

VARIETY GUIDE 2022/2023











Burdekin Region





HOW TO USE THIS GUIDE

*This guide is designed to help growers in the Burdekin 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:***

	New and recent varieties available in the Burdekin region	4
	Harvest management	5
	Smut ratings	6
	Disease resistance	7
	Variety by herbicide screening trials	8
	Variety adoption in the Burdekin	10
	Variety performance TSH by soil type in the BRIA and Delta	11
	Sugarcane Biosecurity Zone map	12
	Propagating new varieties	13
	Planting and managing tissue-cultured plantlets in the field	14

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 BURDEKIN REGION

Variety Recommendation and Release Process

Regional Variety Committees (RVCs) are responsible for variety release decisions. Membership is drawn from growers, millers and productivity services specific to the region. 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 non-voting members to ensure transparency in the decision making process.

The Burdekin RVC (Sugarcane Biosecurity Zone 2) voting membership consists of one grower representative from Canegrowers Burdekin, Pioneer Canegrowers, Kalamia

Canegrowers and Invicta Canegrowers and one miller representative from Wilmar.

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

WSRA17[Ⓛ]

WSRA17[Ⓛ] is the first variety to carry the 'WSRA' prefix since the naming convention for new sugarcane varieties changed in 2015. WSRA17[Ⓛ] was first released in the Burdekin in 2017.

The W represents Wilmar's contribution to the development of the variety through its early-stage breeding program. In the Burdekin, Wilmar and SRA plant breeders collaborate closely, assessing potential new varieties as they progress through to

the Final Assessment Trial (FAT) stage.

In 2022, 940t of approved seed will be available from Burdekin Productivity Services.

SRA23[Ⓛ]

SRA23[Ⓛ] was first released in 2019. Over 2000t of approved seed will be available in 2022. In FATs, it had yields and CCS average with the standard commercial varieties. Yields dropped off in ratoons.

SRA32

SRA32 was fast tracked through the program and released in 2021. Almost a hectare was planted to the BPS Isolation Plot in 2021. It will be available in 2023. In FATs, it has very high tonnes but lower CCS. Smut has been observed in field trials.

Presented below are the results of Final Assessment Trials (FATs) conducted in the Burdekin region. Yield (TCH) and CCS for each new variety are compared with the trial results of various standard varieties.

Variety: SRA32		QS09-8404	Parentage: QN80-3425 X QN86-2168 / Summary: High tonnes, low CCS.									
TRIAL HARVEST YEAR	CROP CLASS	YIELD (TCH)					CCS					# OF TRIALS
		SRA32	KQ228 [Ⓛ]	Q183	Q208 [Ⓛ]	Q240 [Ⓛ]	SRA32	KQ228 [Ⓛ]	Q183	Q208 [Ⓛ]	Q240 [Ⓛ]	
(2015 series FATs): 2016	Plant	171	158	142	153	151	14.5	16.0	15.5	15.3	15.1	3
2017	1R	156	139	125	140	131	15.9	16.5	16.1	16.4	15.8	3
2018	2R	113	106	90	106	96	17.3	18.4	18.1	18.0	18.3	3
(2017 series FATs): 2018	Plant	152	151	128	144	148	15.7	17.0	16.9	16.7	16.6	4
2019	1R	137	132	121	122	126	16.8	17.5	17.8	17.6	17.1	4
2020	2R	129	107	105	104	108	17.2	17.8	17.9	17.5	17.3	3
Overall performance		143	133	119	129	128	16.2	17.2	17.1	16.9	16.7	20
Comments		In FAT trials, SRA32 has high tonnes but low CCS. Smut has been observed in the field. Some side shooting has been observed										

Variety: SRA23 [Ⓛ]		QA07-2330	Parentage: QC82-663 X QC87-123 / Summary: Average tonnes cane; average CCS.									
TRIAL HARVEST YEAR	CROP CLASS	YIELD (TCH)				CCS				# OF TRIALS		
		SRA23 [Ⓛ]	Q183	Q208 [Ⓛ]	KQ228 [Ⓛ]	SRA23 [Ⓛ]	Q183	Q208 [Ⓛ]	KQ228 [Ⓛ]			
(2011 series FATs): 2012	Plant	124	114	109	118	15.8	16.2	15.8	15.7	4		
2013	1R	94	99	97	104	16.6	16.9	16.2	16.8	4		
2014	2R	111	118	122	125	16.8	16.6	16.3	17.1	4		
(2013 series FATs): 2014	Plant	157	147	163	168	15.8	16	15.4	16.2	4		
2015	1R	112	108	120	120	16.6	17	15.9	17.0	4		
2016	2R	91	88	103	96	17.1	17.2	16.7	17.3	4		
Overall performance		115	112	119	122	16.4	16.7	16.1	16.7	24		
Comments		Overall, in FAT trials, SRA23 [Ⓛ] has average tonnes and average CCS compared to the average of the standards (KQ228 [Ⓛ] , Q240 [Ⓛ] , Q208 [Ⓛ] and Q183). In trials, TCH dropped off in ratoons. It is a trashy variety and arrows profusely. It has shown good smut resistance in trials. SRA23 [Ⓛ] has been planted into five demonstration trials by the Burdekin Productivity Services. Contact BPS for more details.										

Variety: WSRA17 [Ⓟ] KQ08-2180		Parentage: Q208 [Ⓟ] X Tellus [Ⓟ] / Summary: Higher tonnes cane; lower CCS								
TRIAL HARVEST YEAR	CROP CLASS	YIELD (TCH)				CCS				# OF TRIALS
		WSRA17 [Ⓟ]	Q183	Q208 [Ⓟ]	KQ228 [Ⓟ]	WSRA17 [Ⓟ]	Q183	Q208 [Ⓟ]	KQ228 [Ⓟ]	
(2011 series FATs): 2012	Plant	115	114	109	118	15.4	16.2	15.8	15.7	4
2013	1R	102	99	97	104	16.0	16.9	16.2	16.8	4
2014	2R	139	118	122	125	16.1	16.6	16.3	17.1	4
(2013 series FATs): 2014	Plant	161	143	159	161	15.9	16.2	15.6	16.3	4
2015	1R	117	103	116	114	17.2	17.9	16.9	17.8	4
2016	2R	105	96	109	103	16.7	17.2	16.8	17.3	4
Overall performance		123	112	119	121	16.2	16.8	16.3	16.9	24
Comments		<p>WSRA17[Ⓟ] has an intermediate - susceptible smut rating. Smut rating indicates smut may be observed in this variety and will continue to be closely monitored in all trials.</p> <p>Intermediate-susceptible rating for pachymetra and is resistant to leaf scald. WSRA17[Ⓟ] has been planted into five demonstration trials by Burdekin Productivity Services. Harvest details for these trials are below.</p>								

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/

HARVEST MANAGEMENT

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.

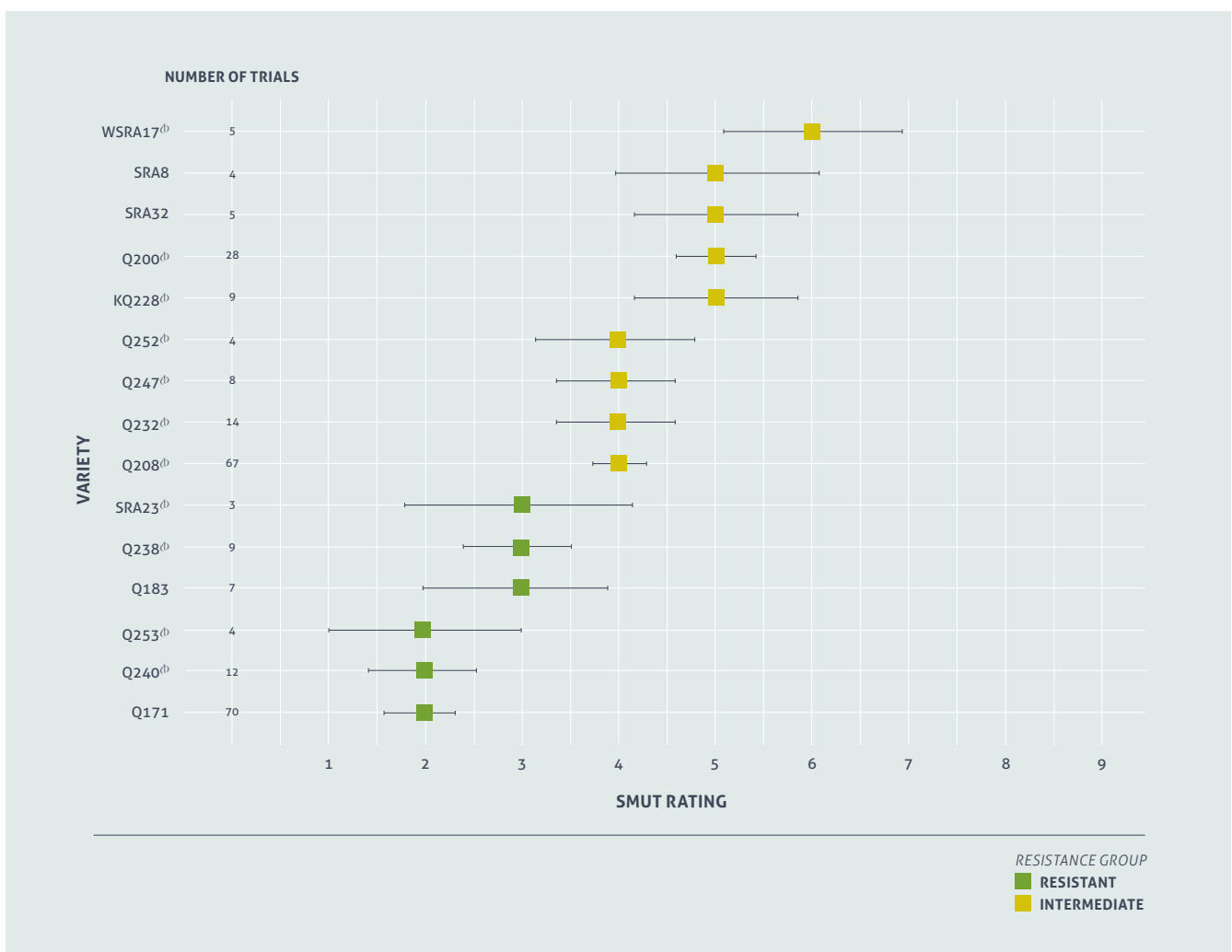
Burdekin Harvest Management				
VARIETY	EARLY SUGAR	MID SUGAR	LATE SUGAR	LODGING TOLERANCE
SRA32	Poor	Poor	Poor	Poor
SRA23 [Ⓟ]	Good	Good	Good	Average
WSRA17 [Ⓟ] (Based on limited mill data)	Average	Average	Average	Average
SRA8	Good	Good	Good	Average
Q253 [Ⓟ] (Harvest mid-late season for optimal maturity)	Poor	Poor	Poor	Average
Q252 [Ⓟ]	Average	Good	Good	Average
Q247 [Ⓟ]	Average	Average	Average	Average
Q240 [Ⓟ]	Average	Average	Average	Average
Q238 [Ⓟ]	Poor	Poor	Poor	Good
Q232 [Ⓟ]	Poor	Poor	Poor	Average
KQ228 [Ⓟ]	Good	Good	Average	Average
Q208 [Ⓟ]	Average	Good	Good	Average
Q200 [Ⓟ]	Poor	Average	Good	Average
Q183	Average	Good	Good	Good
Q177	Average	Average	Average	Average
Q171	Good	Average	Average	Average
Q133	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.

■ GOOD
■ AVERAGE
■ LOW
■ POOR
 UNKNOWN

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 Q200[Ⓛ] has been tested in 28 trials and has a narrow confidence interval from 4.6 to 5.4, while the new variety SRA23[Ⓛ] has only been tested in three trials and ranges from 1.8 to 4.2. Rating confidence will improve as more data is collected.





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.

Burdekin Disease Ratings										
CLONE	SMUT	LEAF SCALD	PACHYMETRA	CHLOROTIC STREAK	ORANGE RUST	BROWN RUST	RED ROT	YELLOW SPOT	FIJI LEAF GALL	MOSAIC
SRA32	I	R	I-R	U	U	U	I	U	I-S	R
SRA23 [Ⓛ]	R	R	I	U	U	U	I	U	I	R
WSRA17 [Ⓛ]	I-S	R	I	U	U	U	R	U	I	R
SRA8	I	R	I-R	U	R	R	I	U	R	R
Q253 [Ⓛ]	R	R	R	U	R	I-S	I	S	S	R
Q252 [Ⓛ]	I-R	R	I	U	R	U	R	I	I	R
Q247 [Ⓛ]	I-R	R	R	U	R	U	R	S	R	R
Q240 [Ⓛ]	R	R	I	I-R	R	U	R	I	I-S	R
Q238 [Ⓛ]	R	R	R	S	R	R	I-R	S	I-R	R
Q232 [Ⓛ]	I-R	R	I	R	R	U	I-R	R	I	R
KQ228 [Ⓛ]	I	R	I	S	R	R	R	I	I	R
Q208 [Ⓛ]	I-R	R	I	R	R	R	R	R	I-S	R
Q200 [Ⓛ]	I	R	I	I	R	R	R	I-R	I	R
Q183	R	I	R	S	R	R	I	I-S	R	R
Q177	R	R	S	U	I	R	I-R	R	I-R	I-R
Q171	R	R	S	U	R	R	I	U	R	S
Q133	R	I-R	S	I-S	U	R	I	U	S	U

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 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[Ⓛ] and Q253[Ⓛ].

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



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[®] is assessed and used as a susceptible reference variety to compare to other tested varieties.

Table 2 describes the phytotoxicity symptoms obtained on KQ228[®] 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 2021.

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

**For more information contact:
Emilie Fillols, Senior Researcher
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[®]

	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 [®]	Mild	Medium to severe	Mild	Mild	Medium	Mild	Severe	Medium	Mild	Medium to severe
KQ228 [®] PHYTO RATING RANGE										
	1.2 to 1.9	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 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 ^o	1.7	2.0	1.8	1.4	1.7	1.4	3.7	2.2	1.7	2.9
Q208 ^o	1.6		1.7		1.7			2.2	1.7	2.9
Q232 ^o	1.7		1.8		1.7			2.3	1.7	2.9
Q238 ^o	1.7		1.8		1.7			2.4	1.7	3.0
Q240 ^o	1.7		1.7		1.7			2.2	1.7	2.9
Q252 ^o	1.7		1.8		1.7			2.3	1.6	2.9
Q253 ^o	1.7		1.7		1.7			2.4	1.7	2.9
SRA8	1.7	1.9		1.4	1.8		3.7	2.2	1.7	2.9
WSRA17 ^o	1.7	1.8		1.4	1.7		3.7	2.1	1.6	2.8
SRA23 ^o	1.8	1.7		1.4	2.0	1.4		2.2	1.7	3.1

The predicted EWRC scores and associated colour code are presented for each tested combination of herbicides by variety. The predicted EWRC scores is derived from the average EWRC scores for each trial series, using KQ228^o as a 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 are derived 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 ^o	-26%	-50%	-56%	-10%	-25%	-18%	-39%	no reduction	-30%	-26%
Q208 ^o	-36%		-34%		-22%			-54%	-27%	-55%
Q232 ^o	20%		-43%		-36%			-34%	-18%	-38%
Q238 ^o	-48%		-35%		-73%			-37%	-38%	-44%
Q240 ^o	-43%		-29%		-51%			-8%	-27%	-42%
Q252 ^o	-46%		-11%		-3%			-7%	-26%	-31%
Q253 ^o	-36%		-50%		-62%			-19%	-57%	-60%
SRA8	no reduction	-5%		no reduction	no reduction		-45%	no reduction	no reduction	no reduction
WSRA17 ^o	-14%	-64%		-71%	-17%		-75%	-46%	no reduction	-53%
SRA23 ^o	-32%	-30%		-7%	-67%	-25%		-5%	-26%	-61%

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^o 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 (a negative value indicates a biomass reduction 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.

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 ^o	0%	-11%		-7%	-1%		0%	-1%
Q232 ^o			-6%			0%	-4%	-1%
Q238 ^o			-8%			-3%	-5%	-13%
WSRA17 ^o	-6%	-6%						

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 ↓

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

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

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

VARIETY ADOPTION IN THE BURDEKIN

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).

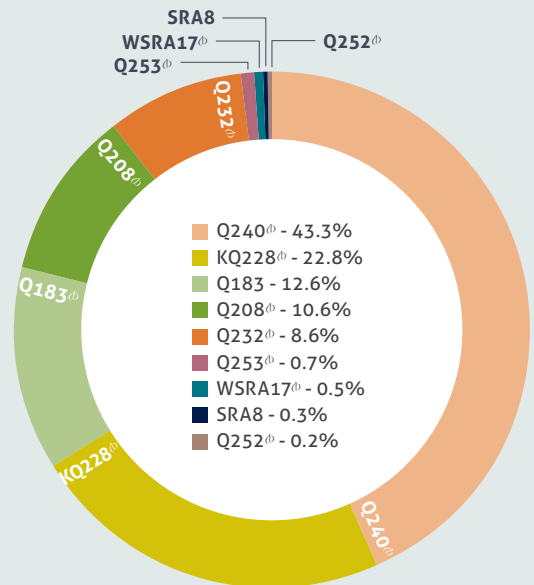
ALL BURDEKIN DISTRICT PRODUCTION (% TONNES 2021)

In 2021, 7.88m tonnes were harvested from 65,505 ha, down from 66,201 in 2020.

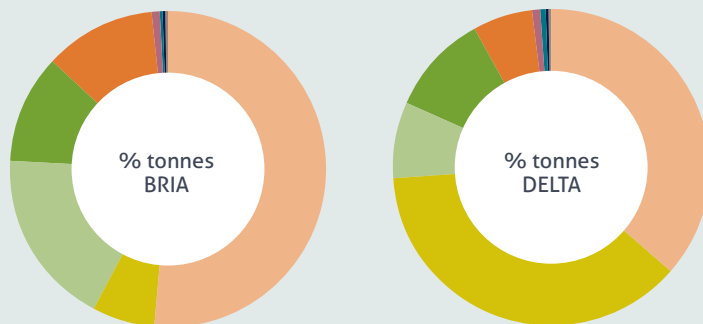
In 2021, the region had an average TCH of 120.4. This was up from 119.4 TCH in 2020. Average CCS for 2021 was 14.40, down from 14.62 in 2021.

Q240[®] increased from 39.5% of the crop in 2020, to 43.3% in 2021. Q183 dropped from 15.8% in 2020 to 12.6% in 2021.

KQ228[®] production remained at about 22% in 2021.



BRIA AND DELTA PRODUCTION (% TONNES 2021)



VARIETY	% TONNES BRIA	% TONNES DELTA
Q240 [®]	51.3	36.3
KQ228 [®]	6.3	37.4
Q183	18.0	7.8
Q208 [®]	11.0	10.3
Q232 [®]	11.3	6.2
Q253 [®]	0.7	0.6
WSRA17 [®]	0.4	0.6
SRA8	0.2	0.3
Q252 [®]	0.2	0.2

This year, the guide shows Variety Performance information in the BRIA and Delta Regions in 2021. Group Classifications are based on productivity groups and have been done in conjunction with BPS and Wilmar Sugar. For more information on group classifications, please contact BPS.

In 2021, 3.69m tonnes were delivered from the BRIA. 4.18m tonnes from the Delta Area. Q240[®] was the dominant variety accounting for 51.3% of tonnes within the BRIA. For the Delta area, 37.4% of production was KQ228[®], followed closely by Q240[®] with 36.3%.

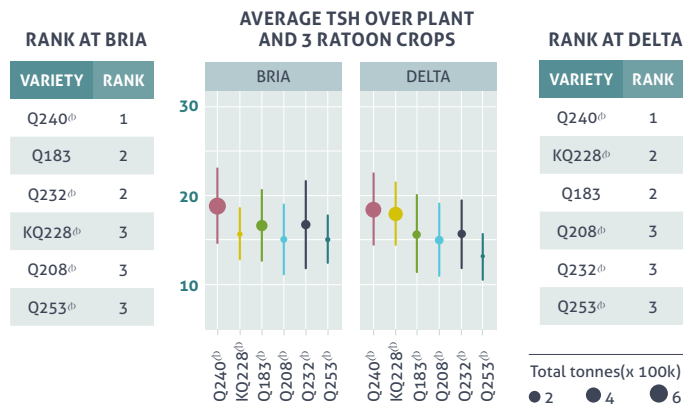
VARIETY PERFORMANCE TONNES OF SUGAR/HA (TSH), BY SOIL TYPE IN THE BRIA AND DELTA.

In the plots below, for variety performance in a given area, a dot represents the average TSH and its size illustrates its total production; length of the line around the dot measures the variation of TSH, a short line means all growers produced similar TSH whereas a longer line indicates some growers produced higher TSH for that variety at the same area.

Ranking of Varieties: Variety performance (TSH) is ranked on each soil type, in both the BRIA and Delta. A ranking of "1" is the top performing variety. In cases where variety performance is similar, the ranking will be the same. For soil classifications on your farm contact BPS.

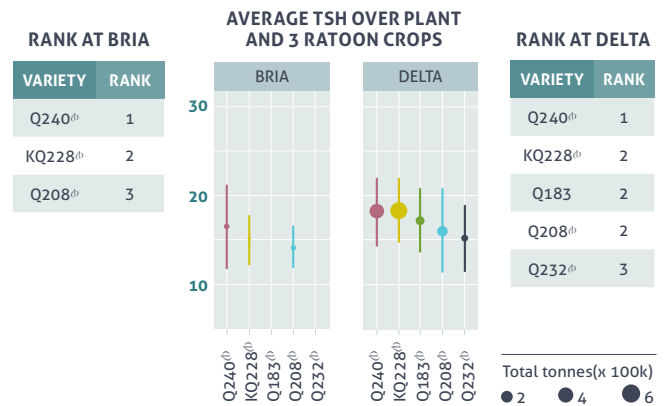
Light Cracking Clay

In 2021, total production was 2.36m (29.9%) tonnes in the Burdekin.



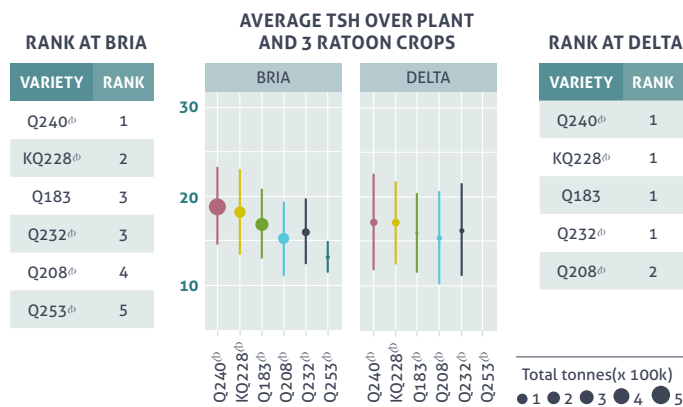
Non-Cracking Clay

In 2021, total production was 1.9m (24.2%) tonnes in the Burdekin.



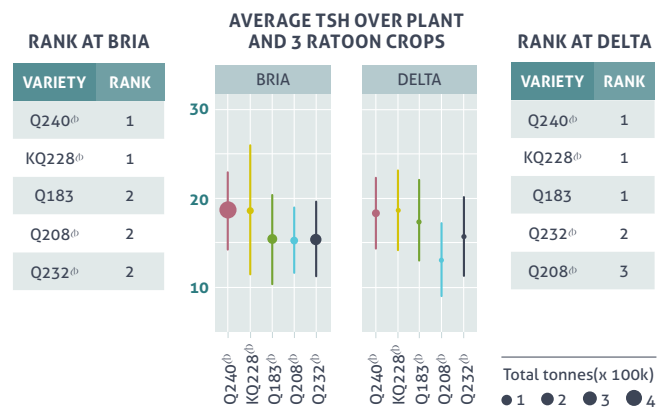
Clay Duplex

In 2021, total production was 1.23m (15.6%) tonnes in the Burdekin.



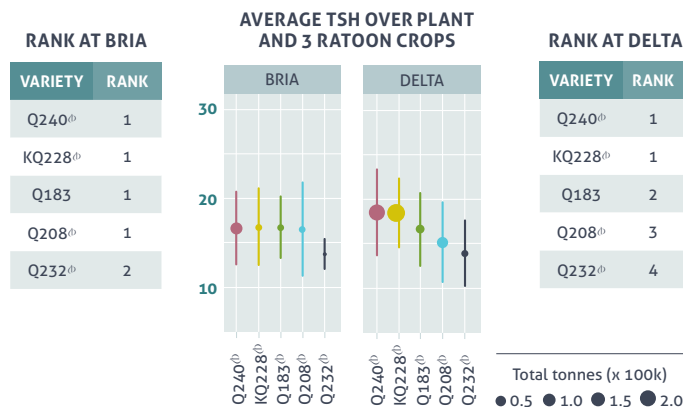
Sodic Duplex

In 2021, total production was 0.95m (12.1%) tonnes in the Burdekin.



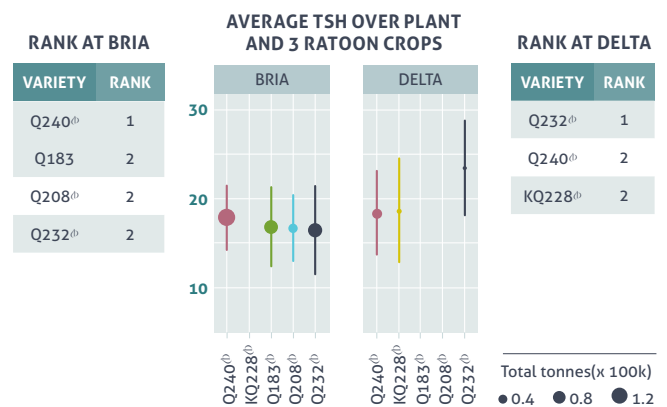
Light Non-Cracking Clay

In 2021, total production was 0.64m (8.2%) tonnes in the Burdekin.



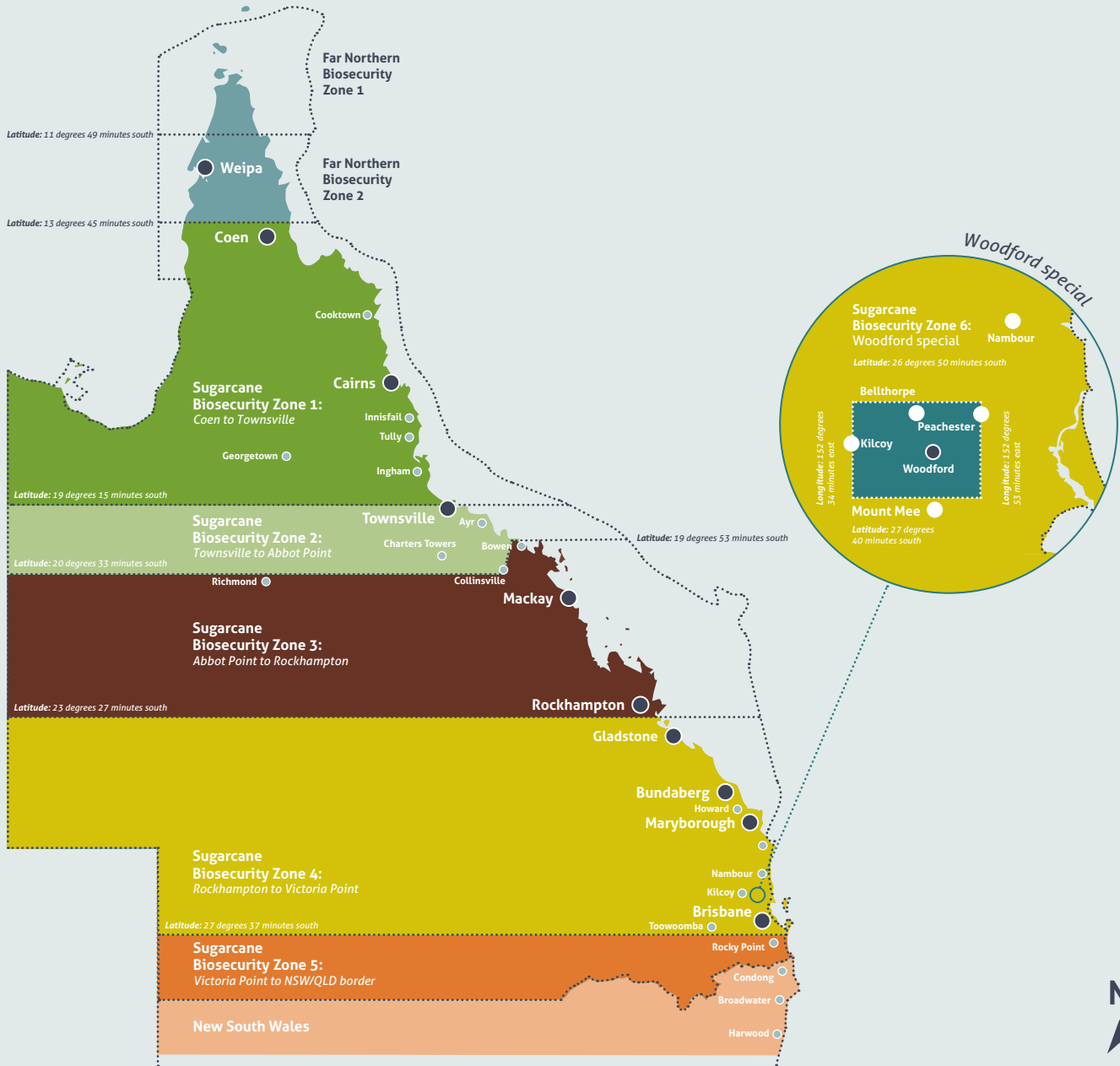
Heavy Cracking Clay

In 2021, total production was 0.51m (6.5%) tonnes in the Burdekin.





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 group for regional advice on varieties. They can supply approved planting material of recommended varieties and place orders for tissue culture plantlets.



Burdekin Productivity Services Ltd (BPS):
T 07 4783 1101

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 from the calculator (available at sugarresearch.com.au/calculator).



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

	No. plantlets ordered	100	250	500	1000
Yr 1	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.

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 2.5kg/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.

QCANESelect®

- Using sugarcane varieties that are best-suited to your farm may help maximise productivity and profitability.
- QCANESelect® is an online tool that allows you to review, compare and select varieties for use on each block on your farm.
- To access QCANESelect® and the tissue culture calculator visit the SRA website sugarresearch.com.au
- The information in QCANESelect® is updated regularly based on our most recent trials and from observations and experiences of varieties that are growing in the field.
- 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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