Sugar Research Australia™

Information Sheet

IS17006

Southern Region Plant Breeding Program

The SRA Plant Breeding Program in the Southern region targets the needs of the Bundaberg, Isis, Maryborough and Rocky Point sugar industries.

21 new varieties have been released in the Southern region since 2006 from the SRA breeding program.

Female and male flowers are positioned in a 'lantern' to facilitate pollen transfer and prevent contamination.

Seedlings are propagated from seed collected from the crossing and planted into the field.

Parent selection and crossing
in Cairns

↓

Early stage selection
at Bundaberg

↓

Final stage selection
at Isis, Maryborough and Bundaberg sites

↓

New varieties are propagated and released to growers through local productivity services

Measuring cane yield with commercial harvesters and weighing equipment. Sucrose and fibre content are analysed by Near Infrared Spectroscopy (NIR).

New varieties which are approved for release are propagated for growers by Bundaberg Sugar Services, Isis Productivity Services and Maryborough Productivity Services.

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The SRA team is focused on providing an efficient and effective variety improvement program to the Southern Queensland industry. Here are some of the highlights:

- Better statistical analysis methods are used to assess potential new varieties in cropping trials which compare their performance against current major commercial varieties.
- By using new trial designs, we have increased the number of potential new varieties we trial in the final stage by 50%; without an increase in resources.
- Final stage selections are assessed over 4 locations in the Southern region. The performance of potential new varieties are tested under different soil types, management practices and micro-climates.
- The top performing potential new varieties from the first plant crop harvest results of the final stage trials each year are also then planted in a second set of cropping trials to collect more productivity data before release.
- The SmutBuster program has doubled the number of early stage potential new varieties as a response to the Smut outbreak.
- The time from initial crossing to release of a new variety to the industry has been reduced from 12-13 years to 10-11 years.
- Potential new varieties advancing through the selection program are screened for disease resistance to smut, Fiji leaf gall, leaf scald, mosaic and red rot at Woodford and for Pachymetra root rot at Tully by SRA pathologists. This means disease ratings are available early before variety release decisions are made.
- The SRA breeding program identifies and selects parents for crossing with genetic traits that will improve breeding for the challenges of the Bundaberg, Isis, Maryborough and Rocky Point cane growing regions. These parents come from the large SRA germplasm collection of old and current varieties as well as wild and foreign varieties.
- The SRA variety exchange program exchanges varieties with 17 countries around the world, including Brazil and USA. These varieties are included in assessment trials in the Southern region. They are also used for parents in the crossing program, providing valuable traits for new clones.
- Wild species of cane, closely related to the domesticated cane cultivars, have been used in the production of hybrids to capture valuable traits such as vigour, ratooning ability and disease resistance.
- Inter Station Exchange (ISE) is used as a method of exchanging elite clones between the other Variety Improvement Programs (Herbert, Burdekin, Central and Northern). This facilitates earlier adoption of new varieties from other regions.
- The Program is producing varieties with good performance. Q240$^{\phi}$, Q242$^{\phi}$, Q245$^{\phi}$ and Q248$^{\phi}$ are examples of recent releases from the Southern Program. High performing varieties are coming through the selection system as well as from other regions and will be released in the next few years.