# Varieties and plant breeding update

June 2016

Sugar Research Australia™

## SRA unveils new sugarcane varieties

Sugarcane growers and millers in multiple regions will soon have access to five new sugarcane varieties that have now been approved for release.

These varieties are SRA4$^{\Phi}$ (QS97-2463) in Southern, SRA5 (QN04-668) in the Herbert, SRA6 (QN05-507) in the North, SRA7 (QN05-1071) in the North, and SRA8 (QA01-5267) in the Burdekin.

Burdekin grower **Steve Pilla** chats about the new Burdekin variety SRA8 with SRA Principal Technician **Catherine Kettle** and Burdekin grower **Lawrence Dal Santo**.

In addition, the previously approved varieties SRA1$^{\Phi}$ and SRA3$^{\Phi}$ have been approved for release in the North and Q247$^{\Phi}$ has been approved for release for the Southern region (recommended for Bundaberg and Maryborough only).

This update provides some more information on these new varieties, and greater detail will soon be available via QCANESelect™, as well as published in SRA's forthcoming Variety Guides, which will be available in coming months. Growers can also contact their local SRA office or talk to their local productivity services organisation for more information.

The SRA breeding program is about delivering the best possible varieties for each region and these are some of the varieties that have stood out among several thousand clones, years of trials, and gained final approval by the local industry.

These varieties have been developed to maximise profitability for sugarcane growers and millers, striking the right balance between tonnes of cane, sugar content, optimum resistance to diseases, and ability to be processed within the mill.

Herbert grower **Chris Bosworth** with the recently-approved variety for the Herbert region, Q252$^{\Phi}$, which he is pleased with in his seed plot in 2016.

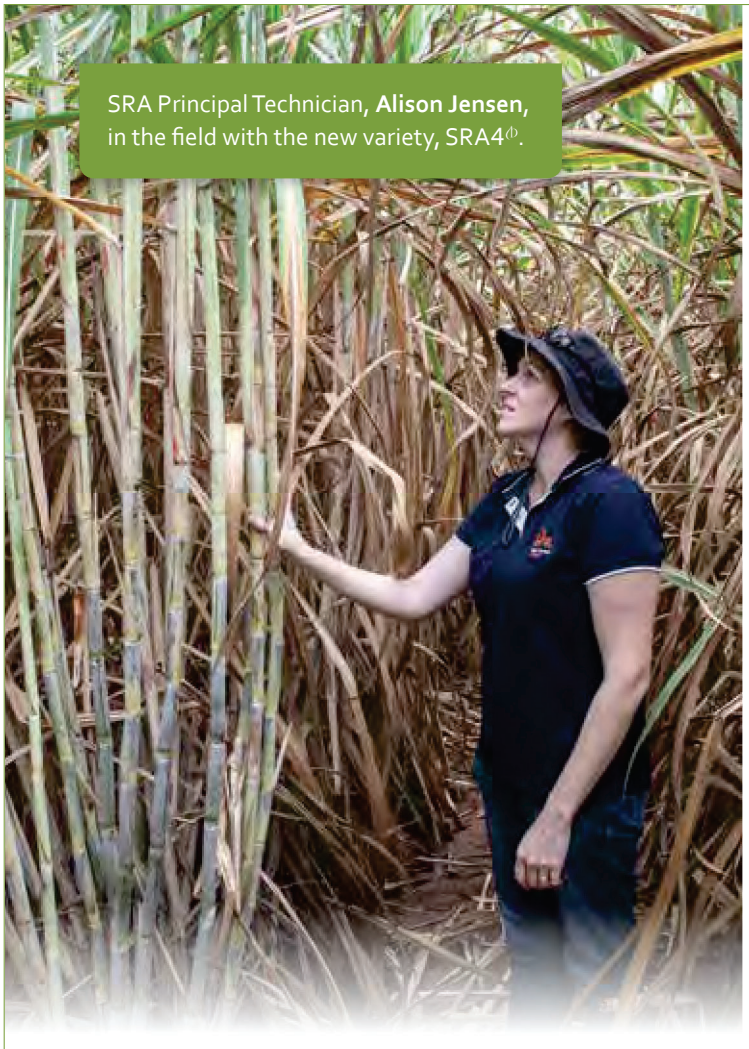
For the Australian sugarcane industry, SRA's breeding objective is to maximise economic profits for the whole industry through genetic improvement.

All of these varieties have been approved for release following deliberations of each region's Variety Approval Committee (VAC).

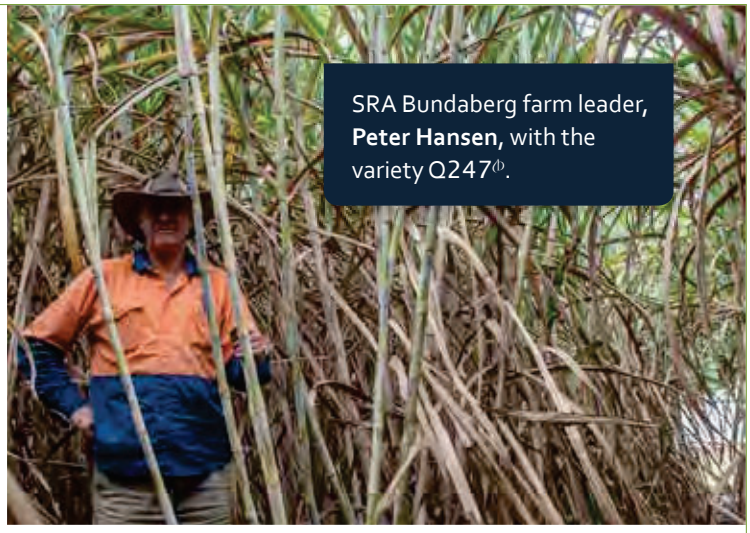
Each VAC is made up of growers, millers, and industry representatives, and they determine the varieties that they want released in their region.

Each VAC makes the assessment on a range of varieties and make their approvals based on the potential for grower and miller profitability.

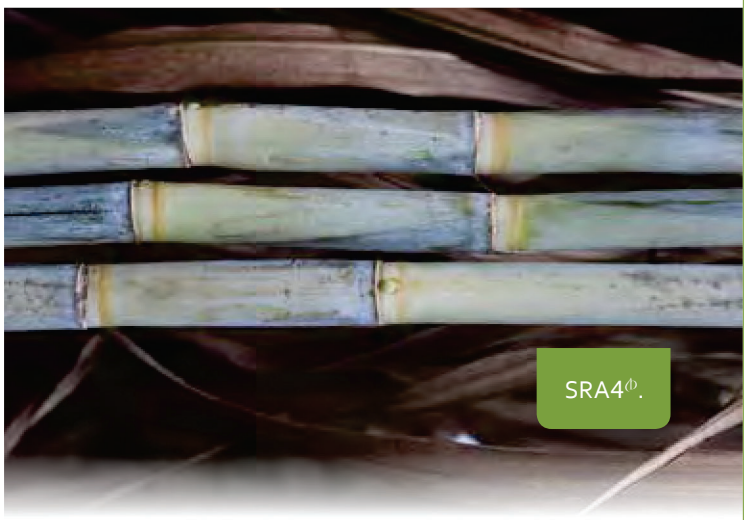
SRA4$^{\Phi}$ has been approved for release for the Southern region.



SRA Principal Technician, **Alison Jensen**, in the field with the new variety, SRA4$^{\Phi}$.



SRA Bundaberg farm leader, **Peter Hansen**, with the variety Q247$^{\Phi}$.



SRA4$^{\Phi}$.

# 2016 new variety releases

**SRA4$^{\Phi}$ and Q247$^{\Phi}$ (Southern)**

SRA4$^{\Phi}$ has been approved in the southern region and Q247$^{\Phi}$ has been released for the region. Q247$^{\Phi}$ had previously been blanket-approved across the industry and in the Southern region it is recommended only in Bundaberg and Maryborough. In SRA trials, SRA4$^{\Phi}$ and Q247$^{\Phi}$ produced moderate tonnes and moderate sugar (CCS), and are resistant to Pachymetra root rot. SRA4$^{\Phi}$ showed good productivity across ratoons. Q247$^{\Phi}$ is suited to early harvest.

Bundaberg sugarcane grower Tony Castro took part in the recent VAC meeting and said that SRA4$^{\Phi}$ and Q247$^{\Phi}$ had impressive trial results. "These varieties that we approved showed good resistance to pests and diseases, good yields in terms of tonnes and CCS, and good early to mid-season maturity," Mr Castro said. "We already have a number of good varieties for later in the season, but we are looking for varieties that are good early- and mid-season."

He added that Pachymetra root rot resistance was very positive as it allowed for improved management of this disease. "We also appreciate the work that SRA is doing assessing varieties through Final Assessment Trials into further ratoons, to give a better indication of how new varieties may perform across a crop cycle."

**SRA5 (Herbert)**

SRA5 has recently been approved for release by the Herbert VAC and is suited to niche environments and certain conditions. SRA5 is most suited to poor soils and extreme environments such as regions prone to extended water-logging. In SRA trials, SRA5 has produced above-average tonnes with good vigour, although with very low CCS and high fibre. Because of this, it is not expected to be a dominant variety for the region, but that it could fill an important niche role.

Herbert grower Joe Girgenti farms at the southern end of the district near Mutarnee and said that he saw potential for SRA5 in certain environments. He has grown small amounts of the variety over several years as part of Final Assessment Trials.

"Growers put our eyes on this variety and decided we want to go ahead with it," he said. "My observation is that it ratoons well, produces very good tonnes, and stands up tall. The lower CCS means that it will not be for everyone, but if it ratoons well and can save on our replanting costs then it could fill an important niche here in the Herbert."

HCPSL will establish nitrogen and ripener trials to see if SRA5 could be managed to produce more CCS.

**SRA6 and SRA7 (North)**

Both SRA6 and SRA7 are locally-bred Northern varieties. They have above-average TCH and below-average CCS, with their productivity in tonnes of sugar per hectare better than the major commercial varieties grown in the Far North.

Cane Productivity Manager with Tully Sugar Limited (TSL), Greg Shannon, welcomed the new varieties. "Up to now, the majority of varieties we are working with have been blanket approved and we test them for several seasons to find the best local recommendation for them to fit into our system," Mr Shannon said. "With SRA6 and SRA7 however, both being locally bred varieties, we are hopeful they will find a place in our system quickly. In addition SRA6 is Pachymetra resistant and we know, from our recent surveys that Pachymetra is a major issue for us. Thankfully many of the new SRA varieties are Pachymetra resistant."

**SRA8 (Burdekin)**

SRA8 is currently in the mother plots run by Burdekin Productivity Services (BPS) and was first planted into BPS strip trials in 2014. In final assessment and strip trial data, the variety had average tonnes of cane per hectare, and high sugar (CCS). It is intermediate resistant to smut.

BPS Manager, Rob Milla, said that once strip trials were harvested in 2016, these results would be shared in BPS newsletters and shed meetings. "From what we have observed at strip trials, SRA8 appears to have rapid germination and above average CCS," Mr Milla said.

"Feedback from growers has suggested they would prefer higher CCS varieties, and SRA8 should fill this requirement. As with all new varieties, BPS suggests growers to trial a small area on their farm."

## Enthusiasm builds for existing new varieties

There continues to be strong interest in the three SRA varieties approved in 2015, as well as other recently released varieties.

In the Southern region, SRA1$^{\Phi}$ and SRA2$^{\Phi}$ were released last year. SRA1$^{\Phi}$ in trials has had high tonnes, high CCS, maintains productivity in ratoons, and has good performance across a range of soil types. It will undergo milling trials in 2016.

SRA2$^{\Phi}$ in trials has had moderate to high tonnes of cane and high CCS. It maintains productivity in ratoons and has shown good performance across a range of soils. It also has shown an indication of good early-season CCS in SRA trials, which is an important characteristic that assists growers to plan their mix of varieties and scheduling of their harvest.

Growers in the Herbert have also expressed enthusiasm for recently released varieties. Victoria Estate farmer Chris Bosworth is particularly pleased with SRA3$^{\Phi}$ and Q252$^{\Phi}$ in his seed plot this year.

"Q252$^{\Phi}$ is a new variety for this district, and it seems that on nice creek-bank soil that you can't fault it," Mr Bosworth said. "I will definitely be planting out more of this variety. I am also dipping my toe in the water with SRA3$^{\Phi}$."

He said while he was pleased with how they were looking, he will follow the advice of HCPSL and plant Q252$^{\Phi}$ and SRA3$^{\Phi}$ with Sinker when smut is present in planting material, given that both varieties have Intermediate resistance to smut.

At the recent VAC meetings decisions were also made on clones in the pipeline that are being maximum propagated for release next year or in coming years. This includes QC97-2432, and QC04-1411 in the Central Region, which will be discussed further at a supplementary VAC meeting after September 2016; and QS04-259 and QA02-6431 in NSW, both of which are showing promise in trials.

Trial data and detailed information on these varieties will be published in SRA's 2016 Variety Guides and will be available on QCANESelect™.

Herbert grower Joe Girgenti with the niche variety SRA5. Because of its very low CCS, SRA5 is recommended only in niche conditions and growers should seek more information from SRA or Herbert Cane Productivity Services Limited (HCPSL).

## Plant breeding team profile with Nikita Soukhov

**Nikita Soukhov** from SRA Mackay.

**What is your role within the plant breeding team at SRA?**

My principal function in the plant breeding team is to provide scientific and technical support for the Smutbuster and the Introgression projects. While the Smutbuster project focuses on the development of high-yielding smut-resistant varieties, the Introgression project aims to broaden the genetic base of the sugarcane breeding population by delivering new parents with new genes from wild relatives of sugarcane. I am responsible for the establishment and assessment of trials in these projects.

In addition, I am managing the varietal sugar quality testing program in Mackay. The aim of this program is to provide sugar quality information of new varieties before they are released to the industry. My job is to plant the advanced clones from all regions in a replicated field trial at the station in Mackay and to supervise the sampling process in the field and the laboratory.

**What are the major challenges associated with your job?**

The Introgression project involves work in Mackay, Herbert, Burdekin, Bundaberg and Northern NSW. My job often requires me to travel for long periods of time to meet the requirements of the project. During the busy season, this aspect of my work is challenging and rewarding at the same time. It allows me to connect with some remarkable people throughout the industry. Also, as a newcomer to Queensland and Australia, I am really enjoying to explore this part of the continent.

**Where are the main opportunities and areas of interest for growers from the breeding program for the years ahead?**

SRA's work on the Introgression project provides a huge potential for growers. Currently, the project focuses on two wild relatives of sugarcane: *Erianthus arundinaceus* and *Saccharum spontaneum*. These species commonly grow and thrive in harsh conditions and simultaneously show good ratoonability and resistance to pachymetra, smut and plant parasitic nematodes. Crossing these wild canes with commercial sugarcane can lead to new cultivars with a range of beneficial characteristics from the wild species. SRA is already starting to test some of the Introgression clones in Final Assessment Trials and as parent material in the crossing program at Meringa.  Some of these clones could become major parents of successful commercial varieties in the future.

## Research partnership to explore new ground for variety improvement

A new research partnership between Australian and Indian sugarcane researchers will conduct joint research to help accelerate gains in sugarcane breeding and variety development for both of these countries. The project is occurring thanks to a new grant that has just been announced as part of the Commonwealth Government's Australia-India Strategic Research Fund (AISRF).

SRA CEO Neil Fisher said that the grant allowed for a partnership between SRA and the Sugarcane Breeding Institute in Coimbatore, India. "Establishing partnerships with leading sugarcane breeding institutions overseas is a critical aspect of continuing to improve the Australian sugarcane variety development program, which is run by SRA," Mr Fisher said. "India is the second largest producer of raw sugar in the world and is an important country for Australia to collaborate with. This research partnership has enormous potential for both countries."

The project will identify genetic markers for cane yield, sugar content, drought tolerance and red rot resistance, in sugarcane varieties, using sophisticated biotechnology. It builds on previous investment made by the Australian sugar industry in developing this technology jointly by SRA, CSIRO, and Syngenta.

"The results will be used to determine ways to accelerate gains in sugarcane breeding, as well start mutually beneficial cooperation for sugarcane improvement," Mr Fisher said. "The SRA breeding program is SRA's largest area of investment on behalf of our investors. Projects such as this fit into a much broader spectrum of research looking for continued improvement in sugarcane breeding, and ultimately for the delivery of improved varieties for growers and millers.

"Use of cutting edge technologies will help our researchers explore new ground in improving sugarcane varieties."

The AISRF helps Australian researchers to participate with Indian scientists in leading-edge scientific research and workshops. The AISRF is Australia's largest fund dedicated to bilateral research with any country and one of India's largest sources of support for international science. The project is being awarded $644,000 through AISRF.


SRA acknowledges and thanks its funding providers, including levy payers (sugarcane growers and millers), the Commonwealth Government, and the Queensland Government (Department of Agriculture and Fisheries).