Sugar Research Australia

VARIETY GUIDE 2021/2022

New South Wales Region

HOW TO USE THIS GUIDE

This guide is designed to help growers in the NSW 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 NSW REGION

Variety Recommendation and Release Process

Regional Variety Committees (RVCs) have replaced Variety Approval Committees (VAC) in line with changes to biosecurity legislation. With membership drawn from growers, millers and productivity service groups specific to the region, the RVCs will continue to be 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.

The NSW RVC Membership is drawn from the NSW Agricultural Advisory Committee, Sunshine Sugar, Agricultural Services staff and Sugar Research Australia and will review and approve new varieties for release in NSW. The NSW RVC requires committee consensus for progression of a variety through the breeding program and committee consensus 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 NSW region. Yield (TCH) and CCS for each new variety are compared with the trial results of various standard varieties.

Variety: SRA11Φ QS05-6092			***Parentage:*** *QN86-2139 x QC90-289* ***/ Summary:*** *1 yr Crop equal tonnes cane; equal CCS 2 yr Crop higher tonnes cane; lower CCS*						
TRIAL CYCLE	**TRIAL HARVEST YEAR**	**CROP CLASS**	**YIELD (TCH)**			**CCS**			**# OF HARVESTS**
			SRA11Φ	**Q208Φ**	**KQ228Φ**	**SRA11Φ**	**Q208Φ**	**KQ228Φ**	
1 Year Crop	(2011 series FATs): 2012	Plant	55	64	58	14.9	14.9	14.9	2
	2013	1R	95	89	91	15.9	16.1	16.3	2
	2014	2R	113	114	116	12.0	12.0	12.2	2
	2015	3R	123	142	135	14.6	13.7	14.0	1
	(2014 series FATs): 2015	Plant	114	101	97	13.9	13.7	13.4	2
	2016	1R	71	71	74	14.1	14.3	13.9	2
	2017	2R	94	96	104	13.8	14.6	14.5	2
	Overall performance 1yr crop		**95**	**97**	**96**	**14.1**	**14.2**	**14.2**	**13**
2 Year Crop	**TRIAL HARVEST YEAR**	**CROP CLASS**	**SRA11Φ**	**Q203Φ**	**Q208Φ**	**SRA11Φ**	**Q203Φ**	**Q208Φ**	**# OF HARVESTS**
	(2014 series AATs): 2016	Plant 2yr	211	191	182	13.4	13.5	13.3	5
	2018	1R 2yr	175	168	160	12.8	12.8	12.5	4
	Overall performance 2yr crop		**193**	**176**	**171**	**13.1**	**13.2**	**12.9**	**9**
Available 2020									
Comments:			Results for 2011 and 2014 series final assessment trials (FATs) 1-year and 2014 series AATs 2-year trials. SRA11Φ disease ratings: resistant to smut, mosaic, leaf scald, Fiji leaf gall and Pachymetra. Released as a 1-year and 2-year variety.						

Variety: SRAW18Φ KQB07-34350			***Parentage:*** *Q208 x QBYN04-26272* ***/ Summary:*** *2yr Crop higher tonnes cane; lower CCS 1yr Crop equal tonnes cane; lower CCS*								
TRIAL CYCLE	**TRIAL HARVEST YEAR**	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
			SRAW18Φ	**Q208Φ**	**Q232Φ**		**SRAW18Φ**	**Q208Φ**	**Q232Φ**		
2 Year Crop	(2014 series AATs): 2016	Plant 2yr	222	193	205		13.1	13.3	13.7		4
	2018	1R 2yr	174	168	190		12.5	12.5	12.9		3
	Overall performance 2yr crop		**198**	**181**	**198**		**12.8**	**12.9**	**13.3**		**7**
1 Year Crop	**TRIAL HARVEST YEAR**	**CROP CLASS**	**SRAW18Φ**	**Q208Φ**	**Q183Φ**	**KQ228Φ**	**SRAW18Φ**	**Q208Φ**	**Q183Φ**	**KQ228Φ**	**# OF HARVESTS**
	(2015 series FATs): 2016	Plant	88	97	98	101	11.8	12.9	13.2	13.2	2
	2017	1R	122	116	119	117	14.0	15.3	15.1	15.5	2
	2018	2R	109	101	108	105	12.0	13.0	13.3	13.4	2
	Overall performance 1yr crop		**106**	**105**	**108**	**107**	**12.6**	**13.7**	**13.8**	**14.0**	**6**
Available 2020											
Comments:			Results for 2015 series final assessment trials (FATs) 1-year and 2014 series AATs 2-year trials. SRAW18Φ disease ratings: resistant to mosaic, leaf scald and Fiji leaf gall; intermediate rating for smut and Pachymetra. Released as a 2-year variety.								

For more information on *variety field trials* contact:

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Variety: SRA29 QS08-9474			***Parentage:*** *Q170 x QC90-289* ***/ Summary:*** *1 and 2yr Crops are equal in tonnes cane/Ha and CSS*										
TRIAL CYCLE	**TRIAL HARVEST YEAR**	**CROP CLASS**	**YIELD (TCH)**					**CCS**					**# OF HARVESTS**
			SRA29	**Q208Φ**	**Q240Φ**	**BN81-1394**	**BN83-3120**	**SRA29**	**Q208Φ**	**Q240Φ**	**BN81-1394**	**BN83-3120**	
2 Year Crop	(2016 series AATs): 2018	Plant 2yr	175	179	165	178	209	13.4	13.0	13.3	13.7	11.4	4
	2020	1R 2yr	126	113	120	117	141	13.5	13.2	13.7	13.8	11.8	3
	Overall performance 2 Yr crop		**154**	**151**	**146**	**152**	**180**	**13.4**	**13.1**	**13.5**	**13.7**	**11.6**	**7**
1 Year Crop	**TRIAL HARVEST YEAR**	**CROP CLASS**	**SRA29**	**Q208Φ**	**Q240Φ**	**BN81-1394**	**KQ228Φ**	**SRA29**	**Q208Φ**	**Q240Φ**	**BN81-1394**	**KQ228Φ**	**# OF HARVESTS**
	(2014 series FATs): 2015	Plant	107	101	92	108	97	14.0	13.7	13.5	14.1	13.4	2
	2016	1R	70	71	71	75	74	13.8	14.3	13.9	14.2	13.9	2
	2017	2R	88	96	91	95	104	14.2	14.6	14.1	14.2	14.5	2
	(2016 series FATs): 2017	Plant	122	118	118	120	119	14.1	14.3	14.2	14.6	14.6	1
	2018	1R	113	111	109	114	104	13.0	13.0	13.2	13.4	13.6	1
	2019	2R	106	102	92	106	106	14.5	14.8	14.9	15.1	15.0	1
	Overall performance 1yr crop		**101**	**100**	**95**	**103**	**101**	**13.9**	**14.1**	**14.0**	**14.3**	**14.1**	**9**
Available 2021													
Comments:			SRA29 is resistant to Fiji leaf gall, leaf scald and Pachymetra. It has intermediate resistance to smut.										

Variety: SRAW30Φ KQB07-24815			***Parentage:*** *QA89-3305 x QBYC05-10199* ***/ Summary:*** *2yr Crop higher tonnes cane and CCS*								
TRIAL CYCLE	**TRIAL HARVEST YEAR**	**CROP CLASS**	**YIELD (TCH)**				**CCS**				**# OF HARVESTS**
			SRAW30Φ	**BN83-3120**	**Q208Φ**	**Q203Φ**	**SRAW30Φ**	**BN83-3120**	**Q208Φ**	**Q203Φ**	
2 Year Crop	(2015 series AATs): 2017	Plant 2yr	151	150	134	133	13.4	10.7	12.2	13.2	5
	2019	1R 2yr	163	137	140	129	12.9	10.6	12.3	12.6	3
	Overall performance 2yr crop		**156**	**145**	**136**	**131**	**13.2**	**10.7**	**12.3**	**13.0**	**8**
Available 2021											
Comments:			Results for SRAW30Φ in the 2015 2-year old AAT series are excellent. It is resistant to Fiji leaf gall, smut, leaf scald and Pachymetra. We have no 1-year old data.								

SRA11Φ

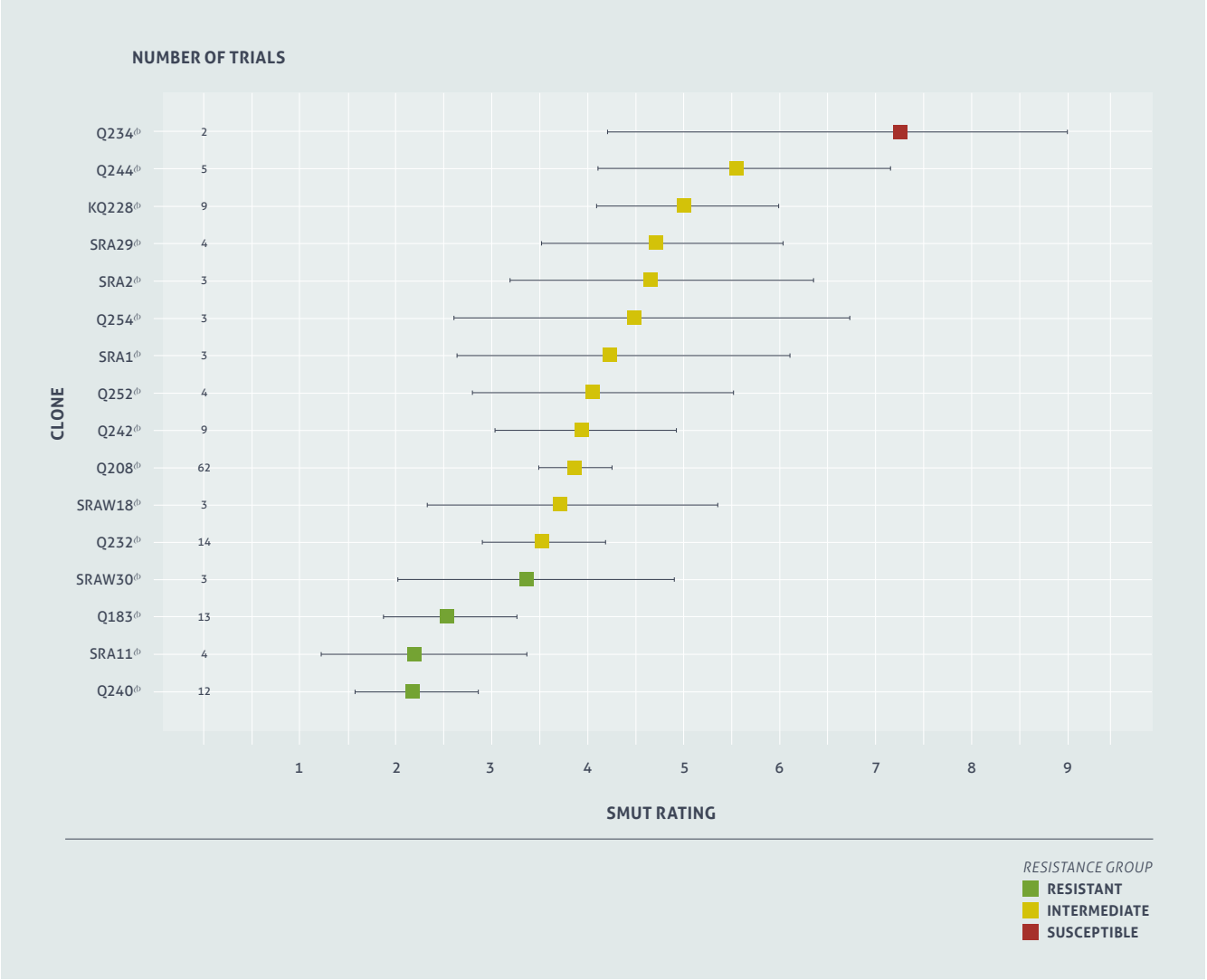
SRAW18Φ

SRA29

SRAW30Φ

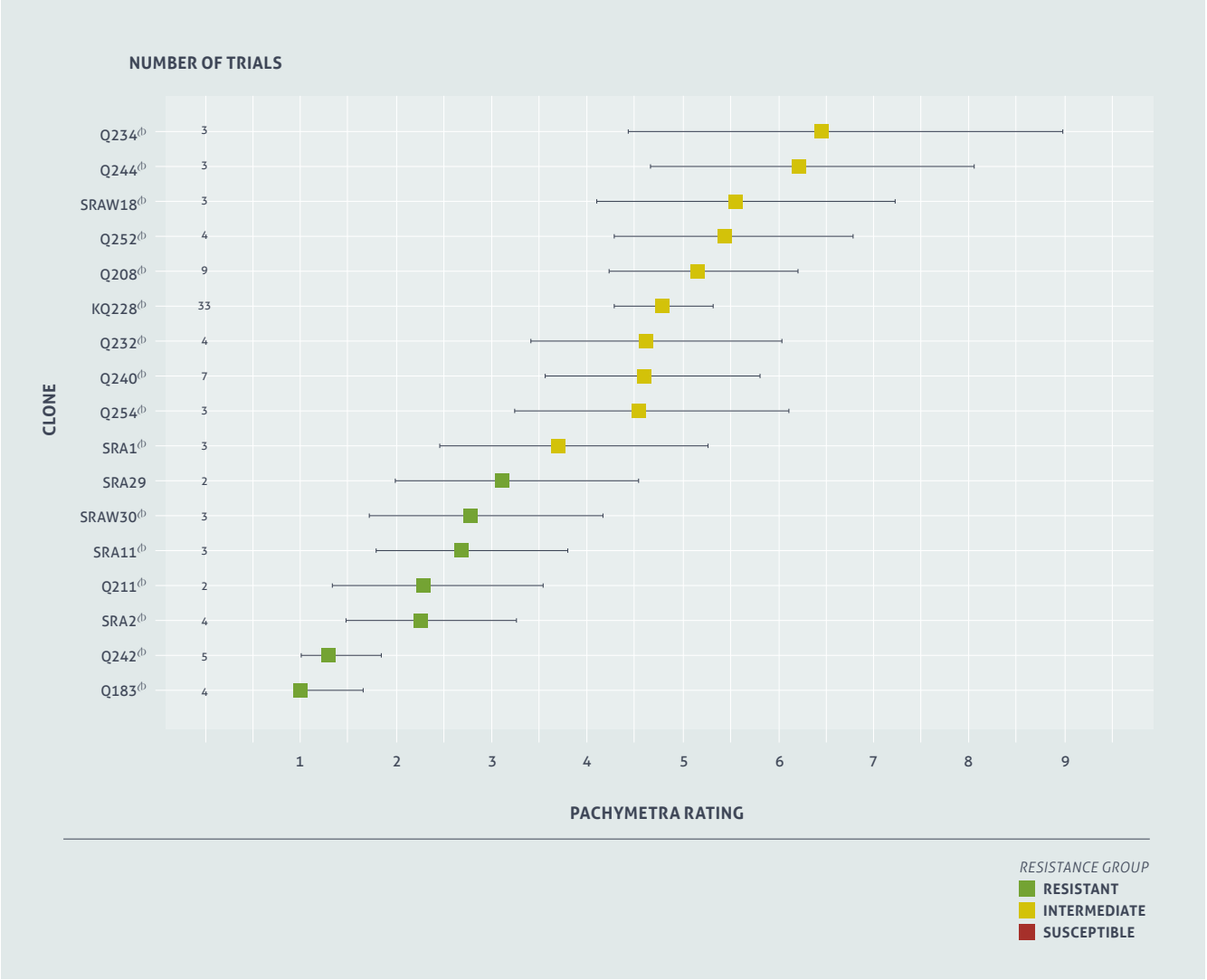
SMUT RATINGS

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 Q208Φ has been tested in 28 trials with a confidence interval of 3.5 to 4.25 while the new variety SRAW30Φ has only been tested in three trials and ranges from 2.4 to 5.6. 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 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 the new variety SRA11(ф) has only been tested in three trials and ranges from 1.8 to 3.8. 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 given the diseases that may be present on your farm.

Disease Ratings								
VARIETY	FIJI LEAF GALL	SMUT	LEAF SCALD	CHLOROTIC STREAK	ORANGE RUST	BROWN RUST	RED ROT	PACHYMETRA
KQ228ϕ	I	I	R	S	R	R	R	I
Q183ϕ	R	R	I	S	R	R	I	R
Q208ϕ	I-S	I-R	R	R	R	R	R	I
Q211ϕ	S	S	R		R	R	R	R
Q232ϕ	I	I-R	R	R	R		I-R	I
Q234ϕ	R	S	R	I-S	R	S	I-R	I-S
Q240ϕ	I-S	R	R	I-R	R		R	I
Q242ϕ	R	I-R	R	I	R		I-R	R
Q244ϕ	R	I	R	S	R		I	I-S
Q252ϕ	I	I-R	R		R		R	I
Q254ϕ	R	I	R		R		I	I
SRA1ϕ	I	I-R	R		R	R	I	I-R
SRA2ϕ	R	I	R		I		R	R
SRA11ϕ	R	R	R		R		I	I-R
SRAW18ϕ	R	I-R	R				R	I-S
SRA29	R	I	R				I	R
SRAW30ϕ	R	R	R				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 Q211ϕ, KQ228ϕ, Q234ϕ, Q242ϕ, SRA1ϕ and SRA2ϕ.

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

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.

NSW Harvest Management				
VARIETY	TRASHING	EARLY SUGAR	MID SUGAR	LATE SUGAR
KQ228ϕ	A-T	A	A	A
Q183ϕ	F-AV	P	A	A
Q208ϕ	F	G	G	G
Q211ϕ	F-AV	P	A	A
Q232ϕ	T	P	A	A
Q234ϕ	F-AV	G	G	G
Q240ϕ	F-AV	G	G	G
Q242ϕ	A-T	G	A	A
Q244ϕ	F	G	G	A
Q252ϕ	F	G	G	G
Q254ϕ	A	A	A	A
SRA1ϕ	A	G	G	G
SRA2ϕ	F-AV	G	G	G
SRA11ϕ	F-AV	A	A	A
SRAW18ϕ	F-AV	A	A	G
SRA29ϕ	F-AV	G	G	G
SRAW30ϕ	A	G	G	G

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.

TRASHING
- FREE (F)
- FREE-AVERAGE (F-AV)
- AVERAGE (A)
- AVERAGE-TIGHT (A-T)
- TIGHT (T)

- GOOD
- AVERAGE
- POOR
- 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.

Table 3 summarises phytotoxicity severity symptoms 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$^{\Phi}$

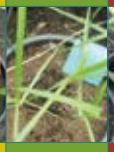
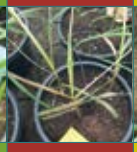
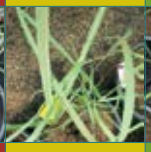
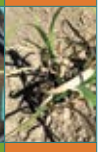
	2,4-D	2,4-D+ IOXYNIL	AMETRYN	AMETRYN+ TRIFLOXY SULFURON	AMICARBAZONE	ASULAM	DIURON	FLUMIOXAZIN	METOLACHLOR	METRIBUZIN	MSMA
DESCRIPTION OF SYMPTOMS	Small white spotty discolorations	Small yellow spotty discolorations	Yellowing of the whole plant	Slight yellow blotching	Small white spotty discolorations	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, KQ228ϕ was used as our reference variety. Note that symptoms severity on KQ228ϕ 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 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	Q208ϕ	1.1	1.1		1.3		1.2			1.5	1.3	1.8
#2014	Q232ϕ	1.2	1.2		1.2		1.2			1.5	1.2	1.8
#2014	Q240ϕ	1.2	1.2		1.3		1.2			1.5	1.2	1.8
#2014	Q242ϕ	1.2	1.2		1.3		1.2			1.6	1.2	1.8
#2014	Q252ϕ	1.2	1.2		1.3		1.2			1.5	1.2	1.8
#2014	*Ref KQ228ϕ*	*1.2*	*1.2*		*1.3*		*1.2*			*1.4*	*1.2*	*1.7*
#2016	SRA1ϕ	1.4		1.8			2.5			1.7	1.0	2.9
#2016	SRA2ϕ	1.4		2.0			2.4			2.4	1.6	3.5
#2016	*Ref KQ228ϕ*	*1.7*		*2.3*			*2.3*			*1.8*	*1.7*	*3.0*
#2017	SRA11ϕ	1.5		1.8		1.4	2.9		3.6	2.3	1.4	3.2
#2017	*Ref KQ228ϕ*	*1.6*		*2.4*		*1.5*	*1.8*		*3.7*	*2.1*	*1.6*	*3.2*
#2020	SRA29	1.4		2.1		1.6	2.8	1.3		1.4	1.1	3.7
#2020	SRAW30ϕ	1.0		1.8		1.7	3.0	1.2		1.2	1.1	3.2
#2020	*Ref KQ228ϕ*	*1.3*		*1.8*		*1.7*	*2.4*	*1.3*		*1.5*	*1.1*	*3.0*

For more information contact:
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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).

Condong

In 2020 season, a total of 519,107 tonnes of cane was harvested from 4,428 hectares in the Condong mill area. Approximately 69% of the crop was harvested as one year old cane and 31% as two year old cane.

Condong had a combined one and two year mill average TCH of 117.2 t/ha and an average CCS of 11.61.

Q208Φ and Q183Φ accounted 46% of the tonnes harvested as one year old cane with Q208Φ being the dominant two year cane accounting for 40% of the crop.

The best one year old varieties in the 2020 season, producing TSH over mill average were Q208Φ, KQ228Φ, Q240Φ,Q254Φ and SRA2Φ. Q254Φ and SRA2Φ were a small percentage of the harvested area.

In two year old crops Q208Φ performed above mill average TSH with Q240Φ performing around mill average.

KQ228Φ and Q183Φ, performed below mill average TSH.

Note: Varieties with low tonnes for each crop type are not shown in the graphs.

Broadwater

In 2020 season, a total of 657,064 tonnes of cane was harvested from 5,597 hectares in the Broadwater mill area. Approximately 84% of the crop was harvested as two year old cane and only 15% as one year old cane. There was a small amount of standover.

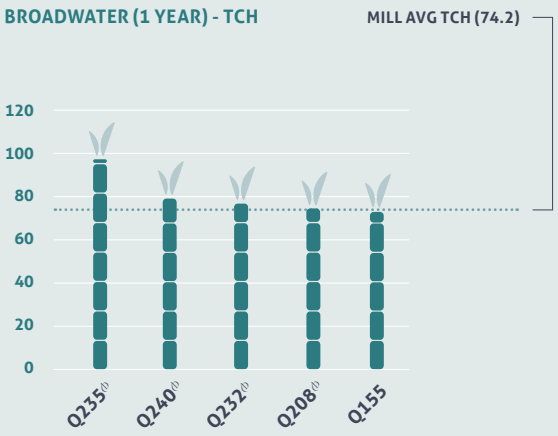
Broadwater mill had an average TCH of 117.4 t/ha and had an average CCS of 12.2.

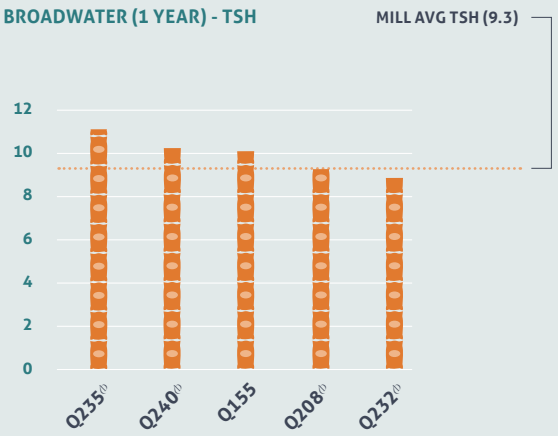
Q208Φ, Q240Φ and Q232Φ accounted for 71% and 59% of the cane supply for one year old and two year old cane.

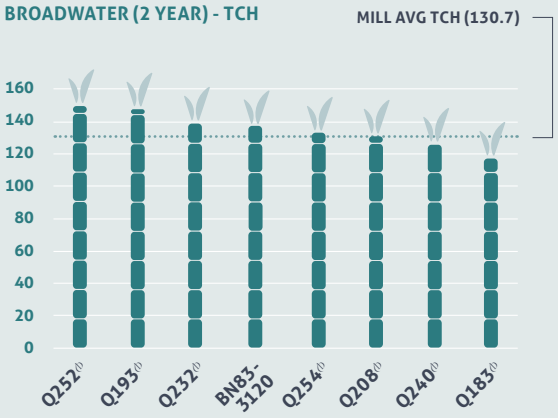
The varieties with the best one year TSH were Q235Φ, Q240Φ and Q208Φ.

However, the results for Q235Φ are based on limited information as it is only 3% of the one year crop.

In two year old crops Q208Φ, Q232Φ, Q252Φ and Q254Φ all performed above mill average for TSH with Q240Φ around mill average. Q252Φ and Q254Φ were only a small percentage of the two year old harvest.







TONNES OF CANE PER HECTARE (TCH)

TONNES OF SUGAR PER HECTARE (TSH)

Note: Varieties with low tonnes for each crop type are not shown in the graphs.

VARIETY ADOPTION IN EACH MILL AREA (CONT)

Harwood

In 2020, a total of 567,857 tonnes of cane was harvested from 4,685 hectares in the Harwood mill area.

Only 22% of the crop was harvested as one year old cane and 78% as two year old.

Harwood had a mill average TCH of 121.2 t/ha and an average CCS of 11.9.

Q208Φ was the dominant one and two year variety and accounted for 39% and 38% of the cane supply respectively.

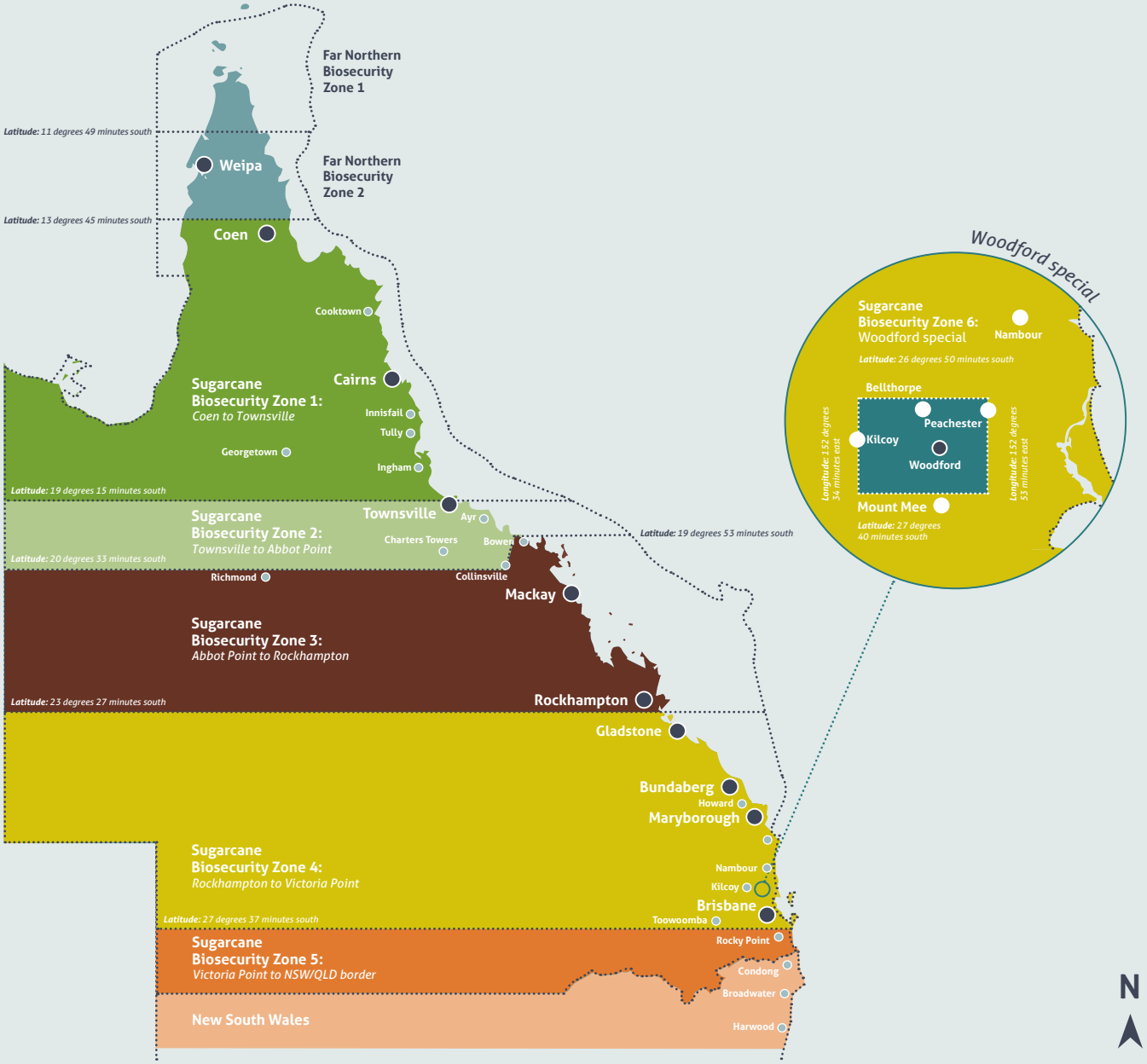
In one year old crops Q208Φ,Q240Φ, Q252Φ, Q244Φ and SRA1Φ performed above mill average for TSH. The SRA1Φ results are from a small percentage of the one year old crop.

In two year old crops Q208Φ,Q232Φ, Q240Φ, Q244Φ, Q252Φ and Q254Φ performed above mill average for TSH with Q244Φ, and Q252Φ being only a small percentage of the two year old crop.

Note: Varieties with low tonnes for each crop type are not shown in the graphs.

For more information please visit:
www.sugarresearch.com.au

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.

NSW Agricultural Services:
T *Broadwater* 02 6620 8257
T *Condong* 02 6670 1745
T *Harwood* 02 6640 0479

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 advance 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.
- 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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