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CaneConnection

Winter edition

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Welcome to the 2014 winter edition of CaneConnection

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A good crop starts with planting the right variety using high-quality plant material. So, in this edition of *CaneConnection*, we preview three new varieties selected by the Herbert Variety Adoption Committee for production in that region. We also provide an update on the outcomes of the other regional variety adoption meetings held throughout the industry.

After you have chosen the most appropriate variety for your farm, you need sound planting material protected by appropriate fungicides to lay the foundation for future success. To cover both of these elements, we have included articles that discuss the importance of billet quality in successful crop

establishment, and the impact of seedling diseases and how they can be best managed.

With a great crop ready and with the crush either just started or just around the corner, depending on your region, the question often arises as to which block should be harvested in each round to optimise sugar production across the whole farm.

To help you decide, we have included an article discussing how sugar content can be assessed and used as a method to manage harvest sequence. We share with you one Central region grower's experience in making these simple assessments on his farm.

Because pour rate and ground speed affect ratoonnability, we have one article that discusses the impact that these two related harvesting parameters can have on your next crop.

Finally, we have included an article on nutgrass, that hard-to-manage weed that has the potential to rob you of yield in a number of ways. The article offers some possible management solutions that can be utilised to get it under control.

As always, we appreciate your feedback. If you have any suggestions about topics that you would like covered in future editions or how we can improve this or any other publications, please let us know by emailing communications@sugarresearch.com.au

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Varieties wrap-up



Gae Plunkett and Roderick Fletcher

Development Officers – Varieties

Professional Extension and Communication Unit

Herbert region

The Herbert region Variety Adoption Committee has agreed to release Q226[®], Q250[®] and Q253[®] this season. Growers can access material of these varieties from Herbert Cane Productivity Services Limited in 2014.

It is suggested that Q226[®] and Q253[®] could handle the Herbert region's more extreme environments and soils, whereas Q250[®] is recommended for average to better soil types with some moisture.

Another variety, Q252[®] will have only a small release this year due to the limited amount of plant material available. Q252[®] is recommended only for better soil types in wet areas.

Q226[®]

- > Parentage: Q138 x CP57-614.
- > Moderate TCH and moderate CCS levels.
- > CCS is better early in the season.
- > Very vigorous and flowers heavily.
- > Brown rust susceptible. Resistant to smut and leaf scald and intermediate resistance to Pachymetra root rot.
- > Medium to large sticks with a slightly sprawly field habit.
- > It is suggested for planting in areas that suffer from extreme conditions, such as drought, sodicity, difficult soil types and heavy waterlogging (possibly flooding).

Q250[®]

- > Parentage: QN79-183 x QN89-1043.
- > Average TCH with good CCS levels in the mid-to-late season.
- > Intermediate resistance to Pachymetra root rot and red rot.
- > Moderate numbers of medium-sized stalks.
- > Suited to better soil types, or average soil types with moisture.

Q253[®]

- > Parentage: QN80-3425 x Q209[®].
- > Moderate TCH with low CCS level that is better mid-to-late season.
- > Vigorous variety.
- > Pachymetra root rot, smut and red rot resistant but susceptible to brown rust.
- > Susceptible to Fiji leaf gall, which prevents the release of this variety in Southern regions.
- > Moderate to large stalks with an erect-to-sprawly field habit.
- > It is suggested for areas that suffer from extreme conditions, such as drought, difficult soil types and heavy waterlogging (possibly flooding).

Q252[®]

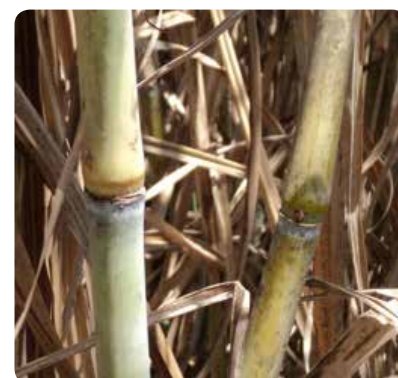
- > Parentage: Q208 x Q96.
- > Moderate TCH and high CCS.
- > Intermediate resistance to Pachymetra root rot and smut.
- > It is suggested for planting in better-to-average soils in the wetter areas.

VAC decisions in other regions

Information on the latest SRA trial harvest and disease testing results of a large number of new varieties has also been put forward to the Northern, Burdekin, Central, Southern and NSW Variety Adoption Committees (VAC) to review.

Potential new varieties in these regions are awaiting final harvest results and disease testing to be completed by the SRA breeding and pathology teams. The performance of a number of these varieties has been exceptional in the early stages of the selection process and the VAC will have more information next year to make release decisions.

The sound performance of a number of recently released varieties in all regions has 'raised the bar' for new varieties. The potential new varieties are assessed against the best commercial varieties before the VAC recommend release.



Above: Q226[®].

The role of the Variety Adoption Committees

The VAC play an integral role in deciding which new varieties will be released each year to the productivity services groups for distribution to growers.

The VAC include invited representatives, both directors and field staff, from the regional productivity services groups, milling companies, regional CANEGROWER groups and ACFA. As these members have a thorough knowledge of industry issues and experience in growing and milling sugarcane, they offer invaluable insight into the selection decisions.

The SRA Plant Breeding Program team presents the latest SRA trial data on the most promising new clones coming through the program. The VAC reviews the trial results and considers a large set of data for each clone including:

- > yield in tonnes of cane per hectare
- > sugar content
- > disease resistance
- > ratoonability
- > fibre quantity
- > fibre quality.

The VAC relates these results to the plant and harvest dates, soil types, disease prevalence, seasonal conditions and milling characteristics that will help them decide whether the variety is of value to the industry.

The VAC also plays a critical role in providing feedback on industry issues to SRA's Plant Breeding Program team so that they understand the variety characteristics that are essential to keeping each region productive and sustainable. This feedback assists the breeding team to focus on these characteristics in the early stages of the selection process, and, in future, present the best varieties for consideration by the VAC.

New variety guides go mobile

All of the information contained in the 2014-15 Variety Guides is available on the main SRA and mobile websites.

When you are using your mobile device, you will automatically be directed to the mobile site. Simply look for the 2014-15 Variety Guides menu option and choose the information you are after.



Harvesting Best Practice Manual release

We are taking pre-orders for SRA's new Harvesting Best Practice Manual which brings together current research, innovations, and thinking about harvesting management practices.

The latest information and practical advice presented in the manual can help growers and their harvest operators make informed decisions about:

- > Managing crop and farming operations to improve cane and sugar quality
- > Reducing harvester losses
- > Improving harvester efficiencies
- > The financial costs and benefits of HBP.



To order your free copy of the Harvesting Best Practice Manual phone 1300 SRA 111 (1300 772 111) or email sra@sugarresearch.com.au

For delivery the week commencing 23 June. A downloadable copy will also be available on the SRA website www.sugarresearch.com.au

Assessing the sugar content of a crop for managing the harvesting sequence



Gae Plunkett and Roderick Fletcher

Development Officers – Varieties

Professional Extension and Communication Unit

Maximising whole-farm sugar yield is possible by selecting blocks to harvest with maximum Commercial Cane Sugar (CCS).

As the CCS of a block can vary due to a range of factors, including variety, age of the crop, arrowing, moisture, nutrient or temperature stress, it is important to understand which blocks contain the highest CCS levels.

This information can be obtained through some basic measurements and can help growers to develop a harvesting sequence plan.

Tools of the trade

A portable refractometer (or handheld brix meter) is a useful tool when planning the block harvesting sequence on your farm.

A refractometer measures brix in cane juice—a higher brix reading indicates higher sucrose content. The refractometer measurements taken from stalks of cane in the field can be used to estimate the relative sucrose content between blocks.

Refractometers, which are also used in home brewing, are readily available for around \$100–\$200.

The brix measured in the field is relative to but does not equal the mill-measured CCS due to the harvesting process, sampling error, fibre contents and environmental factors.

Juice-sampling equipment

A juice-sampling device, or dibbler, makes the measuring process easy. A handy engineer can make a device or dibbler, as shown on page 5. Pliers or a screwdriver can also be used to squeeze juice out of the stick into a reservoir, but this is slow and will destroy each stalk. Clean the tools between blocks to prevent the spread of ratoon stunting disease (RSD).

Assessing the average sucrose content of the block

To get a representative sample of the block, you will need to sample 10 to 20 sticks of cane from at least five locations spread across the block and at least 10 metres in from the edge or ends. It is important to sample this many sticks as the accuracy of the measurement improves when more sticks are sampled. Take the sample at the same height from the ground, such as waist height, on each stalk.

Take one brix reading from the collected juice sample at each of the locations and then average the five readings to give an overall brix for the block. If one of the five brix readings varies by greater than 10 per cent from the average, discard it from your calculation.

Sample each block and compare readings to assess the block with the best sugar content to harvest.

Assessing the maturity of the block

Because basal internodes of the stalk fill with sugar while the top of the stalk is still actively growing, the sugar content varies throughout the stalk. The lower internodes will have higher sucrose content than the upper stalk on an immature plant. As the stalk matures, more internodes reach their maximum CCS level.

You can use this characteristic to assess whether a sugarcane crop has reached its maximum CCS by sampling the stalks separately at top, middle and bottom. Use the same technique outlined above, but at each site collect CCS samples from the three positions along the stalk length.

A crop with more similar readings at the top and bottom of the stalk will be more mature, and only a minor increase in overall crop CCS will result from delaying the harvest.

A crop with a bigger difference between the brix reading at the top of the stalk compared to the bottom will be less mature. A higher overall crop CCS may result if harvest is delayed till the next round.

Maximising the sugar yield from each block by planning the harvester sequence will improve whole-farm productivity.

Sweet success

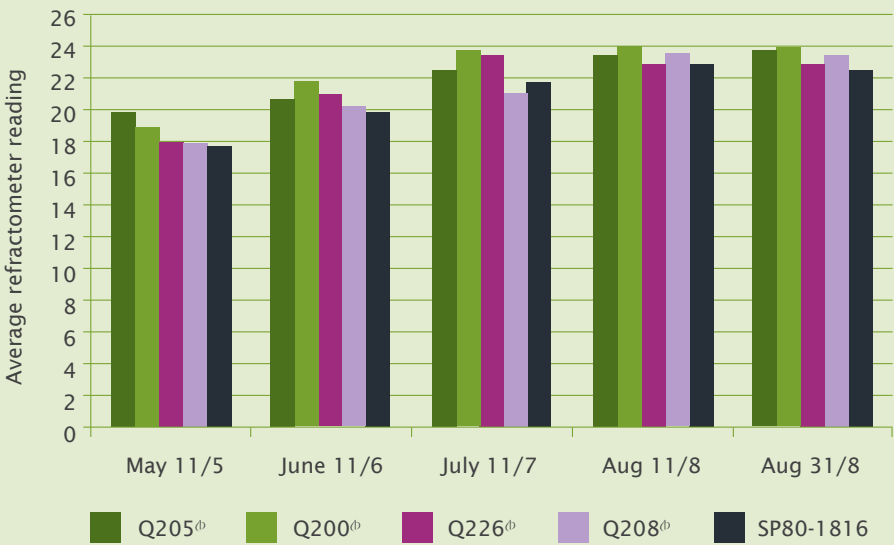
Michael Vassallo works with his parents, Colin and Georgina, and his brother Colin on their cane farms in Septimus in the Central region. Every season Michael takes regular refractometer readings of the blocks on their farms to compare the sugar content of the different varieties over time.

He charts these on his computer as a record from year to year and the results are used to help the team decide which blocks to harvest first and which blocks to leave till later in the season to improve the whole-farm sugar yields.

The chart below shows Michael's refractometer readings over time of five varieties. The results indicate a general increase in sugar content of all varieties. Harvesting Q200[®] early and Q208[®] later maximised the whole-farm sugar yield in this season.



Above: Cane Sap Extraction Tool (Dibbler). Photo courtesy of Bruce Quinn, Isis Productivity Ltd.



Top left: Dibbler. Top right: Refractometer.

Improving harvesting efficiency



Phil Patane

Development Officer – Harvesting
Professional Extension and
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There are a number of actions that growers and operators can do to make this season's and future harvests more efficient, to improve the productivity and profitability of their farming operations.

This season's advice

1. Develop a harvesting plan to maximise cane maturity at harvest.

Plan the order in which blocks will be harvested according to maturity, layout, predicted peak in CCS and seasonal weather conditions. **See the previous article** on how to assess the sugar content of a crop.

2. Pay attention to harvester setup and operation.

Harvester maintenance, particularly the condition of basecutters and chopper blades, has a significant impact on harvester damage and sugar loss. Research has shown that losses can be tripled if blades are not correctly maintained. In the feedtrain, optimise feed roller speeds to chopper rotation speeds to reduce juice loss in the billet cutting process. Avoiding high fanspeeds (>850 rpm) will lower excess losses. However, if the fanspeed is reduced further, excess trash levels may affect bin weight and CCS to a point where transport/milling requirements are not met.

3. Have a wet-weather harvesting plan in place.

Growers should discuss the best harvesting options for wet periods with their harvesting contractor. For example, it may be best to cut plough out blocks in preference to damaging plant, first ratoon and possibly second ratoon crops. Also use trash blanketing and minimum tillage where appropriate as these improve trafficability in wet weather compared to conventional cultivation.

4. Ensure appropriate harvester hygiene.

To avoid the spread of RSD, sterilise harvesters between blocks wherever possible. Pay special attention to the crop dividers, basecutters and choppers.

5. Plan ahead to ensure a sufficient supply of bins.

This minimises the time lost during harvesting operations.

6. Maintain appropriate records.

Use a logbook for all harvesting operations.

Planning ahead

1. Improve farm layout.

The aim is to increase the proportion of actual cutting time. Pay particular attention to row length and appropriate headland space. Headlands that are wide and smooth increase the efficiency of harvester turning and haul-out.

2. Ensure row spacing is consistent and rows are parallel by precise planting or using GPS.

GPS guidance systems can be used to keep harvesting and haul-out over the cane rows. This contributes to improved ratoonnability by minimising soil compaction and physical damage to stools.

3. Ensure row profile is consistent across the farm and matches the harvester.

Poor row profiles increase cane loss at harvest as well as causing stool shattering and splitting that hinders subsequent ratooning. The damage caused also encourages the development of fungal rots.

Consistent row profiles which match basecutter setup significantly reduce stool damage during harvesting. Remember that damage to hill shape during harvesting cannot be effectively corrected by cultivation in ratoons. Also use ripper tines carefully to avoid having large clods of soil present in the rows.

4. Select varieties carefully and tailor agronomic practices to the variety.

It is best to match vigorous varieties to appropriate soil types. Highly vigorous and productive varieties grown on good soil may create problems with lodging and stool tipping. This may require deeper planting, better hilling up, and reduced nitrogen fertiliser applications. High-yielding erect cane well presented for harvesting significantly increases harvesting efficiency, particularly given the high pour rates of existing harvesters. Also control weeds within the crop to reduce the quantity of potential extraneous matter (EM) in the harvest.

Handy tips – Nutgrass



Phil Ron

Development Officer – Weed and Pest Management

Professional Extension and Communication Unit

Nutgrass competes intensely with cane for water and nutrients and can affect cane emergence and growth even before it emerges.

Nutgrass facts

- It is a perennial sedge with a creeping rhizome.
- Tubers (nuts) grow from the rhizome forming an extensive network of connected plants and tubers.
- Most tubers develop within the top 10 to 15 cm of soil and germinate readily.
- Breaking the chain stimulates the dormant tubers to shoot.
- Roots can extend to a depth of one metre resulting in deeper tubers remaining dormant until disturbed.
- Although the plant flowers and seeds, seed viability is low and the main method of dispersal is from expanding rhizomes and mechanical disturbance.

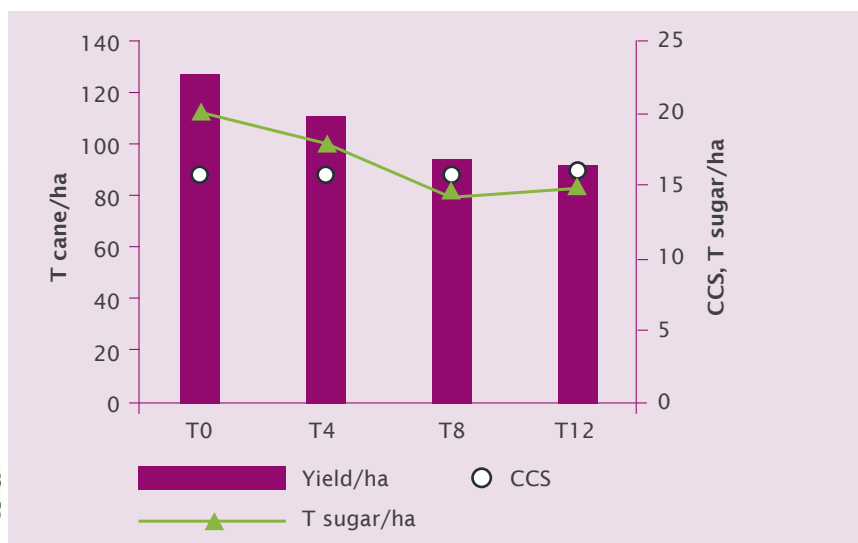


Getting the timing of control right

Nutgrass competes aggressively for both soil moisture and nutrients:

- > 25 to 45 kg nitrogen/ha and 45 to 50 kg potassium/ha can be taken up by nutgrass tops alone.
- > It can remove the equivalent of 12 mm rainfall from the cultivated layer in four to eight days.
- > More than 50 000 tubers have been recorded in one cubic metre of soil.
- > 40 tonnes of tubers and rhizomes can be produced in one hectare in one year.
- > Roots exudates from nutgrass are allelopathic—they are known to inhibit growth of other plants and although not tested in sugarcane, this is quite probable.

Delayed control costs **tonnes** of cane, even in irrigated cane. Cane yield drops as the time interval between planting and nutgrass control increases. Yield losses in plant cane have been measured at 18 to 25 per cent. In extremely infested ratoons, yield losses of 30 per cent have been measured.



Above: Cane yield continues to fall as nutgrass control is delayed. (T0 = full control, T12 = delayed until 12 weeks after plant).

Types of control strategies

Control must start in fallow and break crops and continue through plant cane and ratoons.

Fallow

- > Use glyphosate in fallow to manage nutgrass.
- > Glyphosate translocates from leaves down to the root and tuber network and effectively kills all the connected tubers.
- > Any tuber network that has not emerged will not be affected.
- > Repeat applications may be necessary to target later flushes.
- > If planting fallow crops, use glyphosate before planting and after harvest to clean up nutgrass before planting back to cane.

Legume fallows

Choice of herbicide depends on what legume you are growing.

- > Soy: Spinnaker® (imazethapyr)
- > Peanuts: Flame® (imazapic)

Tillage in plant cane

- > Tillage is effective in dry conditions.
- > Multiple tillings are needed to bring tubers to the surface where they will dry out and die. Tillage is not effective in moist soil, as the tubers will not dry out and will shoot.
- > Any subsequent deeper cultivation will also bring dormant tubers into the top soil layer where they will germinate.

In-crop: Pre-emergent herbicides

Flame® (imazapic):

- > Reduces nutgrass emergence and tuber viability when applied either before or after nutgrass emergence.
- > Works better on nutgrass when not mixed with paraquat (this may not be possible if you need to add paraquat to prevent phytotoxicity on the cane plant from imazapic).

In-crop: Post-emergent herbicides

- > Sempra® or Nut-Buster (halosulfuron-methyl) are the most effective selective herbicides for reducing tuber production and viability.
- > Krismat® (ametryn plus trifloxysulfuron) also reduces the production of tubers and their viability but results are more variable than Sempra®.

Product	Active	Rate/ha	Crop stage
Spinnaker®	imazethapyr	140 g	Soy
Flame®	imazapic	400 mL (plus Hasten™ at 1 L/100 L)	Peanut
Roundup CT®	glyphosate 450 g/L	2.4 L	Fallow
Roundup Ultra® Max	glyphosate 570 g/L	1.2–5 L	Fallow In-crop with shields
Weedmaster® Argo® (dual salt)	glyphosate 540 g/L	1.1–4.7 L	Fallow In-crop with shields
Glyphosate 540 K (potassium salt)	glyphosate 540 g/L	1.2–5 L	Fallow In-crop with shields
Flame®	imazapic	300–400 mL	In-crop
Sempra®	halosulfuron-methyl	65–130 g	In-crop
Krismat®	ametryn + trifloxysulfuron	1.5–2 kg	In-crop
Actril® DS	2,4-D + ioxynil	1.0–1.5 L	In-crop

Read product labels for full instructions.

References and further information

Parsons W.T. & Cuthbertson E.G. (2001) *Noxious Weeds of Australia*, CSIRO Publishing.

Aitken, R.L., Munro, A.J. & McGuire, P.J. (2011) *An integrated approach to nutgrass control*. Final report – SRDC project NFS002.

Fillols E. (2011) 'Impact of nutgrass on sugarcane yield.' In *Proceedings of 12th Queensland Weed Symposium*, Mackay 2011, 4p.

Fillols E. (2013) 'Nutgrass herbicide management: results of two pot trials.' In *Proceedings of Australian Society of Sugar Cane Technologists* 34, 11p.

Fillols E. (2014) 'The impact of soil type and incorporation when using Flame® for nutgrass management.' In *Proceedings of Australian Society of Sugar Cane Technologists* 35, 15p.



Billet quality – a key element for planting success



Phil Patane

Development Officer – Harvesting

Professional Extension and Communication Unit

Planting is a major cost to the industry. It is important to get good plant establishment as it affects your ongoing returns through the crop cycle. Paying careful attention to the many components of the billet planting system will ensure a successful strike.

For optimal germination rates the following items need to be assessed:

- Seed cane quality
- Harvester set-up to minimise damage
- Planting rates
- Effectiveness of fungicides
- Placement of billets
- Press-wheel set-up.

Seed cane quality

You should plant only good-quality, disease-free cane from an approved seed source.

Plan ahead:

1. Determine what varieties and volumes of cane will be required for planting.
2. Grow cane specifically for plants. Cane should:
 - > Be erect with short internodes; can be achieved through reduced fertiliser rates
 - > Have at least two buds per sett
 - > Be less than one year old
 - > Be no more than three years off hot water treatment.

Note: Approved seed is already one year off hot water treatment when purchased. New approved seed should be introduced onto the farm at least every second year.

Harvester set-up for cutting good-quality billets

For billet planting, it is best to use a modified harvester to cut undamaged billets between 250 and 300 mm long. Samples of planting billets should be taken and inspected for split or crushed ends and damaged eyes.

Many commercial cane harvesters have variations in feed roller speeds and aggressive ‘teeth’ on rollers. This causes highly variable billet length and damage to eyes, which in turn will reduce germination rates. Modifications such as rubber-coating rollers and feed-train optimisation to match all roller speeds to chopper speed can significantly improve the quality of planting billets.

Quality assessments to determine the quantity of viable billets have shown:

- > Whole stick planter – 80 per cent viable billets
- > Modified harvester (optimised/rubberised) – 70 per cent viable billets
- > Commercial cane harvester – 30 per cent viable billets or less.

Cutting lodged cane for plants significantly reduces the level of viable billets, even with a fully modified harvester.

It is also important to reduce speed when harvesting for billet planting. This minimises trash levels and avoids overloading the choppers, which can cause billets to become squashed on the ends and to split.



Above: Good quality billets.



Above: Poorly cut billets.

Planting rates

The target planting rate is four to six eyes per metre to establish three primary shoots per metre. Key points to remember for planting rates include:

- > Higher planting rates will not guarantee a suitable plant stand.
- > Excessive tillering may mean unnecessary use of nutrients and moisture.
- > For lower planting rates, good-quality billets are essential.
- > Assess the number of viable eyes prior to planting to ensure good strike.
- > You need an even feed of billets with no gaps.

Increasing the amount of cane (depth of cane) covering the elevating slats will increase the billet metering rate. While billet planters don't have a consistent metering system, it is important to ensure that the depth of cane remains constant, which will allow for a more even billet distribution.

Calculating Planter Output (t/ha)

Step 1

Run the planter over 10 metres, collect the billets and weigh.

Step 2

Planter output (t/ha) =

$(\text{Sample weight kg}/10) \times (10,000/\text{row spacing m})/1000$

Effectiveness of fungicides

Effective fungicide application is necessary to prevent Pineapple sett rot. Pineapple sett rot is caused by a fungal infection which is favoured by planting damaged billets and/or by cold, dry or wet soil conditions. Billets must be cleanly cut and protected with an appropriate fungicide (see page 12) or other cane sett treatments. Planters that use fungicide sprays must be correctly set up to ensure that both ends of the billet and any growth cracks on the billet are covered. If there is insufficient coverage, check nozzles for correct positioning and to ensure no nozzles are blocked.

If the planter uses a dip to apply fungicide, the dip must be kept clean. Mud in the dip will reduce the effectiveness of the fungicide.

Placement of billets

The amount of soil cover over the sett, soil temperature, and moisture content influence the speed of germination. With good soil moisture, 25 to 50 mm of firmed soil is sufficient coverage.

Press-wheel set-up

Correctly set press-wheels enhance crop establishment. It is best to use large diameter pneumatic wheels, with wheel width matched to the planting furrow width. Significant press-wheel forces are required to create adequate sett-to-soil contact. Down force should be in the range of 2 to 4 kg per cm of wheel width. For example, for a 15-cm wide press-wheel, down force should be in the range of 30 to 60 kg. This can be easily checked using bathroom scales.

Sweet success

Robert Quirk runs a 106-hectare farm in NSW. He changed his farming practices a number of years ago after having problems with poor plant establishment.

Robert realised that this was due to the use of short billets (150 mm), which had only eye per billet. This meant that he had to cut a lot of cane to overcome germination problems.

He also identified that his press-wheel set-up was not adequate to get a good sett-to-soil contact.

Robert began to cut longer billets (225 mm), which generally had two eyes per billet, so now with better plant establishment, he cuts less cane for planting. He has also adjusted his press-wheel set-up to gain better sett-to-soil contact.



Beware of diseases that have an effect on plant emergence



James Ogden-Brown

Development Officer – Biosecurity

Professional Extension and Communication Unit

With the new planting season approaching, it is important that growers know about the soil-borne diseases that could affect the emergence of planted crops.

By understanding how to identify the diseases and the prevention and control methods that are available, growers can reduce the impact of the diseases and maximise emergence and crop yield.

Sett rot diseases

The main disease that affects the germination of the buds in planting material is Pineapple sett rot. Caused by a fungus (*Ceratocystis paradoxa*), Pineapple sett rot is often confused with Fusarium sett rot (*Fusarium moniliforme*) which is only a minor disease.

Both diseases are soil-borne and are favoured by cold wet soil conditions or excessively dry soil that slows the germination of the cane. The fungus is present in all sugarcane soils and it multiplies on any organic matter. It infects the sett through cut ends or damaged areas to the sett.

Differences

The two diseases differ in appearance and smell:

Pineapple sett rot has an over-ripe pineapple smell, hence its name, when the setts are freshly split. It can also be identified by the reddening and central blackening of the internal sett which is caused by the massive number of spores that are present.

Fusarium sett rot has a purple colouration and does not produce the distinctive pineapple smell.



Above: Cross-section view of pineapple sett rot. Note the central blackening.



Above: Fusarium sett rot. Note the purple colouration.

Prevention and control

- > Use a registered fungicide and ensure thorough coverage of the sett, particularly the cut ends.
- > If possible, plant when conditions favour rapid germination and soil temperatures are above 18°C.
- > Both diseases are soil-borne, therefore plough out replant should be avoided because it provides an ideal food for multiplication of the fungus, creating high numbers of spores in the soil. The use of some rotational crops or a fallow period between cane crops can reduce this spore load and the potential of the disease. If sorghum or maize are used as rotation crops and the fresh green stalks are ploughed into the soil, they can provide a food source

for the build-up of the Pineapple sett rot fungus.

- > The use of two or three bud setts will increase the chance of germination. The nodes act as a barrier which can slow the spread of the fungus in the sett and provide the buds sufficient protection until they germinate.
- > Ensure planting material is free of damage from stalk and bud borers, rats and stalk rots. Avoid lodged cane, if possible.
- > Seed cane should be sourced from the progeny of Approved Seed. Avoid plough out replant blocks because volunteer cane and cane trash carries and provides a food source for these diseases.
- > Ensure the harvester is optimised for cutting billets for planting—synchronising rollers and cutters is an important prevention practice to avoid damaging setts. Rubber-coating rollers also helps reduce damage. Ensure the harvester is set to cut billets long enough so that they have two to three nodes.
- > Ensure soil has a good tilth and moisture content and that there is good soil-sett contact—pressing rollers to compact the drill after planting can assist.

Registered fungicides for Pineapple sett rot

Trade name	Active ingredient	Rate	Remarks
Tilt® 250ec, Bumper® 250ec, Throttle®	250 g/L propiconazole	20 mL/100 L water	Ensure thorough coverage of the cut ends of sugarcane setts.
Tyrant® 500	500 g/L propiconazole	10 mL/100 L water	Ensure thorough coverage of the cut ends of sugarcane setts.
Bayfidan® 250ec	250 g/L triadimenol	20 mL/100 L water	Apply to setts by dipping or spraying. Ensure thorough wetting of cut ends.
Sportac®	450 g/L prochloraz	40 mL/200 L water	Apply as a dip or spray to setts at planting. Ensure thorough coverage of all cut ends.
Shirtan®	120 g/L mercury (Hg) present as methoxy ethyl mercuric chloride	250 mL/200 L water	<p>For dipping of small quantities: Use wire mesh baskets or crates to contain the cut setts and dip for approximately 30 seconds. Move the setts about in the solution to ensure thorough wetting. The solution should be discarded after completion of the dipping. If the solution changes in colour from red to black it should be discarded.</p> <p>For use in spray or dip planters: Ensure thorough wetting of cut ends or setts. If solution colour changes from red, or it becomes contaminated with soil, it should be discarded.</p>
Sinker®	500 g/L flutriafol	500 mL/ha or 7.5 mL/100 m row	<p>Spray application</p> <p>The spray should be applied with a minimum of four nozzles arranged in the planting chute to give thorough coverage of all surfaces of the setts before they are planted in the furrow. Apply in a minimum water volume of 350 L/ha and calibrate the planter prior to application and planting to give the correct rate of fungicide (500 mL/ha or 7.5 mL/100 m row).*</p> <p>The use of a non-ionic wetting agent at recommended rates will enhance coverage of the fungicide on the planting material.</p> <p><i>* The rate is based on single-row cane with a 1.5 m row spacing. If row spacing varies from 1.5 m then apply at the use rate according to mL/100 m of row.</i></p>

Fusarium sett rot

There are no registered fungicides for the control of Fusarium sett rot and the activity of chemicals is unknown. The broad spectrum fungicides used to control Pineapple sett rot may have some activity.

Pineapple sett rot is the main disease that affects sugarcane plant emergence but it can be controlled by treating setts with a registered fungicide and following a range of preventative measures:

- Plant when the soil temperature is at 18°C or above.
- Plant with two to three eye setts to reduce damage to the setts.
- Use a non-host rotational crop to reduce the spore population of the fungus in the soil.



Keeping industry up to date

The Professional Extension and Communication (PEC) Unit plays a key role in providing the advisor community with new research findings and practical advice that they can add to their toolkit of information.

By arming this group with the latest information, growers have access to advisors who are well informed and can help with making on-farm decisions.

In April and May the PEC Unit hosted a range of advisory events throughout the industry including:

- > Advisor Technical Updates on a range of specialist topics in Mission Beach, Airlie Beach and Bundaberg
- > CTR Agronomy Updates on managing drought-affected cane and Yellow Canopy Syndrome on the Sunshine Coast and in Townsville
- > Harvesting Forums with local productivity service groups in Tully and Ingham.

Delivering the latest information to your inbox

If you have registered your email address with us, you will have received the first of our new-look e-newsletters in your inbox.

Our fortnightly e-newsletter is designed to keep you informed about what's happening within SRA and our industry.

This newsletter includes our popular CaneClips videos, updates on the latest available information products, as well as details of what SRA is doing out in the field.

If you haven't been receiving CaneClips in the past, make sure you subscribe to receive our newsletter to keep up to date with all things sugarcane.

Visit the SRA website www.sugarresearch.com.au and on the homepage look for the **Subscribe to Updates** option.



CaneClips

Gae Plunkett, Development Officer Varieties, recently travelled to Northern NSW and spoke with Anthony Young about the new varieties released from the SRA breeding program in NSW.



[Symptoms of canegrub damage](#)

[Identifying canegrubs](#)

[Canegrub biology](#)

[Monitoring and risk assessment](#)

GrubPlan for Canegrubs

Canegrubs are currently the most significant economic pest of sugarcane in Australia. This is why SRA has compiled a number of resources to assist growers and advisors in identifying and managing canegrubs.

Get to know your local grower delegate

SRA has undertaken the process of electing grower and miller delegates in each mill area/mill group.

Delegates are SRA members who act as the go-to people for other SRA members on a range of SRA-related matters.

They also have direct contact with SRA, which helps us build a better understanding of what is happening on the farm and at the mill so that we can respond to these needs with innovative RD&E solutions.

We encourage you to learn more about what your local delegate can do on your behalf. Further information can be found on the SRA website www.sugarresearch.com.au

Processing plant/mill	Mill area/mill group	Group G (Grower) Delegates
Mossman	Mossman	Brett Coulthard
Tableland	Tableland	No delegate nominations received
Mulgrave	Mulgrave	Jeffrey Day
South Johnstone	South Johnstone	Joseph Marano
Tully	Tully	Thomas Harney
Wilmar Mill Group (Herbert)	Victoria Macknade	Jeffrey Cantamessa Christopher Bosworth
Wilmar Mill Group (Burdekin)	Invicta Pioneer Kalamia Inkerman	Cy Kovacich Arthur Woods Colin Ivory Laurence Dal Santo
Proserpine	Proserpine	Anthony Large
MSL Mill Group (Central)	Farleigh Marian Racecourse	Lee Blackburn Michael Deguara Bill MacDonald
Plane Creek	Plane Creek	Malcolm Langdon
Bundaberg Sugar Mill Group (South)	Bingera Millaquin	Jay Hubert Kelvin Griffin
Isis	Isis	Neil Kingston
Maryborough	Maryborough	Elton Peterson
Rocky Point	Rocky Point	Greg Zipf
NSW Sugar Co-op Mill Group	Condong Broadwater Harwood	David Bartlett Wayne Rodgers Ross Farlow



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