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Sugar Research
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CaneConnection

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Welcome to the third edition of CaneConnection



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In our last edition of CaneConnection, we focused on the fallow period and some of the key steps that can be taken to lay the foundations for the next crop cycle. Having navigated this important phase, we focus on some of the key considerations as we approach planting.

Planting represents the single most expensive operation in the cane-growing calendar. Equally, given that the decisions made at this time have the potential to set the tone for the next four to five years, it is in our best interest to get it right.

So in this edition of CaneConnection, we focus on this important operation—exploring seed sources, what's new on the variety front, and the importance of variety selection in the management of pachymetra. We conclude this series of articles on planting with a topical one discussing

some of the options available to manage weeds in the establishing crop with the recently imposed restrictions on the use of diuron.

For those with established plant and ratoon crops it is also the time of year when canegrub damage becomes evident. Decisions need to be made about the necessity to manage grubs in next season's crop. It is also the time when areas prone to waterlogging start to feel its effect. To address these two production constraints, we have included articles discussing their management options.

Finally, you will have found enclosed with your CaneConnection an update on Yellow Canopy Syndrome and an outline of where our research is leading us as we tackle this important industry issue.

We have also enclosed a DVD containing a selection of last year's CaneClips videos grouped according to the production cycle. We hope you find them interesting and informative. If you don't currently receive them, I encourage you to visit our website www.sugarresearch.com.au and click on the 'Subscribe to Updates' tab on the home page.

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Managing poor drainage and waterlogging to improve sugarcane yields



Marian Davis

Development Officer – Irrigation
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Excess water in the form of flooding or waterlogging can have serious impacts on crop growth.

Flooding is generally a short-term problem where water inundates crops for a brief period of time. The amount of crop loss will depend on the period of inundation and the depth of water.

On the other hand, waterlogging can last for several days or weeks and can have a much greater impact. Soils become waterlogged when they are saturated with water. This often occurs when heavy rainfall is unable to drain away or when watertables rise close to the soil surface.

Waterlogging reduces cane yield in three ways: through the loss of nitrogen from denitrification; via increased levels of plant diseases such as red rot; and through toxic responses to anaerobic soil conditions and the secondary breakdown products of soil organic matter.

In addition, prolonged waterlogging causes oxygen starvation in the root zone which retards root growth. This results in stunted root systems and reduced nutrient uptake even when the soil dries out. Waterlogged plants are typically yellow and stunted which reduces the yield potential. **Studies have found that crops can lose 0.5 t/ha/day for every day they remain waterlogged between December and June.**

Improved drainage is the best way to overcome waterlogging. Depending on the cause of the waterlogging, this will either be surface or sub-surface drainage, or a combination of both.

Improving sub-surface drainage

When the waterlogging is caused by high watertables, sub-surface drainage is required. High watertables typically occur in areas that:

- > receive sustained high rainfall for much of the year
- > have little or no outflow of surface drainage water
- > have slopes that flatten out and are often characterised by a soil type change—from a freely draining soil on the slope to a poorly draining soil on the flatter areas.

There are three ways to drain waterlogged areas. The method that is chosen will depend on the area to be drained, the topography, soil type and cost.

1. Interception drains are open drains sited at the bottom of slopes above the waterlogged area. They drain into surface drainage systems.

2. Sub-surface pipes are placed within the waterlogged area to drain water from the root zone. They most commonly consist of slotted ag-pipe which is installed within a layer of permeable material. The intercepted water is then drained to surface drains or to a well that must be pumped out. Subsurface pipe is the most common form of drainage.

3. Mole drains are compacted tunnels drawn through the subsoil. They work best in soils with a reasonable clay content that will hold the tunnel shape. Mole drains need to be renewed at least every crop cycle.

Improving surface drainage

Surface drainage aims to remove surface water from the field within a reasonable period of time. Good surface drainage will:

- > improve field trafficability
- > reduce waterlogging
- > improve productivity
- > not affect downstream neighbours or water quality.

Field levelling and a system of surface drains are the most effective surface drainage methods.

GPS- or laser-guided levelling is used to provide an even slope in fields to help water to run off more effectively. Levelling to remove high and low spots will reduce the risk of water ponding and causes waterlogging. In furrow-irrigated districts, the whole field is likely to be levelled; however, in other districts, levelling just at the end of the field may be sufficient to improve water flow.

On-farm drains should ideally be shallow grassed spoon drains. The shape makes it easier for machinery movement and maintenance (slashing) than deep open drains. The grass cover will help to filter sediment and any associated nutrients or pesticides before the water reaches riparian areas.

Before commencing any on-farm drainage works, you should seek advice on the best options for your farm. In a number of districts, community drainage schemes exist and you should also discuss your plans with scheme members.

Stool tipping? Yellowing? Gaps in ratoons? Maybe you've got canegrubs



Phil Ross

Development Officer – Weed and Pest Management

Professional Extension and Communication Unit

With 19 different species, canegrubs have the highest potential of all our pests to cause economic loss.

Monitor now to safeguard next season's crop

Indications are that this season's beetle flights in many areas have been comparable, and in some cases, larger than in last season. Now is the time to begin sampling and monitoring for canegrubs so that you can decide whether or not to treat next season's crop.

The critical questions to answer are:

- > Is my farm at risk from canegrubs?
- > Will I need to treat my plant cane this year?
- > Which ratoon fields should be treated after this year's harvest?

Canegrubs are almost exclusively treated with the insecticide imidacloprid. Imidacloprid is sold in a number of formulations and under numerous product names. While suSCon® *maxi* is the only controlled-release formulation, Nuprid® 700WG and Senator® 700WG are Wettable Granule formulations. Confidor® Guard and numerous generic brands are liquid formulations.

Monitoring requires the physical digging of stools to look for canegrubs under the stool. Relying on crop symptoms only may result in crop damage, especially with two-year life cycle canegrubs.

Knowing the level of canegrub activity in the current crop will give you a good indication of expected canegrub pressure in next season's crop.

Advice for growers in the northern and central regions

Greyback canegrub is the major species present from Sarina to Mossman. It has a one-year life cycle, meaning that larvae developing from eggs laid over the past two to three months will begin to feed aggressively on cane roots from about March.

By about the end of May and into early June the larvae will be fully fed and will burrow deeper into the soil to pupate and turn into adults. These adults have the potential to infest unprotected ratoons and plant cane fields.

Because greyback canegrubs have a one-year life cycle, assessing the risk of damage to next season's crop is a prediction. This is because the eggs from which the grubs develop to infest a field have not yet been laid.

There is no direct relationship between the number of grubs present at sampling and the number that will be present next season. However, the presence of grubs this season indicates a high likelihood of grub infestation next year.

Diagram 1 shows the timing for sampling and monitoring for greyback canegrub and crop symptoms.

Following the steps in **Diagram 2** will give you a good feel for the likely greyback canegrub pressure on blocks to be planted in the coming season and also on ratoons and whether treatment is required.

In the northern regions from Herbert to Mossman, the level of the pathogen, *Adelina*, can have a large impact on greyback numbers. Local information should be sourced, if possible, on the level of *Adelina* infections in the current greyback population.

Advice for growers in the southern regions

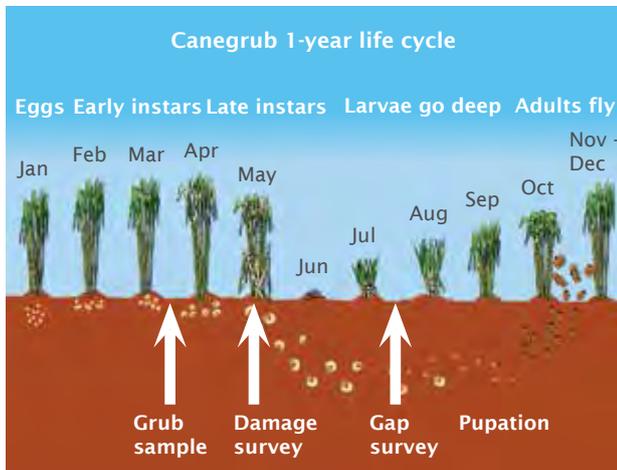
Growers in the Bundaberg, Isis and Maryborough districts usually have to contend with two-year life cycle canegrubs as well as southern one-year canegrubs.

A risk assessment method based on grub sampling during March to May and checking for crop symptoms during spring and summer allows for informed treatment decisions to be made.

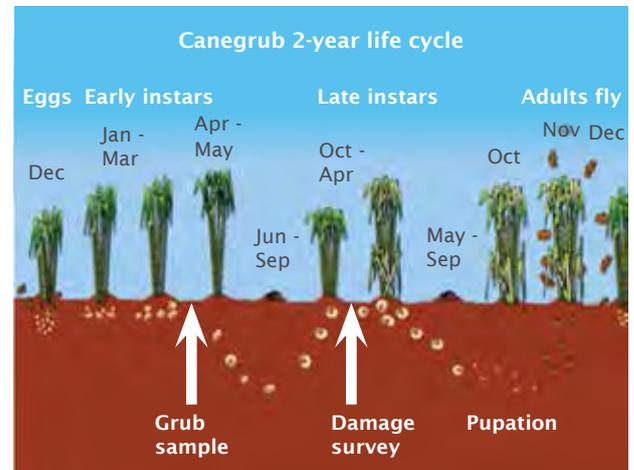
For two-year life cycle canegrubs there is a direct relationship between the number of grubs present during sampling and future damage. This is because grubs found during autumn sampling will be the same grubs that cause damage to the next crop.

Diagram 3 shows the timing for sampling and monitoring for crop symptoms for southern districts. Sampling in autumn allows decisions to be made early so that ratoon crops at risk of two-year canegrub damage can be treated as soon as possible after harvest.

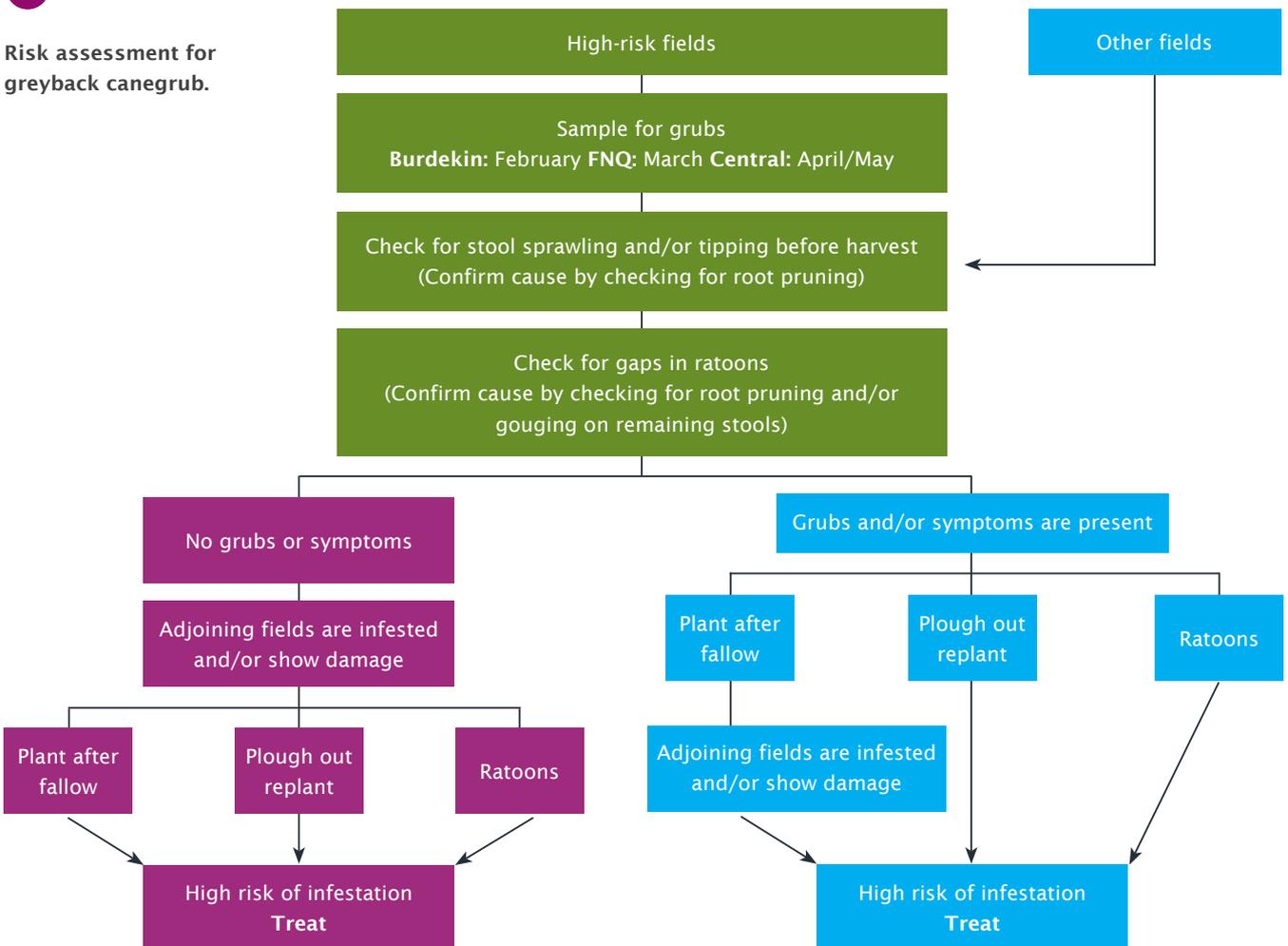
1 Timing of sampling and monitoring for greyback canegrubs and crop symptoms.



3 Timing of sampling and monitoring for canegrubs and crop symptoms for southern districts.

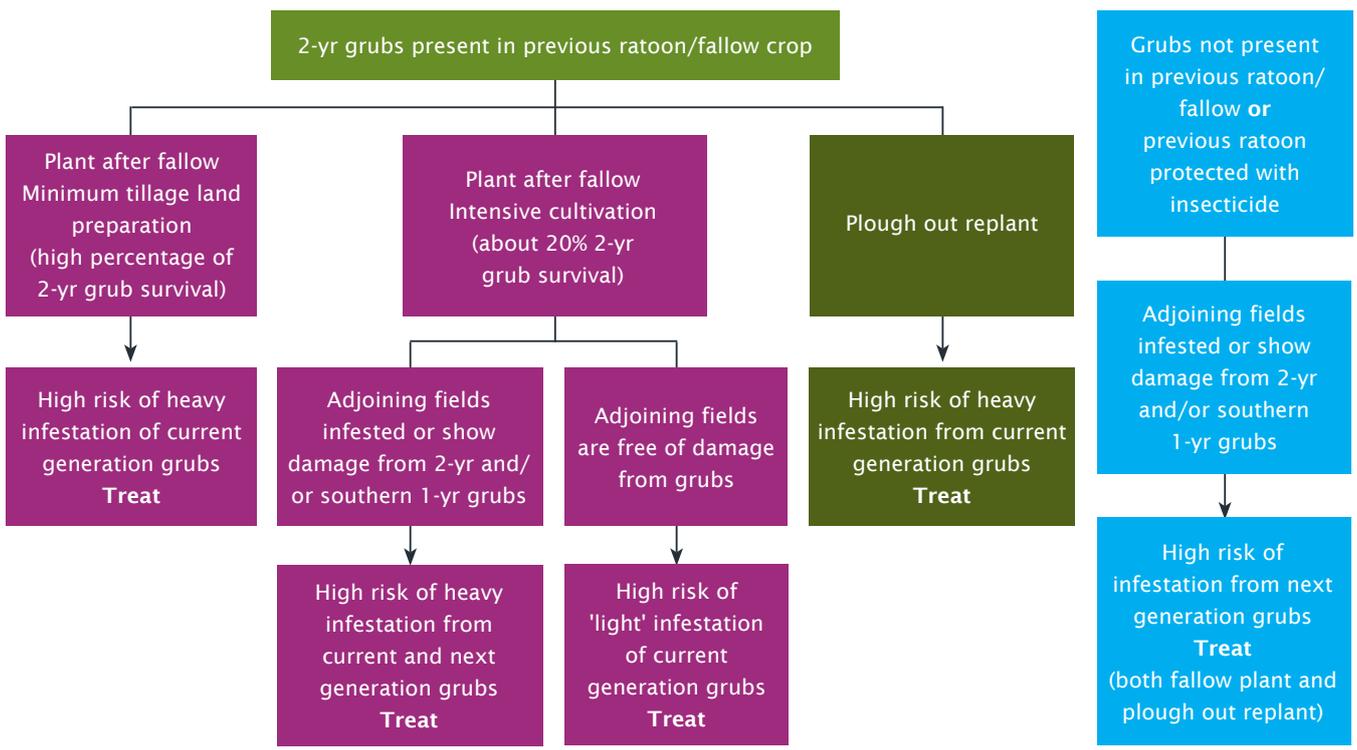


2 Risk assessment for greyback canegrub.

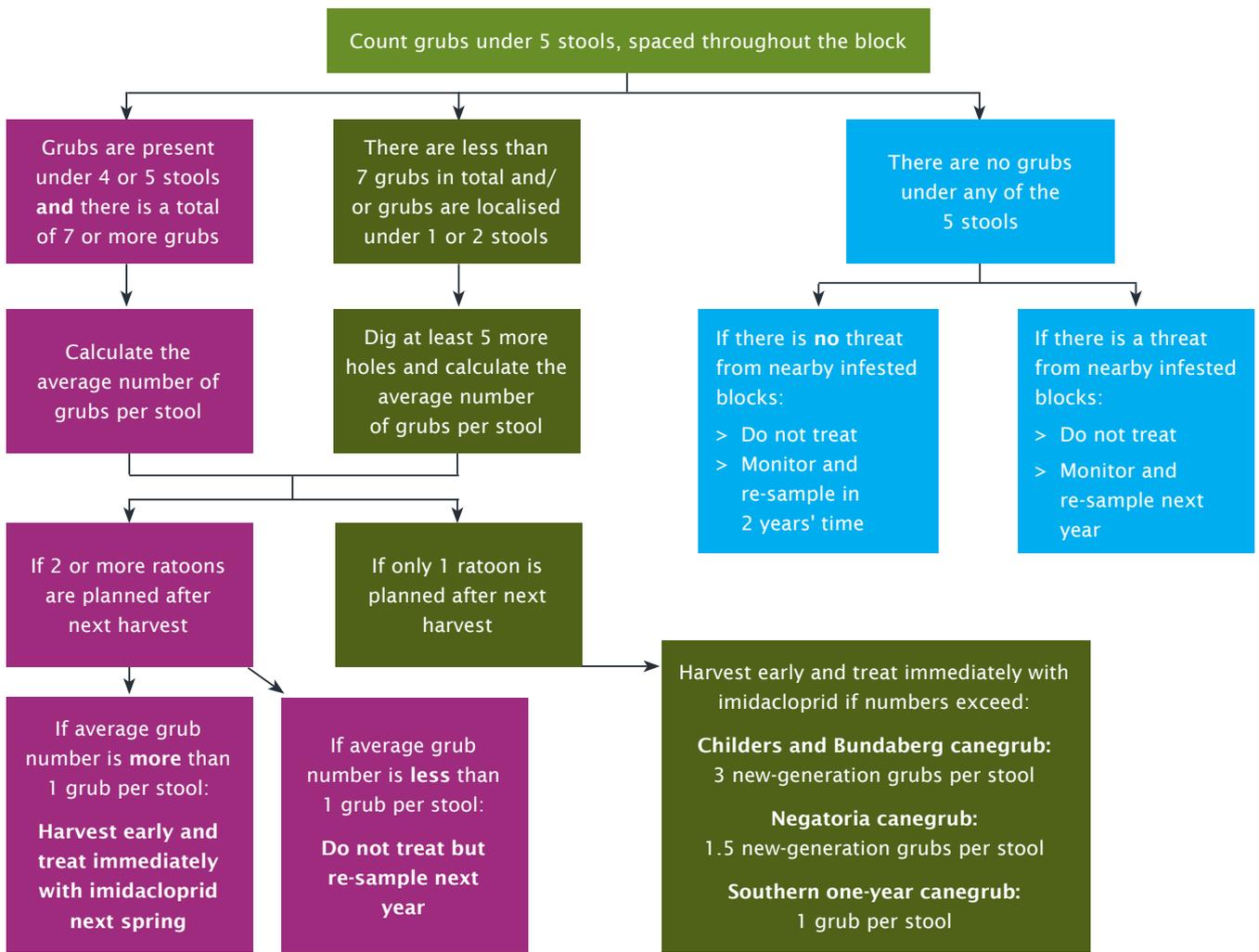


Following the steps in **Diagram 4** will help southern growers decide whether a field to be planted this season will be at risk and should be treated. Follow the steps in **Diagram 5** which has been developed for ratoon crops in southern Queensland.

4 Risk assessment for plant cane for Bundaberg, Isis and Maryborough regions – based on monitoring in autumn.



5 Risk assessment for ratoon crops for Bundaberg, Isis and Maryborough regions – based on monitoring in autumn.



Regional round-up of newly available varieties



Roderick Fletcher

Development Officer – Varieties
Professional Extension and
Communication Unit

With planting beginning soon, it's time to consider which new varieties you might trial on your farm this year.

Variety Adoption Committees (VACs) select varieties based on our scientific trials that are designed to determine not only a variety's commercial performance in a given region but also its agronomic suitability. Below is a brief summary of the new varieties approved by the VACs in 2013 for release in the various regions.

Northern region

Q232^Φ was one of a few varieties to become available through the blanket approval system because it had no known disease concerns. The Northern Variety Adoption Committee voted to approve and recommend it for northern growers to trial on their farms.

Performance in northern SRA Final Assessment Trial (FAT) trials compared to the standard commercial varieties

- > Cane yield is slightly lower and CCS is competitive
- > SRA disease trials show it is resistant to smut and leaf scald.

Q240^Φ is the first commercial release Q cane to have come from a Brazilian parent cross. It has been grown commercially in the southern region of Queensland since its release in 2009. It has performed well in the south and in other trials across the state.

Performance in northern SRA FAT trials compared to the standard commercial varieties

- > Cane yield and CCS are competitive
- > SRA disease trials show it is resistant to smut and leaf scald.

Herbert region

Q242^Φ had been observed to have high vigor and was approved by the Herbert Variety Adoption Committee to trial, particularly in the wet areas.

Performance in Herbert SRA FAT trials compared to the standard commercial varieties

- > Cane yield and CCS are competitive
- > SRA disease trials show it is resistant to Pachymetra root rot (Pachymetra) but is not suitable for blocks that are known to be infected with ratoon stunting disease.

Q247^Φ is a late-flowering variety that is recommended for better soils.

Performance in Herbert SRA FAT trials compared to the standard commercial varieties

- > Cane yield is competitive
- > CCS is better
- > SRA disease trials show it is resistant to Pachymetra, smut and leaf scald.

Burdekin region

Q240^Φ has performed well across the state. Based on its performance

in Burdekin SRA trials and its commercial performance in the southern region, it has been approved to be trialled commercially by the Burdekin Variety Adoption Committee.

Performance in Burdekin SRA FAT trials compared to the standard commercial varieties

- > Cane yield better and CCS is competitive
- > SRA disease trials show it is resistant to smut, leaf scald, red rot and mosaic.

Q252^Φ was noted to outperform Q171^Φ across all SRA Burdekin trial sites.

Performance in Burdekin SRA FAT trials compared to the standard commercial varieties

- > Cane yield is competitive and CCS is marginally better
- > SRA disease trials show it is resistant to leaf scald, red rot and mosaic.

Q253^Φ was approved by the Burdekin Variety Adoption Committee to trial commercially as a high-tonnage variety.

Performance in Burdekin SRA FAT trials compared to the standard commercial varieties

- > Higher cane yield, and has a slightly lower CCS
- > SRA disease trials show it is resistant to Pachymetra, smut, leaf scald, red rot and mosaic.

Central region

Q247th was approved by the Central Variety Adoption Committee to trial in the region specifically where Pachymetra issues are a concern.

Performance in central SRA FAT trials compared to the standard commercial varieties

- > Cane yield and CCS are competitive
- > SRA disease trials show it is resistant to Pachymetra, leaf scald and Fiji leaf gall.

Southern region

Q249th was approved to trial commercially in the southern region after having shown to be a high cane yield variety with good disease resistance traits suitable for the region.

Performance in southern SRA FAT trials compared to the standard commercial varieties

- > Cane yield and CCS are better

- > SRA disease trials show it is resistant to smut, leaf scald and Fiji leaf gall.

Q252th was approved to trial commercially in the southern region after having shown to be a high CCS variety with suitable disease resistance.

Performance in Southern SRA FAT trials compared to the standard commercial varieties

- > Cane yield and CCS are better
- > SRA disease trials show it is resistant to leaf scald and red rot.

NSW region

Q248th was approved to trial commercially by the NSW Variety Adoption Committee. It is suitable as a late season variety and is recommended for a 1-year-old harvest.

Performance in NSW SRA FAT trials compared to the standard commercial varieties

- > Cane yield and CCS levels are better (1-year-old crop)
- > SRA disease trials show it is susceptible to smut so we remind growers to practise good smut control.

Q254th has been approved for release in NSW after performing well in SRA NSW variety trials.

Performance in NSW SRA FAT trials compared to the standard commercial varieties

- > Cane yield better in both 1- and 2-year-old crops
- > CCS is competitive in 1-year-old crops
- > CCS is better in 2-year-old crops
- > SRA disease trials show it is resistant to leaf scald and Fiji leaf gall.

Q255 has also been approved for release in NSW after performing well in SRA NSW variety trials.

Performance in NSW SRA FAT trials compared to the standard commercial varieties

- > Cane yield is better in 1- and 2-year-old crops
- > CCS is better in 1- and 2-year-old crops
- > SRA disease trials show it is resistant to orange rust and mosaic.

More information about these varieties is available in the *2013–14 Variety Guide* for your region or the QCANESelect™ variety selection tool. These useful resources can be found on the SRA website: www.sugarresearch.com.au



Connecting with research



SRA aims to fund and conduct research that matters. Research that creates a sustainable, productive and profitable industry. Research that benefits our members and levy payers.

CaneClips

One of the ways in which we communicate research outcomes and how research is applied in the field has been through CaneClips—short videos covering a range of topics, emailed to subscribers each week and available to view on our website.

With this edition of *CaneConnection* we include a DVD compilation—Connecting with CaneClips—which features videos that cover a range of subjects from planting to harvesting, as well as research.

We have had reports that some growers have picked up suggestions featured in the CaneClips and been able to easily implement these on-farm and reaped the benefits. We hope that you too may find something within our CaneClips that is of value.



*Subscribe
to receive
CaneClips*

Research in action

Emilie Fillols, Weeds Agronomist, SRA, has completed an SRA-funded project in which she evaluated commercially available precision weed spraying technology for detecting weeds in sugarcane farming systems.

The results of her research are available on our website and include information about the economic and environmental impacts of using this technology as well as practical ways in which Weedseeker® technology can be implemented on-farm.

Over the next couple of weeks our CaneClips video will look at automatic spot spraying in sugarcane.



*Take a look at
Emilie's research
outcomes and
recommendations*

Grower Innovation Virtual Expo

With the aim of providing a forum where growers are able to share information about innovate ideas and research, GIVE is another great opportunity to experience research in action.

You are invited to attend a breakfast hosted by the Professional Extension and Communication Unit at the Russ Hinze Building, Innisfail Showgrounds, on Thursday 20 March at 7.30 am. Here you can find out more about:

1. **Varieties** – how they have performed and what's promising for North Queensland.
2. **Harvester research** – small changes in harvesting processes that can deliver big improvements on-farm.
3. **Yellow Canopy Syndrome update** – what we know about it, its impact on last season and what our research is looking into.
4. **Nitrogen nutrition** – what's good and what to beware of.

This is a free event but you must register by completing the GIVE registration form. You'll find the form at www.southjohnstonemill.com.au/images/pages/GIVE_Registration_Form.pdf

Grower Innovation Virtual Expo 18–19 March 2014
PEC Breakfast 20 March 2014

Resistant varieties are the only solution to *Pachymetra* root rot



Gae Plunkett and Robert Magarey

Gae Plunkett: Development Officer - Varieties
Professional Extension and Communication Unit
Rob Magarey: Principal Researcher

Pachymetra root rot (*Pachymetra*) is a major disease which will reduce your yields. In a survey of the Tully Mill area in 2004, the economic loss from *Pachymetra* totalled over \$900 000. **Resistant varieties are the only control to this disease.**

If you are planning on replanting your block, contact your local productivity services group to collect soil samples to test for *Pachymetra*.

These samples are sent to the SRA laboratory for *Pachymetra* severity analysis to identify the number of spores and provide you with a management recommendation.

Checking *Pachymetra* levels in your blocks

Soil samples should be taken before plough out as it is recommended they come from standing crops within the plant row. Spore levels are much higher in the cane row—up to 20 times higher than in the inter-row.

The spores are scattered and diluted after plough out and it is difficult to collect a representative sample once blocks have been cultivated. Management recommendations for fallow ground (see **Table 1**), however, take this dilution effect into account.

Planting resistant varieties will reduce the spore count over the crop cycle because the disease will not thrive within the roots of a resistant variety. *Pachymetra* spores may last for up to five years in soil. Planting a break crop or exposing the soil to the sun will have minimal effect on the disease levels in your soil, and leaving your block bare fallow for five years is not recommended.

Table 1: *Pachymetra* root rot spore count thresholds.

Current crop	Spore count ranges from soil sample results	Expected yield loss
Resistant varieties	0 – 45 000	Nil
	45 000 – 80 000	Very low
	Greater than 80 000	Low
Intermediate resistant varieties	0 – 40 000	Nil to low
	40 000 – 70 000	Medium
	Greater than 70 000	High
Susceptible varieties	0 – 30 000	Nil to low
	30 000 – 50 000	Medium
	Greater than 50 000	High
Fallow ground	0 – 30 000	Low
	30 000 – 50 000	Moderate
	Greater than 50 000	High



Left: *Pachymetra* root rot.

Recommended varieties for planting to reduce *Pachymetra* levels

In blocks with high spore counts (see **Table 1**), plant varieties that are resistant to *Pachymetra*. **Table 2** lists the range of varieties available in each region which will control the disease well while still maintaining yields.

Table 2

Region	Recommended varieties rated as resistant to <i>Pachymetra</i> root rot
Northern Coastal	Q251 [♢] , Q241 [♢] , Q238 [♢] , Q231 [♢] , Q219 [♢] , Q183 [♢]
Tableland	Q241 [♢] , Q231 [♢] , Q183 [♢]
Herbert	Q253 [♢] , Q247 [♢] , Q242 [♢] , Q238 [♢] , Q231 [♢] , Q219 [♢] , Q215 [♢] , Q190 [♢] , Q183 [♢]
Burdekin	Q253 [♢] , Q247 [♢] , Q238 [♢] , Q183 [♢]
Central	Q247 [♢] , Q242 [♢] , Q238 [♢] , Q212 [♢] , Q209 [♢] , Q190 [♢] , Q183 [♢] , Q138
Southern	Q245 [♢] , Q242 [♢] , Q238 [♢] , Q235 [♢] , Q212 [♢] , Q183 [♢] , Q138
NSW	Q242 [♢] , Q235 [♢] , Rogan, Q211 [♢] , Q205 [♢] , Q190 [♢] , Q188 [♢] , Q183 [♢]

- *Pachymetra* root rot will reduce your yields.
- Resistant varieties are the only way to control this disease.
- Poor yields, failed ratoons, stool tipping and soil in cane supply may be the result of *Pachymetra*.

- It is impossible to tell if a crop is infested with *Pachymetra* unless the roots are examined or a soil sample is analysed.
- Contact your local productivity services group to take a soil sample for analysis. The SRA soil assay laboratory will provide you with a management recommendation.



Above: The left of the photo shows low growth of Q208[♢] planted in soil with a high *Pachymetra* spore count. The previous variety was Q208[♢] which is not resistant to *Pachymetra*. The right of the photo shows better growth of Q208[♢] where it is planted in a soil with low *Pachymetra* spore count. The previous variety was Q183[♢] which is resistant to *Pachymetra*. (Photo courtesy of Allan Royal, Mackay Area Productivity Services)

A healthy crop starts with clean seed



James Ogden-Brown

Development Officer – Biosecurity
Professional Extension and
Communication Unit

One of the cornerstones of producing a high-yielding sugarcane crop is the use of approved clean seed or its progeny.

Why use *approved* clean seed?

Diseases such as ratoon stunting disease (RSD), Fiji leaf gall, smut, leaf scald, chlorotic streak and mosaic can be transmitted in planting material from one block to another, reducing the crop yield significantly.

Because disease can be transmitted via plant material so easily, we **never advocate** planting approved seed into plough out replant blocks.

A particular variety is ordered for its characteristics. By planting approved seed into a plough out replant block, you end up with a mixed selection of varieties and, possibly, infected planting material from the previous crop of sugarcane.

Instead, we always advocate that clean seed is planted into blocks that have had legumes, small crops or bare fallows. It is important to keep the fallows free from sugarcane volunteers.

An example: If RSD were to be spread through infected planting material it could cut the crop yield by between 5 and 60 per cent, depending on the susceptibility of the variety and the weather conditions. Yield losses are higher when the cane is suffering moisture stress. Over a range of conditions, the average yield loss is 15 to 20 per cent.

Sourcing clean seed

Approved seed is produced under strict quality assurance guidelines by your local productivity services group in their propagation and distribution blocks. All cane planted into seed plots for multiplication is supplied by SRA to the productivity service groups. Before release, it is treated and screened for diseases.

Standard treatments for some diseases for whole-stick and billet supplies:

- > RSD and smut: long hot-water treatment (LHWT) for 3 hours at 50°C.
- > Leaf scald: cold-soak, long hot-water treatment (CSLHWT): 40 hours in cold water, followed by hot water at 50°C for 3 hours (within 6 hours of the cold-water soak).
- > Chlorotic streak: short hot-water treatment (SHWT) for 30 minutes at 50°C.

Tissue culture is another way of obtaining approved seed. This, as well as clean seed, is distributed through your local productivity services group. It is an effective way of obtaining unlimited quantities of a new variety for early propagation and bulking up for commercial production.



Bulking up clean seed

As a general guide, a factor of 10 can be used when bulking up clean seed.

One tenth of 1 ha planted to whole stick, billets or tissue culture will produce 1 ha of seed.

If the 1 ha block produces 100 TCH, it will supply 10 ha worth of seed if your planting rate is 10 TCH in billets.

Ideally, only material from plant and 1st ratoon can be used for propagation material.

If 2nd ratoon material has to be used, ask your local productivity services officer to inspect the block for any pests or disease before planting.

- > Infected planting material will reduce yields significantly.
- > Always use planting material from an approved seed plot.
- > Source approved clean seed and tissue-cultured plantlets through local productivity services group.
- > Never plant approved clean seed into plough out replant blocks.

Left: Tissue culture seedlings.

Top: Healthy crop of approved seed cane.

Making sure growers get the best spraying advice

SRA plays an important role in upskilling the advisor community with the latest research findings and practical advice so that they can deliver the best advice on-farm for better results.

In February, 16 agronomists and advisors spent two days at the Centre for Pesticide Application and Safety at the University of Queensland to learn more about spray technologies.

Competition from weeds can cause significant losses for growers. However, the move towards farming systems based on minimum tillage is increasing dependence on herbicides and, as a result, there is growing pressure to reduce herbicide run-off.

Therefore, growers need to understand the new spraying practices and technologies that can save them time and money, while reducing the environmental impact of weed control.

The event, funded by SRA Capacity Building funds, armed attendees with knowledge about how the latest developments could help growers meet these challenges, including:

- > developments in drift-control adjuvants and how spray quality is influenced by adjuvant, nozzle and herbicide choice
- > the importance of understanding spray quality (spray patterns and the spectrum of droplet sizes) and how to set up spraying systems
- > how interactions between operating pressure and adjuvant concentration could weaken spray quality, thereby reducing the efficacy of a herbicide.

- > the range of available electronic controllers and how they are best used
- > the use of fully automatic controllers to provide a constant application rate during variable travel speeds

For more advice on how spraying systems can be improved in your farming operations, contact your agronomist or advisor.



Above: Attendees at the joint SRA C-START Spray Application Technology Workshop on 6–7 February 2014.

Pre-emergent herbicide options to help growers overcome diuron restrictions



Phil Ross

Development Officer – Weed and Pest Management
Professional Extension and Communication Unit

A recent collaborative demonstration—between Sugar Research Australia, the Department of Agriculture, Fisheries and Forestry (DAFF), and Plane Creek Productivity Services—has shown that other pre-emergent herbicide strategies can manage weeds just as effectively as traditional mixes based on diuron.

The different herbicide options investigated

John Hughes, Senior Agronomist, Agri-Science Queensland, DAFF, said that increased restrictions on the use of herbicides containing the active ingredient diuron had fuelled growers' interest in other herbicide options.

'The demonstration at Koumala compared a traditional mix of Velpar® K4 plus atrazine against Flame® and against Balance® plus Soccer®. All the treatments also included Gramoxone and Baton®.

'The herbicides were applied to plant cane as a directed spray just before the out-of-hand stage,' John said.

'This stage in crop growth is the last opportunity for most growers to apply a pre-emergent herbicide, before the crop gets too high for machinery access. It is important that pre-emergent herbicides applied at this stage maintain weed control until the cane canopy closes in.'

Encouraging results with other herbicides

Emilie Fillols, Weed Agronomist, Sugar Research Australia, said that the untreated plots showed an abundance of weeds, including mainly Barnyard grass, nutgrass and couch grass. Some pink convolvulus, summer grass, sida, crotalaria and sesbania were also present.

This showed the weed pressure that the block would have been subjected to had herbicides not been applied.

All the treatments reduced the emergence of weeds, with specific results as follows:

- > The Flame® mix (Mix 1) gave the best result as it also suppressed nutgrass despite the application rate for Flame® being reduced to 300 mL/ha to account for the lighter textured soil.

There were also patches of couch grass but this was expected as pre-emergents are not effective against perennial weeds re-establishing from stolons or underground tubers. A few pink convolvulus vines also escaped, probably benefiting from the low application rate.

- > The Velpar® K4 and atrazine mix (Mix 2) controlled grass, broadleaf and vine well, but nutgrass and couch (both perennial weeds) re-established.
- > The Balance® and Soccer® mix (Mix 3) generally controlled grasses and broadleaf well except nutgrass and couch grass. Some pink convolvulus also escaped.

This mix may have suffered from the Soccer® not being incorporated within the optimum time of between two and seven days after application. Follow-up rain fell two weeks after application.

This demonstration clearly showed that alternatives to diuron-based herbicides are available.

Growers should always read product labels to make sure their herbicide choice matches their weed situation.



Queensland Government



Treatment	Rate/ha	Cost \$/ha
Mix 1		
Flame®	300 mL	20
+ Gramoxone	1.2 L	9
+ Baton®	0.625 kg	8
Total cost/ha (product)		37
Mix 2		
Velpar® K4	1.9	32
+ atrazine	2.2 kg	20
+ Gramoxone	1.2 L	9
+ Baton®	0.625 kg	8
Total cost/ha (product)		69
Mix 3		
Balance®	200 g	77
+ Soccer®	2 kg	72
+ Gramoxone	1.2 L	9
+ Baton®	0.625 kg	8
Total cost/ha (product)		166

Note: Treatments were applied before the period of a reduced application rate of 450 g a.i./ha for diuron.



Figure 1: Weed growth in unsprayed plots (mainly Barnyard grass).



Figure 2: Flame® mix (Mix 1).



Figure 3: Velpar® + atrazine mix (Mix 2).



Figure 5: Vine escape from Balance® + Soccer® mix.



Figure 4: Balance® + Soccer® mix (Mix 3).



Figure 6: Nutgrass regrowth occurred in the Velpar® + atrazine and Balance® + Soccer® mixes.



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