓ**	**KQ228ⓓ**	
(2016 series FATs): 2017	Plant	92	86	86	87	16.8	16.2	16.2	16.5	3
2018	1R	109	94	101	101	16.6	15.9	16.2	16.7	3
2019	2R	88	80	76	83	16.7	16.2	16.2	16.5	3
(2018 repeat FATs): 2019	Plant	79	85	70	76	15.4	15.0	15.3	13.5	3
2020	1R	101	104	91	89	16.3	15.5	16.1	16.0	3
Overall Performance		**94**	**90**	**85**	**87**	**16.3**	**15.8**	**16.0**	**16.2**	**15**
Available 2021										
Comments:		Good rEGV (11.08) and average fibre content (12.8%) over 15 crops. Variety fast-tracked from Accelerated status to Release; second ratoon results of the 2018 repeat FATs still to be collected. Resistant to Fiji leaf gall, leaf scald, mosaic and smut. Intermediate resistant to Pachymetra root rot. Tendancy to side-shoot.								

Variety: SRA29 QS08-9474		***Parentage:** Q170 x QC90-289 / **Summary:** High tonnes cane, average CCS.*								
TRIAL HARVEST YEAR	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
		SRA29	**Q208ⓓ**	**Q240ⓓ**	**KQ228ⓓ**	**SRA29**	**Q208ⓓ**	**Q240ⓓ**	**KQ228ⓓ**	
(2014 series FATs): 2015	Plant	105	95	83	99	17.1	17.1	16.5	16.9	4
2016	1R	116	118	115	116	16.4	16.4	16.2	16.8	4
2017	2R	106	106	109	110	16.3	16.6	16.3	16.7	4
2018	3R	106	105	121	104	16.3	16.3	16.5	16.8	3
(2016 repeat FATs): 2017	Plant	111	100	100	105	15.5	16.0	16.0	15.9	5
2018	1R	105	91	98	99	14.7	14.7	15.1	15.4	5
2019	2R	86	81	80	81	14.3	14.3	14.7	15.0	5
Overall Performance		**104**	**98**	**99**	**101**	**15.7**	**15.8**	**15.8**	**16.1**	**30**
Available 2021										
Comments:		Reliable germination, good disease resistance. Resistant to Fiji leaf gall, Pachymetra, leaf scald and mosaic. Intermediate resistant to smut.								

Variety: SRA20Ⓟ QS07-8815		Parentage: QN86-5279 x QS91-7008 / Summary: High tonnes cane, lower CCS.								
TRIAL HARVEST YEAR	CROP CLASS	YIELD (TCH)				CCS				# OF HARVESTS
		SRA20Ⓟ	Q208Ⓟ	Q240Ⓟ	KQ228Ⓟ	SRA20Ⓟ	Q208Ⓟ	Q240Ⓟ	KQ228Ⓟ	
(2013 series FATs) : 2014	Plant	80	68	68	68	13.4	14.2	14.5	14.2	4
2015	1R	96	86	89	87	15.8	17.0	17.1	17.1	4
2016	2R	102	91	100	95	16.0	17.2	17.0	17.3	4
2017	3R	93	95	93	93	14.1	15.3	14.9	15.1	2
(2015 repeat FATs): 2016	Plant	155	126	140	137	14.5	15.9	15.9	16.5	4
2017	1R	126	118	123	123	14.0	15.2	15.1	15.5	4
2018	2R	92	88	99	94	14.4	15.3	15.9	15.8	4
Overall Performance		**107**	**96**	**102**	**100**	**14.6**	**15.8**	**15.8**	**16.0**	**26**
Available 2020										
Comments:		Reliable germination (not as Fast as SRA19Ⓟ), good disease resistance. Resistant to smut and Pachymetra, intermediate resistant to Fiji leaf gall and leaf scald. Good fibre quality trends and average fibre content.								

Variety: SRA19Ⓟ QN02-1707		Parentage: QN86-640 x QN90-252 / Summary: High tonnes cane, lower CCS.								
TRIAL HARVEST YEAR	CROP CLASS	YIELD (TCH)				CCS				# OF HARVESTS
		SRA19Ⓟ	Q208Ⓟ	Q240Ⓟ	KQ228Ⓟ	SRA19Ⓟ	Q208Ⓟ	Q240Ⓟ	KQ228Ⓟ	
(2011 series FATs): 2012	Plant	117	91	109	102	15.0	15.7	15.7	15.8	4
2013	1R	120	101	116	105	16.3	17.1	17.2	17.0	4
2014	2R	116	108	121	111	15.4	16.2	16.1	16.1	4
2015	3R	116	115	125	117	16.6	18.0	17.5	17.7	3
2016	4R	122	115	136	118	17.5	18.7	18.0	18.4	1
(2013 repeat FATs): 2014	Plant	86	78	77	77	12.6	13.6	13.9	13.8	5
2015	1R	100	93	92	92	14.4	15.8	16.1	16.3	5
2016	2R	104	96	104	99	15.0	16.5	16.5	16.8	5
2017	3R	92	95	93	93	13.9	15.3	14.9	15.1	2
Overall Performance		**107**	**97**	**105**	**99**	**14.9**	**16.0**	**16.0**	**16.1**	**33**
Available 2020										
Comments:		Maintains productivity in ratoons. It has been tested till 4th ratoon. Resistant to Pachymetra, mosaic and leaf scald and intermediate resistant to smut, and Fiji leaf gall. Good fibre quality trends and good fibre content.								

SRAW33

SRA29

SRA20Ⓟ

SRA19Ⓟ

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 given the diseases that may be present on your farm.

Southern Disease Ratings											
VARIETY	MILL AREA RECOMMENDED	FIJI LEAF GALL	MOSAIC	LEAF SCALD	SMUT	CHLOROTIC STREAK	ORANGE RUST	BROWN RUST	RED ROT	YELLOW SPOT	PACHY-METRA
SRA33	B,I, M	R	R	R	R	U	R	U	R	U	I-R
SRA29	B,I, M	R	R	R	I	U	U	U	I	U	R
SRA20Φ	B,I, M	I	R	I	R	U	U	U	R	U	R
SRA19Φ	B,I, M	I	R	R	I	U	R	U	I-R	I	R
SRA11Φ	B,I, M, RP	R	R	R	R	U	R	U	I	U	R
SRA4Φ	B,I, M, RP	R	R	R	I	U	R	U	R	I-R	R
SRA2Φ	B,I, M, RP	R	I	R	I	U	I	U	R	I-R	R
SRA1Φ	I, RP	I	R	R	I-R	U	R	R	I	I-R	I-R
Q252Φ	B,I, M, RP	I	R	R	I-R	U	R	U	R	I	I
Q249Φ	B,I, M, RP	R	I-R	R	R	U	R	U	I-R	R	I-R
Q247Φ	B	R	R	R	I-R	U	R	U	R	S	R
Q245Φ	B,I, M, RP	R	R	R	R	U	R	U	S	R	R
Q242Φ	B,I, M, RP	R	R	R	I-R	I	R	U	I-R	R	R
Q240Φ	B,I, M, RP	I-S	R	R	R	I-R	R	U	R	I	I
Q238Φ	B,I, M, RP	I-R	R	R	R	S	R	R	I-R	S	R
Q235Φ	B,I, M, RP	R	R	R	I-R	I-S	I-R	U	R	R	R
Q232Φ	B,I, M, RP	I	R	R	I-R	R	R	U	I-R	R	I
KQ228Φ	B,I, M, RP	I	R	R	I	S	R	R	R	I	I
Q208Φ	B,I, M, RP	I-S	R	R	I-R	R	R	R	R	R	I
Q200Φ	B	I	R	R	I	I	R	R	R	I-R	I
Q183Φ	B,I, M,RP	R	R	I	R	S	R	R	I	I-S	R
Q151	B	R	R	R	R	U	R	R	I-R	U	I-S
Q138	B,I, M, RP	R	I-S	R	S	I-R	R	R	I-S	I	R

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 **sugarresearch.com.au.**

You will note that 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 disease-free 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.

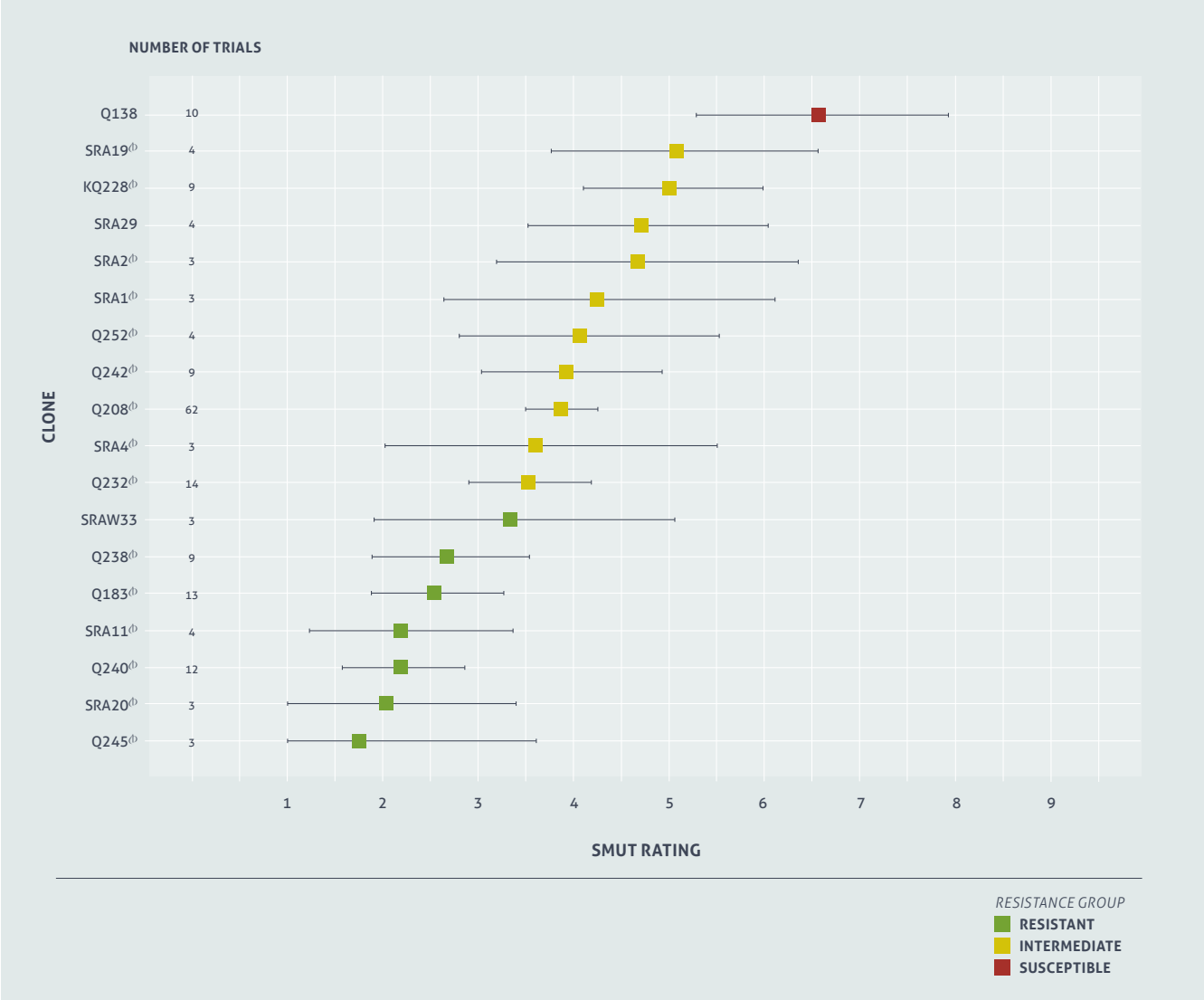
Some varieties are more sensitive to RSD and carry significantly higher levels of the bacteria. In situations where RSD is a high risk and hygiene measures are not guaranteed, it may be appropriate to avoid varieties such as KQ228Φ, Q253Φ, SRA1Φ and SRA3Φ.

- RESISTANT (R)
- INTERMEDIATE - RESISTANT (I-R)
- INTERMEDIATE (I)
- INTERMEDIATE - SUSCEPTIBLE (I-S)
- SUSCEPTIBLE (S)
- UNKNOWN (U)

B BUNDABERG
I ISIS
M MARYBOROUGH
RP ROCKY POINT

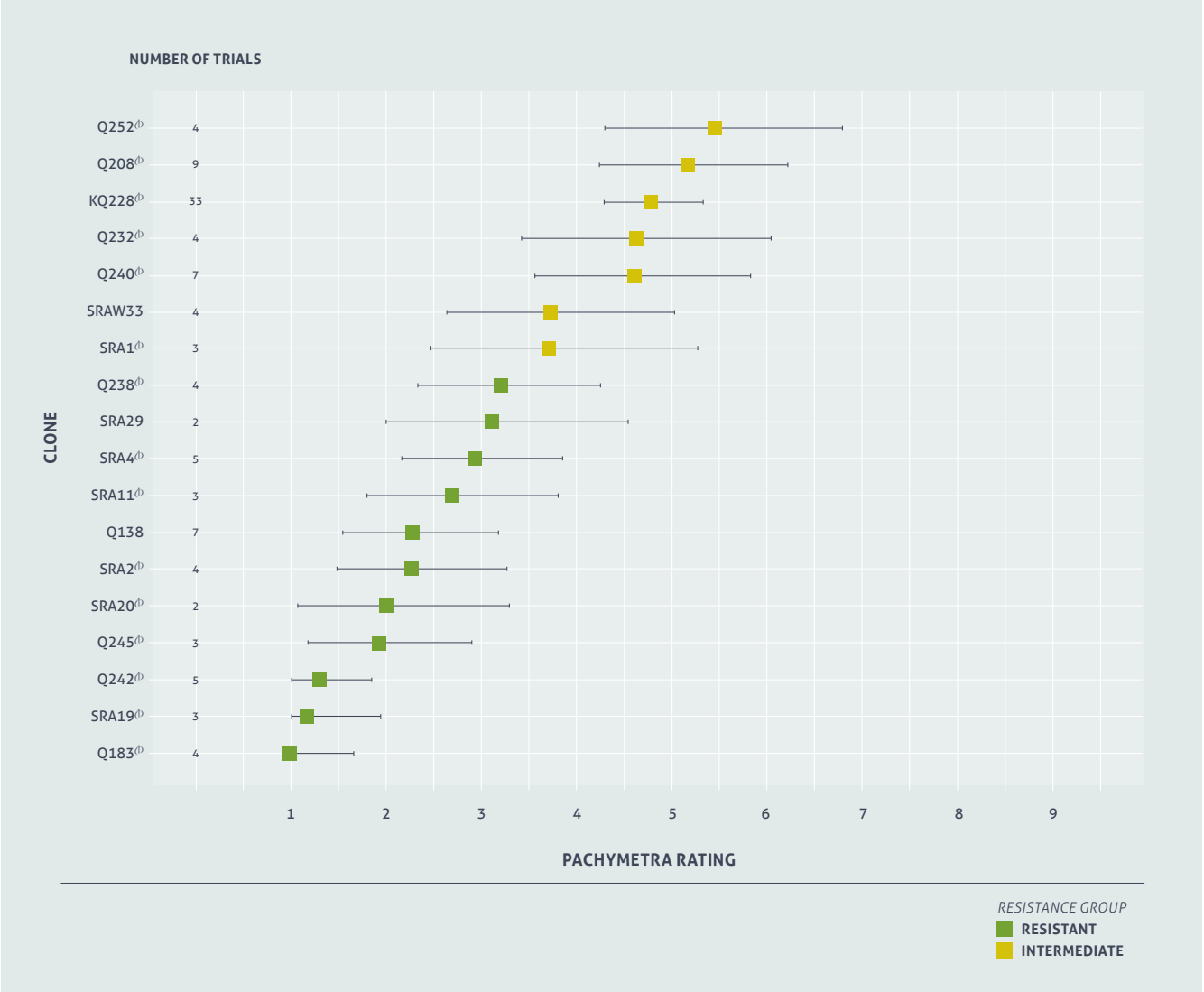
SMUT RATINGS

Smut resistance ratings are calculated from the incidence and severity of infection compared to standard varieties in inoculated field trials. The graphic 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 SRA20Φ has been in three smut trials (P and 1R) and has a confidence interval from 1 to 3.4. Rating confidence will improve as more data is collected. SRA29 has been included in four smut trials and has a intermediate rating of 5 with a lower and upper confidence limit of 3.5 to 6.1.



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 graphic 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 KQ228(ф) has been tested in 33 trials and has a narrow confidence interval from 4.3 to 5.4 while newer variety SRA20(ф) has only been tested in two Pachymetra trials and ranges from 1.2 to 3.3. Rating confidence will improve as more data is collected.



HARVEST MANAGEMENT

Select varieties for a harvest plan that can be followed to maintain maximum CCS throughout the year. The tables below indicate early, mid or late sugar varieties.

Bundaberg and Isis					
VARIETY	EARLY SUGAR	MID SUGAR	LATE SUGAR	TRASHING	LODGING
SRAW33	Good	Good	Good	Unknown	Unknown
SRA29	Poor	Good	Good	Free	Average
SRA20Φ	Poor	Average	Good	Free-Average	Average
SRA19Φ	Poor	Average	Good	Average	Average
SRA11Φ	Average	Good	Good	Free	Good
SRA4Φ	Average	Average	Average	Average	Good
SRA2Φ	Good	Good	Good	Free-Average	Average
SRA1Φ	Good	Good	Good	Average	Poor
Q252Φ	Good	Good	Good	Free	Average
Q249Φ	Average	Average	Good	Average	Poor
Q247Φ	Unknown	Unknown	Unknown	Unknown	Unknown
Q245Φ	Poor	Average	Average	Average	Average
Q242Φ	Average	Average	Poor	Average-Tight	Poor
Q240Φ	Good	Good	Good	Free-Average	Average
Q238Φ	Poor	Average	Average	Average	Good
Q235Φ	Good	Good	Average	Average	Poor
Q232Φ	Poor	Average	Poor	Tight	Poor
KQ228Φ	Good	Good	Average	Average-Tight	Average
Q208Φ	Average	Good	Good	Free	Average
Q200Φ	Poor	Average	Good	Free	Average
Q183Φ	Poor	Average	Good	Free-Average	Average
Q151Φ	Good	Average	Poor	Average	Average
Q138	Poor	Poor	Poor	Average	Average

Maximise your profit at harvest:
Selecting varieties for specific sugar maturity profiles, planting and harvesting them for optimal CCS maturity 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.

TRASHING
- FREE
- FREE-AVERAGE
- AVERAGE
- AVERAGE-TIGHT
- TIGHT

SEASONAL SUGAR AND LODGING
- GOOD
- AVERAGE
- LOW
- POOR
- UNKNOWN

Maryborough

VARIETY	EARLY SUGAR	MID SUGAR	LATE SUGAR	TRASHING	LODGING
SRAW33	Good	Good	Good	Unknown	Unknown
SRA29	Poor	Good	Good	Free	Average
SRA20Φ	Poor	Average	Good	Free-Average	Average
SRA19Φ	Poor	Average	Good	Average	Average
SRA11Φ	Average	Good	Good	Free	Good
SRA4Φ	Average	Average	Average	Average	Good
Q252Φ	Good	Good	Average	Free	Average
Q249Φ	Average	Average	Good	Average	Poor
Q245Φ	Poor	Average	Average	Average	Average
Q242Φ	Average	Average	Average	Average-Tight	Poor
Q240Φ	Good	Good	Good	Free-Average	Average
Q238Φ	Poor	Average	Average	Average	Good
Q235Φ	Good	Good	Average	Average	Poor
Q232Φ	Poor	Average	Average	Tight	Average
KQ228Φ	Good	Good	Average	Average-Tight	Average
Q208Φ	Average	Good	Good	Free	Average
Q183Φ	Poor	Average	Good	Free-Average	Average
Q138	Average	Average	Average	Average	Good

Rocky Point

VARIETY	EARLY SUGAR	MID SUGAR	LATE SUGAR	TRASHING	LODGING
SRA11Φ	Average	Average	Average	Free	Unknown
SRA4Φ	Average	Average	Average	Average	Unknown
SRA2Φ	Good	Good	Average	Free-Average	Average
SRA1Φ	Good	Good	Good	Average	Average
Q252Φ	Good	Good	Good	Free	Average
Q249Φ	Average	Average	Average	Average	Poor
Q245Φ	Poor	Average	Average	Average	Unknown
Q242Φ	Good	Good	Good	Average-Tight	Poor
Q240Φ	Good	Good	Good	Free-Average	Average
Q238Φ	Average	Good	Good	Average	Good
Q235Φ	Good	Good	Average	Unknown	Poor
Q232Φ	Poor	Average	Average	Tight	Unknown
KQ228Φ	Good	Good	Average	Average-Tight	Average
Q208Φ	Good	Good	Good	Free	Average
Q183Φ	Average	Good	Good	Free-Average	Average
Q138	Average	Average	Average	Tight	Unknown

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$^{(\phi)}$ is assessed and used as a susceptible reference variety to compare to other tested varieties.

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

Tables 3 and 4 summarise all phytotoxicity, biomass and yield results obtained in the pot and field trials from 2014 to 2020.

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

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$^{(\phi)}$

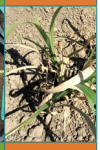
	2,4-D	2,4-D+ IOXYNIL	AMETRYN	AMETRYN+ TRIFLOXY SULFURON	AMICARBAZONE	ASULAM	DIURON	FLUMIOXAZIN	METOLACHLOR	METRIBUZIN	MSMA
DESCRIPTION OF SYMPTOMS	Small white spotty discolorations	Small yellow spotty discolorations	Yellowing of the whole plant	Slight yellow blotching	Small white spotty discolorations	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		NA									
SYMPTOM SEVERITY ON KQ228$^{(\phi)}$	Mild	Mild	Medium to severe	Mild	Mild	Medium	Mild	Severe	Medium	Mild	Medium to severe
KQ228$^{(\phi)}$ PHYTO RATING RANGE											
	1.2 to 1.9	1.2	1.8 to 3.2	1.3	1.3 to 1.5	1.1 to 2.6	1.8	3.9 to 4.1	1.1 to 2.8	1.2 to 1.8	1.7 to 3.5

Table 3 - Herbicide symptoms severity on the cane foliage for all tested varieties. Average EWRC scores and associated colour code are presented for each tested combination of herbicides by variety. In each trial, KQ228$^{(\phi)}$ was used as our reference variety. Note that symptoms severity on KQ228$^{(\phi)}$ can vary between trials: weather conditions at application, and/or during the trial can alter cane growth and herbicide response. These EWRC scores are average scores for the 10-week assessment period, which means higher symptoms intensity and scores have been recorded during the assessment period.

Table 4 - Sugarcane dry biomass reduction in the pot trials measured 10 weeks after spraying and yield reduction in the field trial measured at harvest. The biomass reduction in the pot trials is represented in a green-to-red scale. The percentage value compared to the untreated is indicated in the table (a negative value indicates a biomass

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TABLE 3 Phytotoxicity severity of symptoms (Legend: refer to table 1 on the left)

TRIAL ID	VARIETY	2,4-D	2,4-D+ IOXYONIL	AMETRYN	AMETRYN+ TRIFLOXY-SULFURON	AMI-CARBAZONE	ASULAM	DIURON	FLUMI-OXAZIN	METO-LACHLOR	METRIBUZIN	MSMA
#2014	Q208(f)	1.1	1.1		1.3		1.2			1.5	1.3	1.8
#2014	Q232(f)	1.2	1.2		1.2		1.2			1.5	1.2	1.8
#2014	Q238(f)	1.2	1.2		1.3		1.2			1.7	1.2	1.8
#2014	Q240(f)	1.2	1.2		1.3		1.2			1.5	1.2	1.8
#2014	Q242(f)	1.2	1.2		1.3		1.2			1.6	1.2	1.8
#2014	Q249(f)	1.2	1.2		1.3		1.2			1.5	1.2	1.7
#2014	Q252(f)	1.2	1.2		1.3		1.2			1.5	1.2	1.8
#2014	*Ref KQ228(f)*	*1.2*	*1.2*		*1.3*		*1.2*			*1.4*	*1.2*	*1.7*
#2016	SRA1(f)	1.4		1.8			2.5			1.7	1.0	2.9
#2016	SRA2(f)	1.4		2.0			2.4			2.4	1.6	3.5
#2016 & #2020	SRA4(f)	1.7		2.1		2.1	3.3	1.9		2.3	1.7	3.6
#2016	*Ref KQ228(f)*	*1.7*		*2.3*			*2.3*			*1.8*	*1.7*	*3.0*
#2017	SRA11(f)	1.5		1.8		1.4	2.9		3.6	2.3	1.4	3.2
#2017	*Ref KQ228(f)*	*1.6*		*2.4*		*1.5*	*1.8*		*3.7*	*2.1*	*1.6*	*3.2*
#2019	SRA19(f)	1.7		2.3		1.3	1.3	1.4		1.1	1.4	3.1
#2019	*Ref KQ228(f)*	*1.9*		*3.2*		*1.3*	*1.1*	*1.8*		*1.1*	*1.6*	*3.1*
#2020	SRA29	1.4		2.1		1.6	2.8	1.3		1.4	1.1	3.7
#2020	*Ref KQ228(f)*	*1.3*		*1.8*		*1.7*	*2.4*	*1.3*		*1.5*	*1.1*	*3.0*

TABLE 4 Biomass reduction (pot trial)/yield reduction (field trial)

TRIAL ID	VARIETY	2,4-D	2,4-D+ IOXYONIL	AMETRYN	AMETRYN+ TRIFLOXY-SULFURON	AMI-CARBAZONE	ASULAM	DIURON	FLUMI-OXAZIN	METO-LACHLOR	METRIBUZIN	MSMA
#2014	Q208(f)	-1%	-11%		-28%		9%			-22%	-12%	-29%
#2014	Q232(f)	10%	17%		-35% (-9%)		0%			-9% (+4%)	-6% (-4%)	-17% (+1%)
#2014	Q238(f)	-10%	-1%		-33% (-19%)		-29%			-13% (-9%)	-22% (-14%)	-24% (-22%)
#2014	Q240(f)	-5%	-7%		-23%		-10%			8%	-11%	-19%
#2014	Q242(f)	9%	8%		-13% (+7%)		20%			13% (-3%)	-2% (-1%)	-2% (-17%)
#2014	Q249(f)	-17%	-6%		-33%		-22%			-3%	-1%	-35%
#2014	Q252(f)	-7%	6%		-13%		22%			10% (+12%)	-12%	-13%
#2014	*Ref KQ228(f)*	*6%*	*-12%*		*-40%*		*7%*			*15%*	*-13%*	*-9%*
#2016	SRA1(f)	-6%		23%			**-62%** (4%)			35%	-14% (+12%)	-27% (-18%)
#2016	SRA2(f)	-28%		-40%			-20% (-9%)			-34%	-64% (-2%)	-55% (-13%)
#2016 & #2020	SRA4(f)	-18%		12%		-28%	**-69%** (-13%)	8%		-4%	31% (-2%)	**-35%** (-13%)
#2016	*Ref KQ228(f)*	*-37%*		*-47%*			*-45% (+14%)*			*-35%*	*-47% (+5%)*	*-33% (+3%)*
#2017	SRA11(f)	-8%		**-56%**		**-45%** (-4%)	**-70%** (+1%)		**-61%**	-28%	-33%	**-60%**
#2017	*Ref KQ228(f)*	*-31% (+2%)*		***-80%***		*-36% (-10%)*	***-48%** (-9%)*		***-55%***	*-15%*	***-60%***	***-56%***
#2019	SRA19(f)	-20%		**-59%**		-34%	-42%	-29%		1%	-21%	**-59%**
#2019	*Ref KQ228(f)*	*-9%*		***-63%***		-22%	*0%*	-44%		-2%	-35%	-36%
#2020	SRA29	-58%		-30%		-18%	**-66%**			-1%	-14%	**-64%**
#2020	*Ref KQ228(f)*	*-40%*		*-40%*		*-41%*	*-48%*	*-12%*		*46%*	*26%*	*-14%*

Legend

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

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

(% VALUE) = YIELD REDUCTION (-10% OR MORE SEVERE) IN THE FIELD TRIAL COMPARED TO THE UNTREATED

SLIGHT BIOMASS REDUCTION IN POT TRIAL COMPARED TO UNTREATED

SEVERE BIOMASS REDUCTION IN POT TRIAL COMPARED TO UNTREATED

NO BIOMASS REDUCTION IN POT TRIAL COMPARED TO UNTREATED

MODERATE BIOMASS REDUCTION IN POT TRIAL COMPARED TO UNTREATED

COMBINATION OF HERBICIDE BY VARIETY NOT TESTED

reduction compared to the untreated, a value in bold indicates a significant biomass loss and, a positive value indicates a non-significant biomass gain compared to the untreated). 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. When available, yield reductions compared to the untreated from the field trials were also added in brackets. Red font indicates varieties whose yield was reduced by more than 10% compared to the untreated control (no yield loss was statistically significantly different to the untreated control at P 0.05). In each trial, KQ228(f) was used as our reference variety: note that the biomass reduction can vary between trials: weather conditions at application, and/or during the trial can alter cane growth and herbicide response.

VARIETY ADOPTION IN EACH MILL AREA

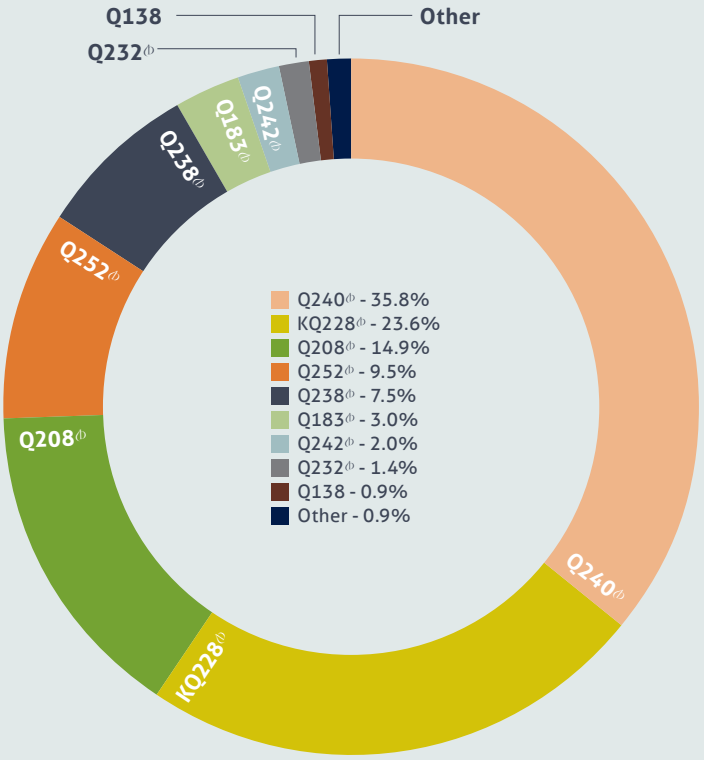
**Data below can be found in QCANESelect® under the regional reporting tab.
Use this information to assess yield performance of varieties over a number of years.
Caution should be taken when comparing commercial performance of newer varieties
(from plant and young ratoons) to older/established varieties (which include older ratoons).**

Bundaberg (% TONNES 2020)

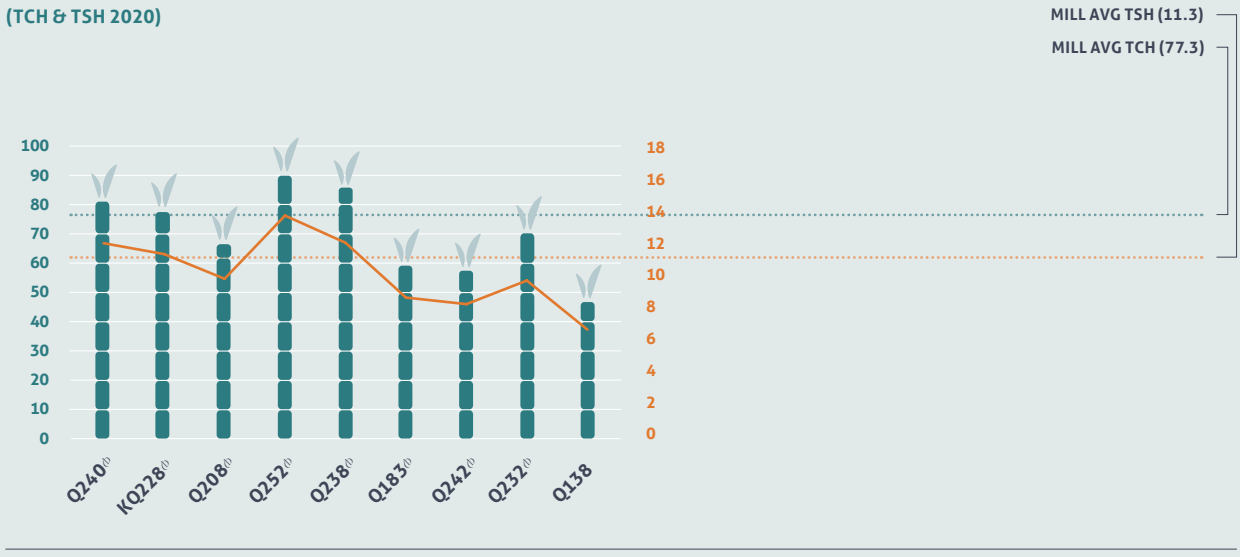
In 2020, a total of 1,042,933 tonnes of cane was harvested from 13,676 hectares in the Bundaberg region. The Bundaberg mill area had an average yield of 77.3 tonnes of cane per hectare and an average CCS of 14.7.

Q240Φ accounts for the majority of production in the Bundaberg region, increasing from 33% in 2019 to nearly 36% in 2020. There was no real change in percent production between 2019 and 2020 for varieties KQ228Φ, Q208Φ and Q232Φ. Production of Q242Φ declined from 5% to 2% and Q252Φ increased from 7% to 10% in 2020.

Q208Φ, Q240Φ and Q252Φ performed at or above mill average for CCS in 2020.



(TCH & TSH 2020)

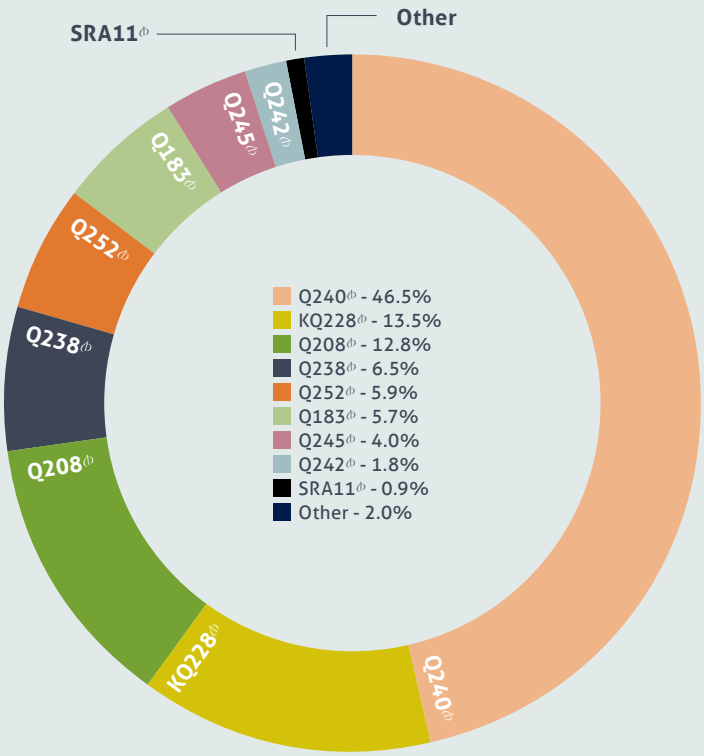


Isis (% TONNES 2020)

In 2020, a total of 806,009 tonnes of cane was harvested from 10,101 hectares in the Isis region. The Isis mill area had an average yield of 80.8 tonnes of cane per hectare and an average CCS of 14.8.

Q240Φ accounts for the majority of production in the Isis region, increasing from 40% in 2019 to 46% in 2020. KQ228Φ, Q208Φ, and Q183Φ all declined slightly to 14%, 13%, and 6% respectively.

Q208Φ, Q240Φ, Q252Φ and SRA11Φ performed at or above mill average for CCS in 2020.



(TCH & TSH 2020)

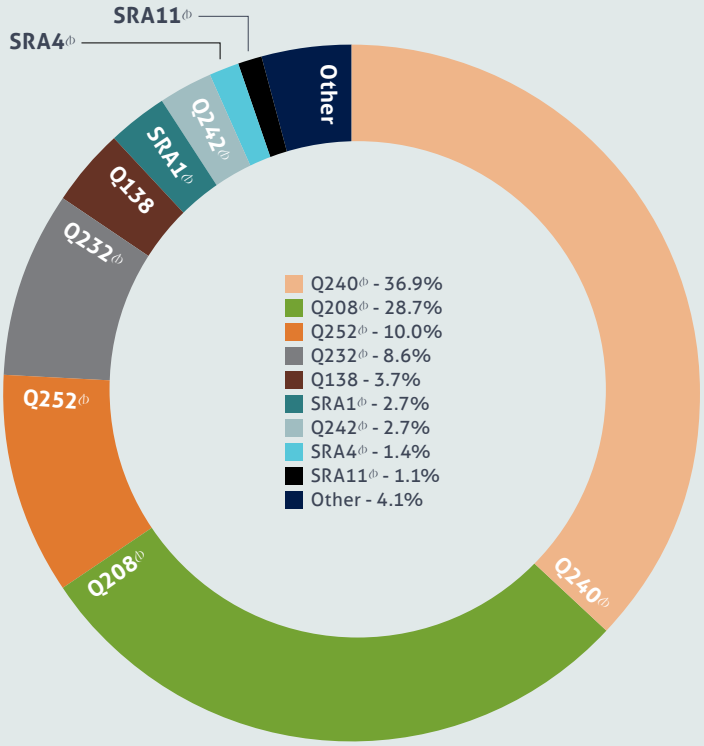
VARIETY ADOPTION IN EACH MILL AREA (CONT)

Maryborough (% TONNES 2020)

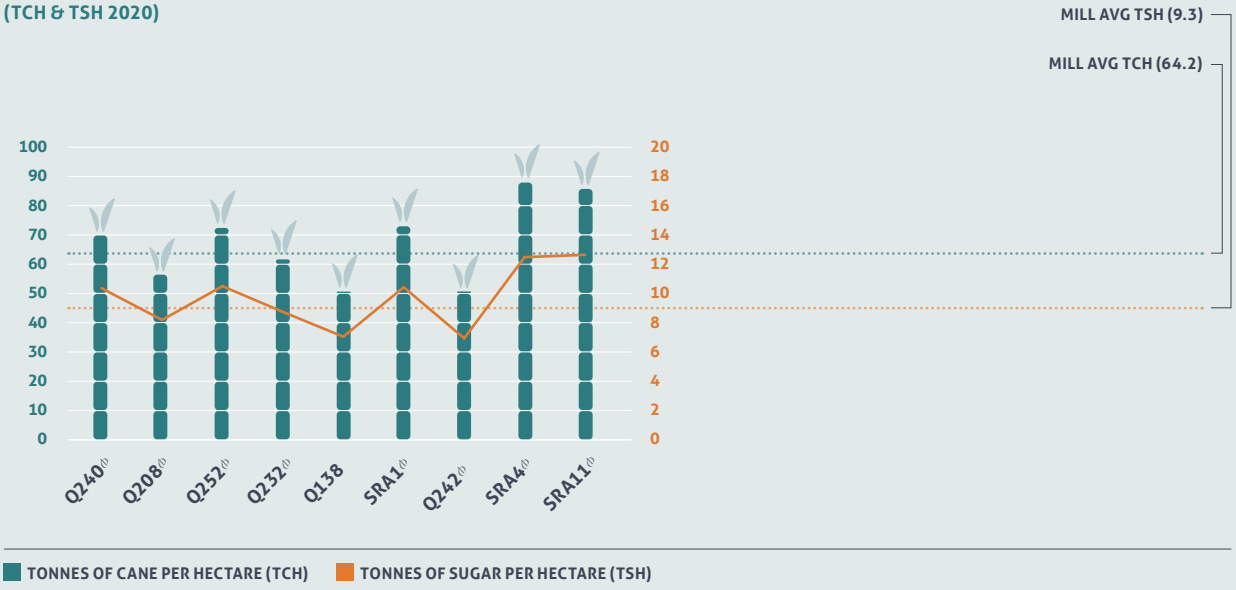
In 2020, a total of 631,831 tonnes of cane was harvested from 10,025 hectares in the Maryborough region. The Maryborough mill area had an average yield of 64.2 tonnes of cane per hectare and an average CCS of 14.5.

Q240Φ overtakes Q208Φ as the major variety in production in the Maryborough region, increasing from 32% of the total harvest in 2019 to 37% in 2020. Q208Φ decreased from 33% in 2019 to 29% in 2020.

Q208Φ, Q240Φ, Q252Φ and SRA11Φ performed at or above mill average for CCS in 2020.



(TCH & TSH 2020)



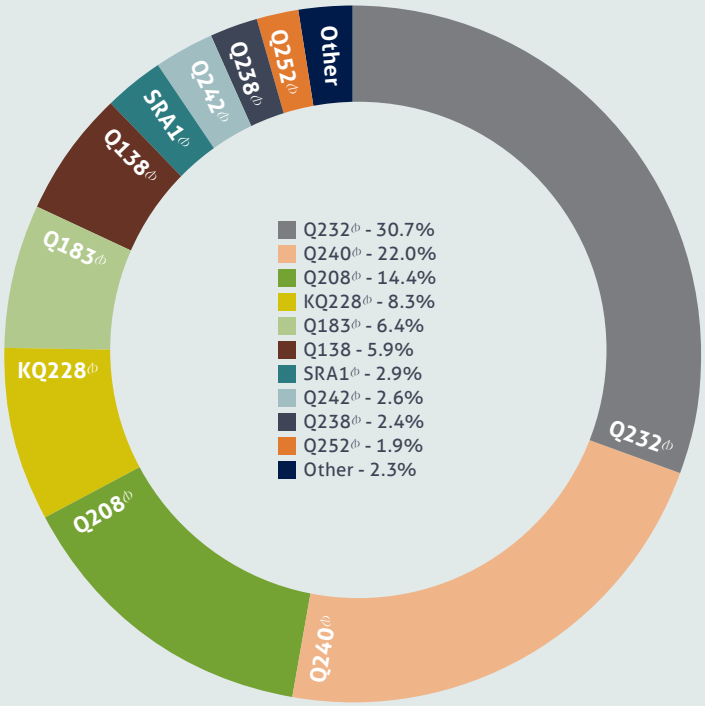
For more information please visit:
sugarresearch.com.au

Rocky Point (% TONNES 2020)

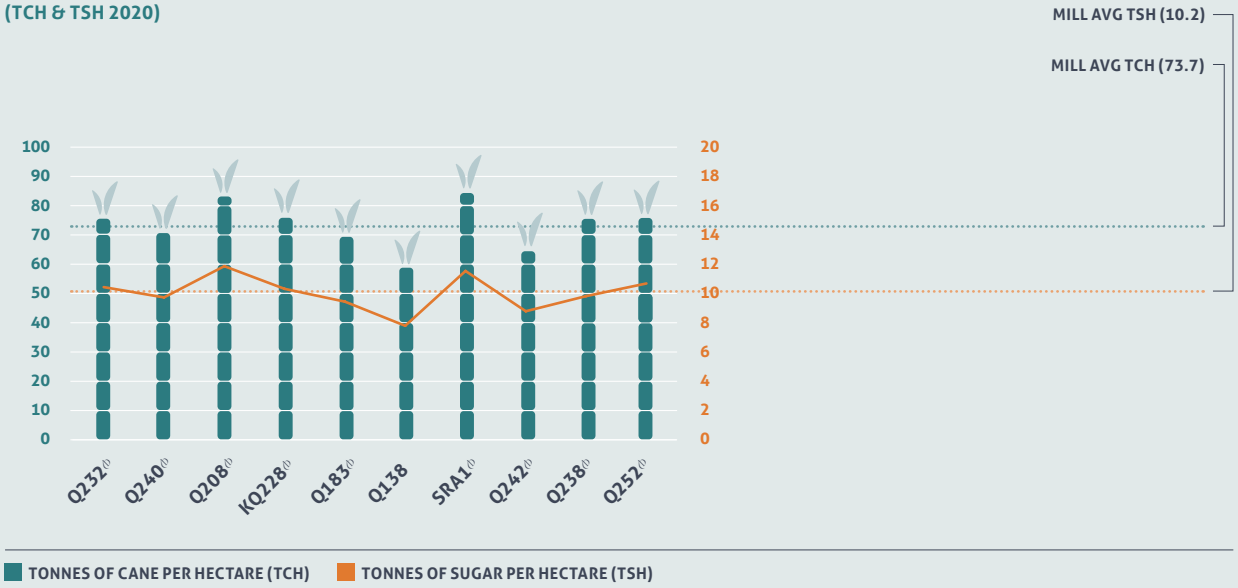
In 2020, a total of 281,003 tonnes of cane was harvested from 3,848 hectares in the Rocky Point region. The Rocky Point mill area had an average yield of 73.7 tonnes of cane per hectare and an average CCS of 13.8.

Q232Φ remains the most dominant variety in 2020, accounting for 31% of the total harvest which is an increase of 4% from the previous year. Q240Φ and Q208Φ remained stable around 22% and 14% of the crop.

Q208Φ, Q232Φ, Q240Φ and Q252Φ performed at or above mill average for CCS in 2020.

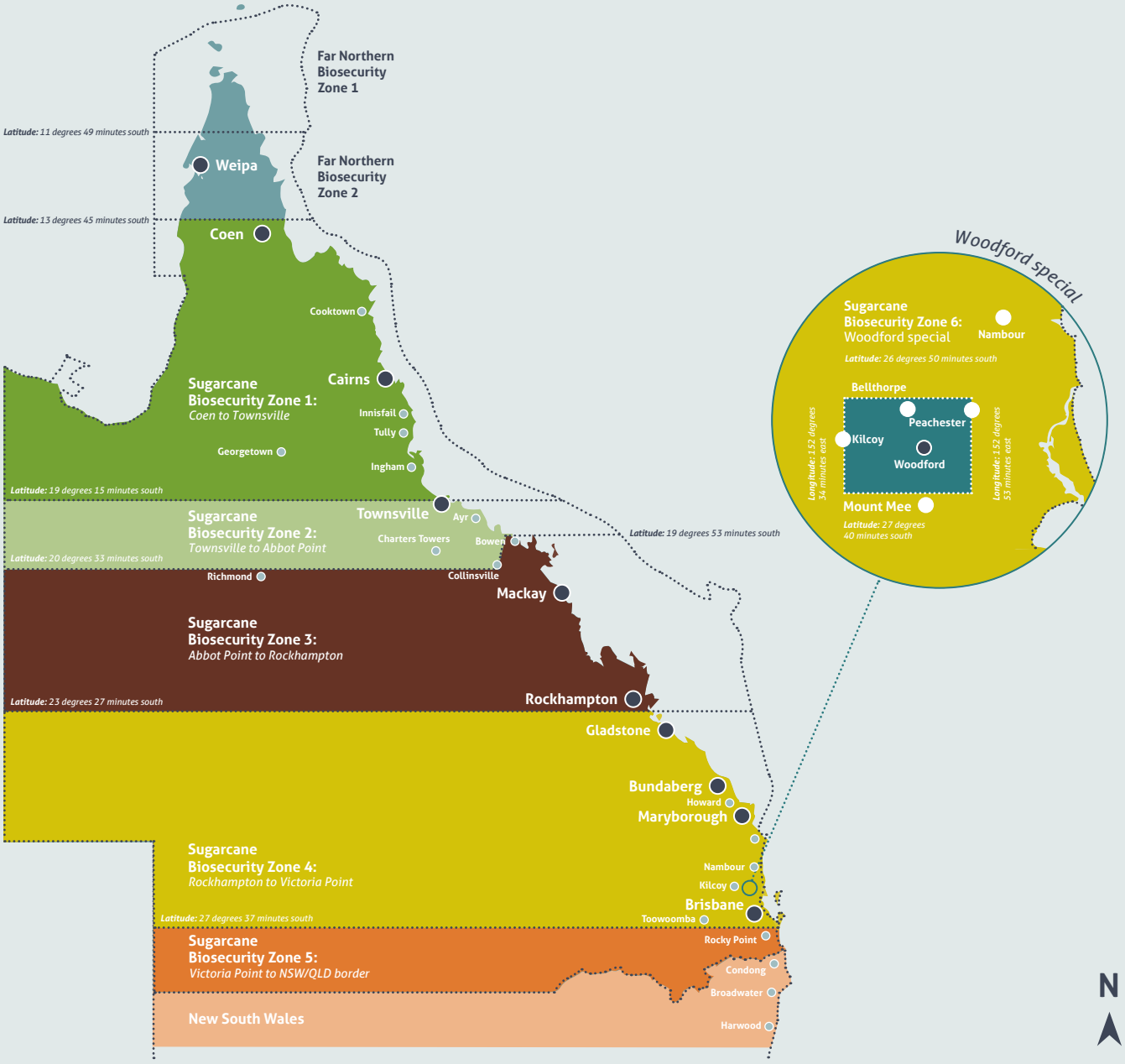


(TCH & TSH 2020)



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

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).
- To move sugarcane plants into NSW you must meet NSW DPI requirements. Contact NSW Biosecurity on 1800 680 244.
- Plant Health Certificates for movement of cane from Queensland into NSW can be arranged by contacting Biosecurity Queensland on 13 25 23.
- Movement of cane from NSW into Queensland requires approval from Biosecurity Queensland and a time in quarantine at SRA. Contact SRA for advice prior to movement.

PROPAGATING NEW VARIETIES

Contact your local productivity services group for regional advice on varieties. They can supply clean planting material of recommended varieties and place orders for tissue culture plantlets.

Isis Productivity Ltd:
T 07 4126 1444

Maryborough Cane Productivity Services:
M 0487 017 811

Sugar Services Bundaberg:
T 07 4151 2555

Rocky Point Productivity Services:
T 07 5546 1481

Billet planting

PLANT MATERIAL FROM AN APPROVED SEED SOURCE

Approved-seed provides cane growers with disease-free seed of varieties that are true-to-type. Disease-free 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 disease-free or 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 a disease-free supply of DNA fingerprinted new varieties. The local productivity services group multiplies the new varieties, maintaining the disease-free status and distributes the approved-seed to growers.

GROW SUGARCANE SPECIFICALLY FOR PLANTING MATERIAL

The block selected for growing plant material should be disease-free, 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 clean 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 from the calculator (available at sugarresearch.com.au/calculator).

TRY TISSUE CULTURE AS AN APPROVED CLEAN SEED SOURCE

Tissue culture is an excellent source of clean 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
	M row planted @ 0.8m	80	200	400	800
Yr 2	M 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 500 mm to 1 m apart. A good distance is 800 mm, 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.

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.

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 2.5 kg/ha plus Dual Gold® at 1.5 L/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 100 g/ha plus Activator at 200 mL/100 L 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.

QCANESelect®

- Using sugarcane varieties that are best-suited to your farm may help maximise productivity and profitability.
- To access QCANESelect® and the tissue culture calculator visit the SRA website **sugarresearch.com.au**
- Once you have identified the best varieties for planting on your farm, contact your local productivity services group to place orders for tissue-cultured plantlets.

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