Burdekin Productivity Services

PRODUCTIVITY PROFITABILITY SUSTAINABILITY

Funded by Burdekin Canegrowers and Wilmar Sugar

Grower Update

ISSUE 29 – MARCH 2018

Welcome to the March issue of our BPS newsletter. We hope you find the articles contained in this issue informative.

This issue contains:

BPS ACTIVITIES

After the Christmas and New Year break, it was back to work for all staff. Crop data collection has been the main activity for our field officers since then, and most members would have been visited by their respective field officer to record farm map and crop information. This data is recorded electronically into BPS computer files so that it can be referenced in the future for reporting purposes as well as pest and disease management. All crop data collected is treated with utmost confidentiality.

RSD sampling has also commenced on commercial cane and again this year, every farm in the district will have at least one block of cane sampled for the disease. Field staff will target blocks with older ratoons for sampling and extract juice from 16 stools at each of these blocks.

Other activities have included farm visitations for general pest and disease advice, plant source inspections, soil sampling, and providing assistance to the agronomy staff with trial work and other project related activities.

Agronomy staff have continued with current project work based around trials for nitrogen use efficiency, effective water use including improvement to irrigation management, advancement of the SmartCane BMP program, soil and water quality testing, nutrient recommendations, as well as general agronomic advice to members.

PLOTS UPDATE

Due to the recent rain, growth has been accelerating at the plots and there appears to be a plentiful supply of seed cane available for purchase. Members are reminded to make sure that they have placed their order for approved seed cane as the time period for pro-rata allocation will expire at the end of May, 2018. After this point, growers can purchase any quantity of the remaining available approved seed cane from the plots. There is no pro-rata allocation of first ratoon/commercial cane from the plots.

RSD (Ratoon Stunting Disease) sampling has been completed on all seed cane plots. Test results have been received back from the SRA laboratory in Brisbane with all samples proving to be clear of the disease. This was expected but it is always very pleasing to gain the all clear.

All plots are due to open early April this year, depending on cyclone activity and associated rainfall events. Hopefully, there are not too many more delays and planting can proceed.

Prices for seed cane and harvesting are listed on the following page and great news for Invicta growers as the plot managers have agreed to reduce the price by $10/tonne. So, please support them by purchasing a good quantity of seed cane so that the viability of the plots is maintained.

SEED CANE PRICE LIST

BURDEKIN PRODUCTIVITY SERVICES LIMITED
ABN: 18 107 846 060

APPROVED PLANTS PRICES 2018

Points to Note

1. **BPS is the on-seller of approved seed cane and does not set the prices. Prices are set by plot owners and managers.**
2. BPS has been granted permission by the owners of all plots to advertise the prices they have set.
3. BPS retains the right to set a management fee to provide and support this service and to cover costs incurred due to:
   - **a** Unforseen Circumstances
   - **b** Transport of planting material to plots
   - **c** Operation of Isolation plot
   - **d** Operation of additional Mother plots due to transition to billet planting
   - **e** Administration of accounts on behalf of plot owners

	Annual Fee to purchase from plots		*Price to Grower (Ex GST)*	*Price to Grower (Incl GST)*
Fee to purchase from plots – Non BPS Member	**$ 600.00**		$600.00	$660.00

INKERMAN

	Base Price/T (Ex GST)	*BPS Management Fee (Ex GST)*	*Price to Grower (Ex GST)*	*Price to Grower (Ex GST)*
Approved Seed - Ink Area Grower	$ 48.00	$0.00	$ 48.00	$ 52.80
Commercial Plants - Ink Area Grower	$ 53.00	$0.00	$ 53.00	$ 58.30
All Plants - Non Inkerman Grower - non BPS member	$ 70.00	$0.00	$ 70.00	$ 77.00
Mother Plot Plants	$ 75.00	$0.00	$ 75.00	$ 82.50
Swindleys Distribution Plot	$ 75.00	$0.00	$ 75.00	$ 82.50
Hand Cutter - Full Stick	$ 40.00		$ 40.00	$ 44.00
Machine Strip/Cut/Load - Full Stick (when available)	Pensini to Charge		$ -	$ -
Cutter - Billet	$ 30.00		$ 30.00	$ 33.00
Loader - Full Stick (per hour)	$ 100.00		$ 100.00	$ 110.00
Cartage - Full Stick (per hour)	$ 90.91		$ 90.91	$ 100.00

AYR

Approved Seed (KCGO/PCGO members OR Pion/Kal mill suppliers) **TO BE CONFIRMED**	$ 45.00	$0.00	$ 45.00	$ 49.50
Commercial Plants (KCGO/PCGO members OR P/K mill suppliers) **TO BE CONFIRMED**	$ 55.00	$0.00	$ 55.00	$ 60.50
All Plants - Non Pion/Kal Grower - non BPS member	$ 70.00	$0.00	$ 70.00	$ 77.00
Mother Plot Plants - Whitson's & Duncan	$ 75.00	$0.00	$ 79.00	$ 86.90
Isolation Plot Plants - Christensen	$ 75.00	$0.00	$ 79.00	$ 86.90
Cutter - Full Stick	$ 40.00		$ 40.00	$ 44.00
Cutter - Billet	$ 30.00		$ 30.00	$ 33.00
Loader - Full Stick (per hour)	$ 100.00		$ 100.00	$ 110.00
Cartage - Full Stick (per hour)	$ 90.91		$ 90.91	$ 100.00
Cartage - Billet (per hour)	$ 90.91		$ 90.91	$ 100.00

INVICTA

Approved Seed	$ 60.00	$0.00	$ 60.00	$ 66.00
Commercial Plants	$ 60.00	$0.00	$ 60.00	$ 66.00
All Plants - Non Invicta Grower - non BPS member	$ 60.00	$0.00	$ 74.00	$ 81.40
Mother Plot Plants	$ 75.00	$0.00	$ 75.00	$ 82.50
Cutter - Full Stick (Giru/Clare)	$ 45.00		$ 45.00	$ 49.50
Cutter - Full Stick (Millaroo)	$ 50.00		$ 50.00	$ 55.00
Cutter - Billet (Giru)	$ 27.00		$ 27.00	$ 29.70
Cutter - Billet (Brock Rd/Rapisarda)	$ 30.00		$ 30.00	$ 33.00
Cutter - Billet (Millaroo) *Limited Availability M.Cervoni*	$ 27.00		$ 27.00	$ 29.70
Cartage per hour - Full Stick	$ 90.91		$ 90.91	$ 100.00
Cartage per hour - Billet	$ 90.91		$ 90.91	$ 100.00

Defintions

Approved Seed - Plant cane from distribution plot
Commercial Plants - Ratooned cane from distribution plot
All Plants - Plants obtained by growers who are from another mill area or plants obtained by growers who are not members of BPS

Terms of Trade

1. Strictly 30 day trading terms on approved seed cane sales
2. All commercial quantities above pro rata allocation will require either a mill deduction authority or approval by BPS to extend credit.
3. BPS reserves the right to refuse credit.

COOTS AND WALLABIES - DAMAGE MITIGATION PERMITS

Growers have indicated increasing levels of crop damage and destruction from some native animals – particularly Coots (Purple Swamp Hen) and wallabies. Permits for control of these pests can be obtained from the Department of Environment and Science (previously Department of Environment and Heritage Protection). The current website link is https://www.ehp.qld.gov.au/licences-permits/plants-animals/native_animal_management.html however with changing government department names, it may be easier to google search "*damage mitigation permit*", or contact the BPS office for a copy of the application form and assistance in completing it. The form that is required is the one labelled "Culling and dispersal of wildlife".

To BPS' knowledge, no application for culling of these pests has been rejected by the Department. It is also worth noting that BPS encourages growers who are being affected by these pests to apply for damage mitigation permits. If there is an increase in the number of permits being applied for, it will give justification for organisations like BPS and grower representative bodies to lobby for increased support or control options. However, if no permit applications are submitted, then governing bodies will not see these pests as a significant issue. Please contact your BPS field officer for further information or assistance.

Coot damage

RAT AND PIG CONTROL

There has been ongoing pressure from other pests such as pigs and rats in crops over the last few months. Growers are reminded that there are only 2 products registered for control of rats in-crop – Ratoff and Racumin. Racumin is required to be located in bait stations, so Ratoff is the most practical option. Ratoff is supplied in small sachets that are distributed in the paddock – it has been suggested to apply some linseed oil to the outside of the sachets as this will increase the likelihood of rats being attracted to the baits.

If any of these rat control products are used, it is a registration requirement that their use be recorded on a central database. BPS staff record this information on the industry's behalf, however growers need to inform their BPS field officer when they are using the product. As with damage mitigation permits if growers do not record use of these products, then governing bodies will not view rats as an issue for the industry. Currently BPS and Qld CANEGROWERS are trying to apply for an emergency permit for aerial rat baiting. However if there is no recorded use of Ratoff, this permit is unlikely to be granted.

Rat damage

Growers are reminded of the aerial pig shooting subsidy available to BPS members. If growers partner with neighbouring farms for aerial shooting of pigs, a subsidy of 50% (up to a maximum of $750) can be obtained. Please contact your field officer or Mark Rickards on 4783 1101 for more information.

RATOON STUNTING DISEASE - RSD

BPS staff have been busy over the last month testing all the approved seed cane plots for RSD. While it is extremely unlikely that RSD will be present in approved seed plots, testing of these plots is a key risk management strategy for BPS. All approved seed plots have tested clear of RSD. BPS staff will start commercial RSD testing over the coming months. We aim to test one block on every farm in the district. Generally, the oldest ratoon of the most susceptible variety will be tested. If your farm tests positive to RSD, you will be notified, along with your harvesting contractor. Other growers in the harvest group will be informed that RSD is present in the group, however individual growers will not be identified to other group members.

There appears to be a slightly increasing trend in the number of RSD positive blocks in the region over the last few years. This increase could be a case of increased testing by BPS, or an actual increase in the occurrence of the disease. Growers are reminded that there are 3 very simple steps that will control RSD if followed:

- Regularly purchase approved seed cane
- Ensure fallows are free from volunteers which could harbour the disease
- Sterilise equipment - particularly stool splitters, planters and harvesters

SUGARCANE SMUT UPDATE AND VARIETY RELEASE

In previous newsletters and shed meetings, BPS has communicated the fact that varying levels of smut have been found in the newly released variety SRA8, along with some other varieties. It is worthwhile reviewing the current situation as there have been some concerns regarding ongoing smut issues with SRA8 in the district.

Following the discovery of smut in SRA8 in some plots last year, there has been some misinformation regarding the management and spread of the disease. SRA pathologists have advised that SRA8 grown commercially with minimal stress is unlikely to contract smut in high levels early in the crop cycle. Growers who have planted SRA8 should ensure it is well irrigated with appropriate nutrition and weed control. BPS has observed an example of how stressed cane contracts smut at much higher levels than well managed cane at a trial site. This particular site involved replicated strips of well managed SRA8 (and other experimental varieties), as well as 2 rows of SRA8 that were under irrigated as it was an intended plant source. These 2 rows of under irrigated SRA8 had significant smut infestation in 1st ratoon, whereas the well managed SRA8 (same plant source, same plant date, same environmental conditions and spore loading) only 50 metres away had no visible smut infestation.

Anyone planting SRA8, or other intermediate rated varieties, should plant with the fungicide Sinker to assist in control of the disease and minimise stress. General farm biosecurity such as cleaning and sterilisation of equipment should also occur. Growers should also be aware that other varieties in the region are rated as intermediate for smut. Q252 is rated intermediate-susceptible, and Q208 and Q183 are rated as intermediate-resistant.

SRA8 has been planted on the P&K farm and there is some smut in the SRA8 first ratoons. These first ratoons are well separated from the rest of the approved seed plot and will be sold as commercial cane to the mill, not to growers. Smut has not been detected in any of the cane in the distribution plots that is sold as approved seed cane. BPS staff regularly inspect and monitor the approved seed cane for any possible pest and disease problems. Please contact your field officer if you have any questions.

BPS staff have also been asked about the variety release process. SRA8 had been in experimental plots for 5 years prior to release, and only 2 smut whips had been seen in any of those sites prior to 2017. The regional

variety committee considers a range of factors when deciding on whether to release a variety or not. Some of the factors include tonnes, CCS, milling characteristics, disease resistance and risk. The regional variety committee will meet in April 2018 to discuss and decide on any varieties for release in the coming year. Voting members on this committee are CBL, PCGO, Kalagro, ICGO and Wilmar. These voting members consider the above factors, along with trial data and observations from SRA, BPS and Wilmar plant breeding teams. If growers would like more information on the variety release process, please contact any staff member from BPS, or your grower collective organisation.

CALCULATING NITROGEN APPLICATION RATES

While most growers are aware that the Queensland Government has regulated the amount of nitrogen and phosphorus that growers can apply, there is still some confusion about what those amounts are.

The allowable nitrogen application rate is based on a combination of the crop (district) yield potential (DYP*) *and* the organic carbon per cent (OC%) in the soil. The higher the organic carbon percentage, the more nitrogen will be mineralised in the soil and the lower the rate that will need to be applied.

In the Burdekin, the maximum nitrogen rate is 220 kg/ha. This is for replant and ratoon crops with a district yield potential of 180 t/ha, ***but***, this is only when the organic carbon is less than 0.4%. Most of the soil tests that we see have an organic carbon percentage between 0.4% and 1.2%. At this OC% the maximum nitrogen rate is 200 – 210 kg/ha for crops with a DYP of 180 t/ha, or 170-180 kg/ha for crops with a DYP of 150 t/ha.

For fallow plant cane, the maximum nitrogen rate is 180 kg/ha – again this is when the OC% is less than 0.4% and the yield potential is 180 t/ha or greater. For the majority of growers, where the organic carbon is 0.4 - 1.2%, the plant cane nitrogen rate is 160 - 170 kg/ha (DYP 180 t/ha) or 130-140 kg/ha (DYP 150 t/ha).

BPS extension staff are able to assist with interpreting soil tests and ensuring that the recommendations comply with the current regulations.

Nitrogen rate guidelines for the Burdekin

DYP (t/ha)	Crop	Organic Carbon %						
		<0.40	0.41-0.80	0.81-1.20	1.21-1.60	1.61-2.00	2.01-2.40	>2.40
		Nitrogen rate (kg/ha)						
180	Fallow plant	180	170	160	150	140	130	120
	Replant Ratoon	220	210	200	190	180	170	160
150	Fallow plant	150	140	130	120	110	100	90
	Replant Ratoon	190	180	170	160	150	140	130

***DYP (District Yield Potential)** - the regulations state that "if verifiable yield records or other reasonable evidence from the past fifteen years show that your farm or block can produce yields higher than 150 tonnes cane/ha, you may adopt the 180 tonne cane/ha yield potential to calculate your nitrogen rate. Otherwise you must use a district yield potential of 150 tonnes of cane/ha".

NOTE: The Burdekin nitrogen rate allowance that enabled participating growers to use up to 240 kg/ha of nitrogen is no longer in operation.

NEXT GEN BUS TRIP

On Monday the 26th of February, members of the Burdekin Next Gen group departed on a three day bus tour through the Wet Tropics and Mareeba district accompanied by BPS extension officer Cherrie Johnson and SRA adoption officer Anthony Curro.

During the first day the group visited Blenners' farm in the Upper Murray region south of Tully. Farm manager Damien Dodds spoke about the farming system that Blenners have adopted, which is 600 mm dual rows on a 1.9 m wheel spacing and using 2cm GPS guidance. He also spoke about neighbouring farms in the area who have adopted similar systems and the successes and challenges they have all faced.

From here the group travelled to the DAF research station in South Johnstone where they spent the afternoon with extension staff. The afternoon started with a presentation by Marcus Bulstrode (DAF) on the use of drones in sugar production and a practical demonstration of how drone mapping of crops in the wet tropics is being utilised in cane crops. Marcus walked the group through the use of crop health, variance and NDVI image filters on a cloud based software program and demonstrated how a standard 20MP camera was sufficient to achieve these crop health maps. The remainder of the afternoon was spent looking over the citrus trellis trials where trees are being trialled in three styles of trellises in an attempt to cyclone proof the crops. We also saw the banana trials where the use of inter-row cover crops like pinto peanut are being tested to minimise runoff and improve moisture retention.

Banana trials (L) and drones in agriculture presentation (R) at South Johnstone DAF research station

The following morning the group travelled to Blue Sky Produce to meet with operations manager, Matt Fealy. Matt was the recipient of a Nuffield Scholarship in 2017 and is passionate about reducing labour costs and improving productivity and profitability through robotics and automation. Upon arriving at the farm the group met Matt inside the packing shed which was in full swing for the processing of avocados. Matt spoke about the process involved in picking and packing the produce and the throughput of the shed each day.

When Matt arrived the company was only selling first and second grade produce with the remainder being thrown out as there was no market for it. In the five years since Matt and his wife have taken over management of the farm they have built a substantial following on social media sites like Facebook and Instagram. They attribute a large proportion of their success to this social media presence.

Blue Sky Produce's drip irrigation system

They now sell all classes of produce and are only forced to throw out approximately 300 kg in total of avocados per year as consumers are looking for their produce instore and requesting it from markets. Matt explained to the group that their key aim was build the name and quality of Blue Sky's produce to a standard where they were not locked into major supply contracts but rather, when their produce came onto the market consumers were driving the demand for it and it was being "pulled through the markets by demand rather than pushed through by quantity."

As well as improving produce sales they have also improved productivity as crop production has doubled year on year with the focus being put back on the health of the trees. As the farm's water is provided by Tinaroo Dam it has been crucial to monitor water use and improve efficiency where possible. The farm is in the process of being converted from traditional sprinkler systems to drip irrigation and in the blocks which have been already converted Matt has seen a reduction in water use of 30%. As well as drip irrigation Matt is working with IoT Australasia to implement a LoRaWAN network across the farm to connect moisture sensors, weather stations and irrigation automation onto one platform.

After leaving Blue Sky Produce we travelled to the new multi-million dollar Lindsay transport hub which encompasses Lindsay Transport and Lindsay Rural under one roof. Operations manager Terry Montague gave the group a guided tour of the new facility and spoke of the continued expansion of the facility in coming years.

The group then travelled to Skybury Coffee to see the coffee and papaya operation and also enjoy some of their freshly roasted Arabica beans. Candy MacLaughlin (general manager) spoke about the farms double cropping practice of growing papaya and coffee and provided details on how this practice uses environmental resources such as land, water and sunlight more efficiently than prior practice of standalone crops.

From here the afternoon was spent at MSF's farms looking at their controlled traffic system, drip and overhead irrigation systems. Irrigation manager Aaron Moore stepped the group through the automated irrigation systems and how they utilise Irrigweb as their scheduling tool. The group also had a guided tour of MSF's Tableland Mill to see the new cogen plant.

Aaron Moore and Graham Cripps demonstrating MSF's irrigation system

The final day saw the group visit the SRA Meringa station south of Cairns where Gavin Rodman (adoption officer) lead the group through the plant breeding facility and spoke about the SRA crossing program. The group were able to see aspects of the program first hand by visiting the photoperiod facilities which are used to enhance sugarcane flowering to obtain seeds for cross pollination. From there the greenhouses were visited to see the seedling family trials. To conclude the trip Belinda Billing and Julian Connellan both spoke with growers about current projects they are involved in and the progress of these projects.

SRA Meringa photoperiod facility

Seedling greenhouse

It was a great chance for everyone on the bus to catch up and to gain an outside perspective on farming systems from other regions and industries. All growers on the bus were impressed by the farms that were visited and felt as though they had all gained valuable information from the experience.

We would like to thank Les Blennerhassett and Damien Dodds of Blenners Farms; South Johnstone DAF research station team; Matt Fealy of Blue Sky Produce; Candy MacLaughlin of Skybury Coffee; Terry Montague of Lindsay Transport; Gavin Rodman, Belinda Billing and Julian Connellan of SRA Meringa; and MSF's Rik Maatman, Graham Cripps and Aaron Moore for hosting the group over the three days.

Burdekin sugarcane farmers who would like to get involved in the Burdekin Next Gen group and receive notifications of upcoming events are encouraged to contact Cherrie on 0447 069 887.

UNDERSTANDING THE IMPORTANCE OF SOIL BIOLOGY

Recently SRA held a workshop hosted by Graham Stirling to promote healthy soil. One area that was focussed on was the biology involved in maintaining a sustainable soil. Biological processes are a crucial aspect of developing well-functioning soils capable of producing a vigorous crop. To maintain a healthy soil, a range of organisms are required, this includes: bacteria, protozoa, fungi, nematodes, worms, mites and other insects. All of these organisms act together fighting for resources and creating complex relationships that overall affect the ability of a plant to grow. Bacteria are the most abundant and are the basis of soil health.

Figure 1. Nitrogen fixing bacteria inhabit the nodules on the roots of legumes
https://www.allposters.com.au/-sp/Nitrogen-Fixing-Bacteria-Rhizobium-Nodules-on-Soybean-Roots-Glycine-Max-posters_i6014897_.html

There are millions of bacteria in a single teaspoon of soil, all of which have an important ecological role. Some are responsible for plant and animal diseases and others are integral for plant growth and sustaining the foundations of a complex food web. There are many useful bacteria such as those that fix nitrogen in leguminous crops (Figure 1) but there are also unfavourable bacteria that can cause disease and suppress crop growth. There are also many that are able to help moderate numbers of larger organisms that cause damage to the plant, such as nematodes.

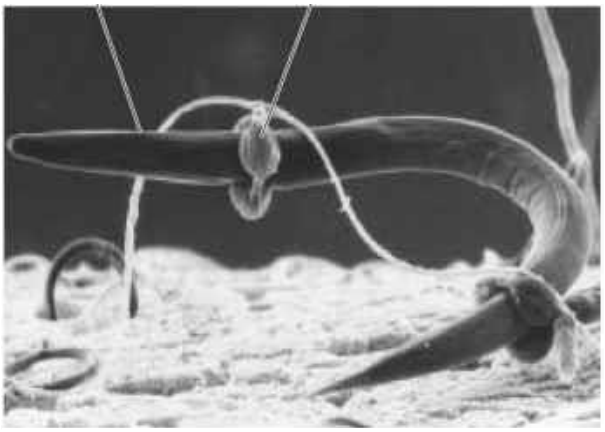


Figure 2. Some fungi set traps to catch nematodes
https://www.78stepshealth.us/plasma-membrane/general-biology-of-the-fungi.html

Soils that have not been carefully managed can experience high levels of harmful nematodes, such as root knot or lesion. A way to reduce excessive numbers of harmful nematodes is to maintain diverse biology within the soil. One example of a nematode suppressor is the bacteria *Pasteuria*, which infects female nematodes by interfering with the reproductive organs, thereby preventing them from reproducing. Fungi are also able to help control nematodes. An example of this is a predacious fungi that sets traps in order to ensnare wandering nematodes so they become entangled in loops formed by the fungus and eventually are consumed (Figure 2).

There are also types of soil fungi such as *mycorrhizae* which are able to increase a plant's nutrient and water uptake by attaching themselves to the roots and increasing their surface area (Figure 3). Fungal feeding nematodes can slow the expansion of these roots, however they are kept in check by predacious nematodes that actively hunt them and other small organisms. Predatory mites and springtails also ensure nematode populations do not explode.

For all of these organisms to perform in a favourable manner, correct conditions are required to allow them to persist in a soil. Having a good amount of organic carbon allows the lower levels in the food chain, such as bacteria and protozoa, to flourish and sustain a food source for the higher levels. This is why trash

blanketing or incorporating fallow crops into the system is encouraged. It is also important to maintain a soil that is minimally tilled and not compacted so organisms are able to have a consistent living environment where they can move freely.

With the right soil conditions these organisms create a complex food web where they consume and compete for resources and in turn prevent any single type of organism from becoming the dominant occupier. The more diversity of organisms in the soil, the greater the ability it has to suppress possible pathogens that may become present throughout a crop cycle. Maintaining good soil health has many benefits and the more it is practiced, the more it will be evident that the organisms are working to keep the plant healthy.

Figure 3. Mycorrhizal fungi inhabit plant roots and assist with the uptake of water and nutrients
https://www.westernsydney.edu.au/hie/research/research_projects/how_plants_benefit_from_partnerships_with_soil_fungi

BURDEKIN SHOW SUGARCANE SECTION

This year's Burdekin Show will be held on Wednesday June 27 and the show society is encouraging cane growers to enter their best sticks of cane into one, or more, of the following sections.

1. Longest stick (classes 1-4)
2. Heaviest stick (classes 5-8)
3. CCS – 3 sticks; cane must be at least 2 metres long and not topped (classes 9-12)
4. Best three sticks (classes 13-16)
5. Best collection of sticks – 3 sticks each of 3 varieties of cane (9 sticks total) (class 17)

The sugar cane section is proudly sponsored by Wilmar Sugar. First prize in each class is $70, second prize is $50 and third prize is $20. In addition the overall champion in each section will receive prize money of $150 and a Burdekin Pastoral Association sash.

This year, as well as the award ($100) donated by Wilmar Sugar, the Champion Exhibitor (the highest points in the sugar cane section) will also be presented with a special award in memory of Brian Strathdee. The Brian Strathdee Memorial Award ($100 and memorial sash) has been donated by Lorraine Strathdee in memory of her late husband. Brian was involved with the Ayr and Burdekin Show Societies for many years and served as president for 15 years.

For more information or to obtain an entry form please contact the Burdekin Show Society.

IRRIGATION OF YOUNG PLANT CANE

As planting gets underway across the district the question of "when should I be irrigating?" inevitably arises. Of course there is no easy answer as it depends on a number of factors, including fallow management, recent rainfall, and soil types. Despite this there are some basic principles that can be used to guide irrigation decisions. These are: daily crop water use and the soil's water holding capacity.

The first thing to remember is that the daily crop water use is driven by the size of the crop and the environment (solar radiation ,wind and temperature), and small cane uses very little water. Soil type affects how frequently a crop will require irrigation, because of different water holding capacities, but it doesn't change the daily water use.

While the canopy is still small (less than 50%) the average daily water use will be only around 1-2 mm per day (Figures 1 & 2). As the canopy increases crop water use will also increase, but peak water use of 7 mm/day will not be reached until November/December. While the canopy is small and temperatures are cooler there is the opportunity to reduce irrigation frequency without stressing the crop.

The second thing to know is the soil's water holding capacity. This can be expressed as either the plant available water (PAW) or the readily available water (RAW). For irrigation management the RAW is the important number because that is the amount of water that the crop can extract easily without going into stress. PAW for Burdekin soils is quite wide ranging – from around 60 mm/m for very sandy soils up to 200 mm/m for some of the cracking clay soils. RAW on the other hand ranges from about 30 mm to about 70 mm. Most Burdekin soils, except those that are very sandy or are shallow sodic duplexes, will have a readily available water content of at least 50 mm.

So, practically speaking, how do we make use of the daily water use and RAW to guide irrigation decisions? The easiest way to explain it is to look at some scenarios. In the following three cases the soil type is a loam over sand (Delta loam) with a readily available water content of 50 mm of soil (PAW = 120 mm), and the crop was planted on April 20, 2017. The significant rainfall that was received in April and May last year has been deleted to make it easier to understand the crop water use. For the scheduling graphs (Figures 3 & 4) the legend is: Blue bars = irrigation; Green bars = rainfall; Red line = soil moisture content; Yellow line = soil moisture deficit at which irrigation should occur = RAW.

Scenario 1. The soil is too dry for crop germination and irrigation occurs at planting. The soil has now been returned to field capacity - the maximum amount of water that it can hold that is available to the crop. At a RAW of 50 mm and daily crop water use of 1 mm/day the crop won't require irrigation for at least 50 days. In this case the average water use is a little under 1 mm/day, and it will be about 60 days before the second irrigation is needed (Figure 3).

Scenario 2. There has been rain recently and the grower wants to get the crop 'up on moisture'. As a rule of thumb, in blocks where there is good moisture e.g. preformed beds, the soil moisture level when the block is trafficable will be around 75% of plant available water. For our soil this equates to about 30 mm of RAW or around 6 weeks until irrigation is needed (Figure 4). The profile has now been refilled, but because the daily water use is now around 1.5 mm/day, this block will require a second watering in about another 5 weeks (50 mm of soil water divided by 1.5 mm/day = 33 days).

Scenario 3. If cultivation is required to dry out the soil before planting, the RAW is going to be reduced. These crops will probably have enough moisture to germinate, but will require irrigation (or rainfall) within

a couple of weeks. The second irrigation on these blocks will be around 5 weeks later, or about the same time as the second irrigation in scenario 2.

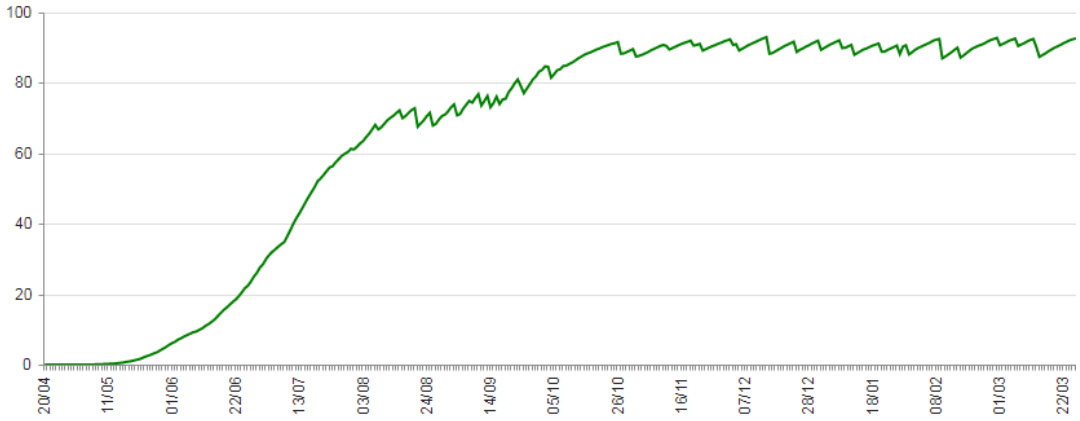


Figure 1. Canopy development for a crop planted in April 2017

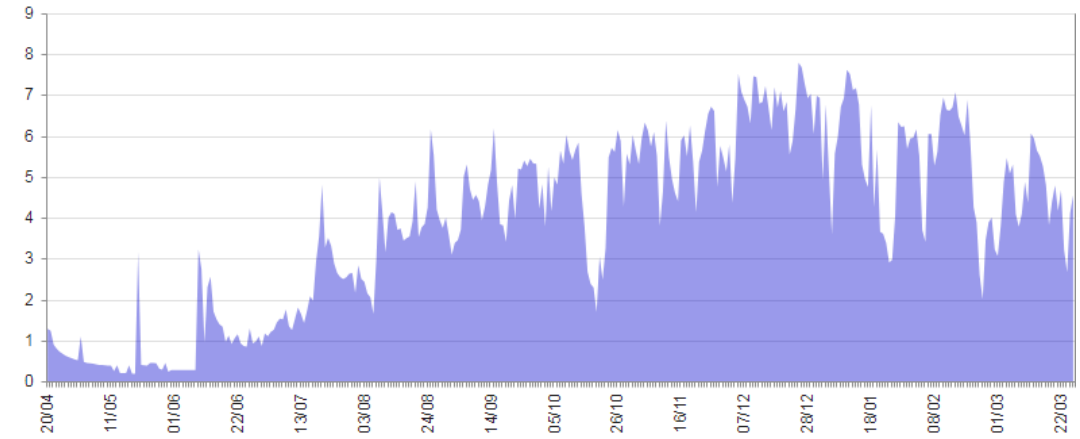


Figure 2. Daily crop water use (mm) for a crop planted in April 2017

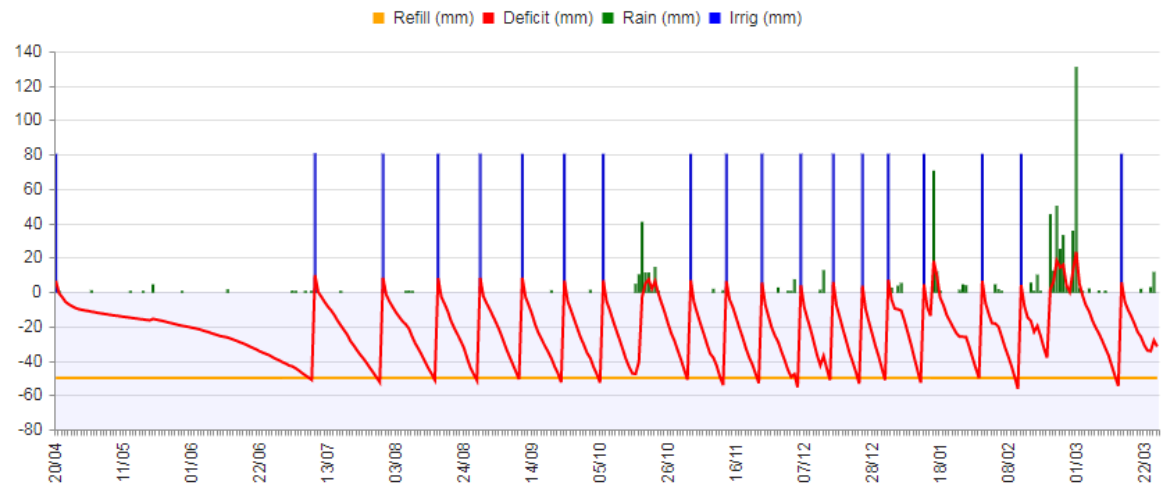


Figure 3. Irrigation schedule for a crop planted April 2017, with the first irrigation at planting

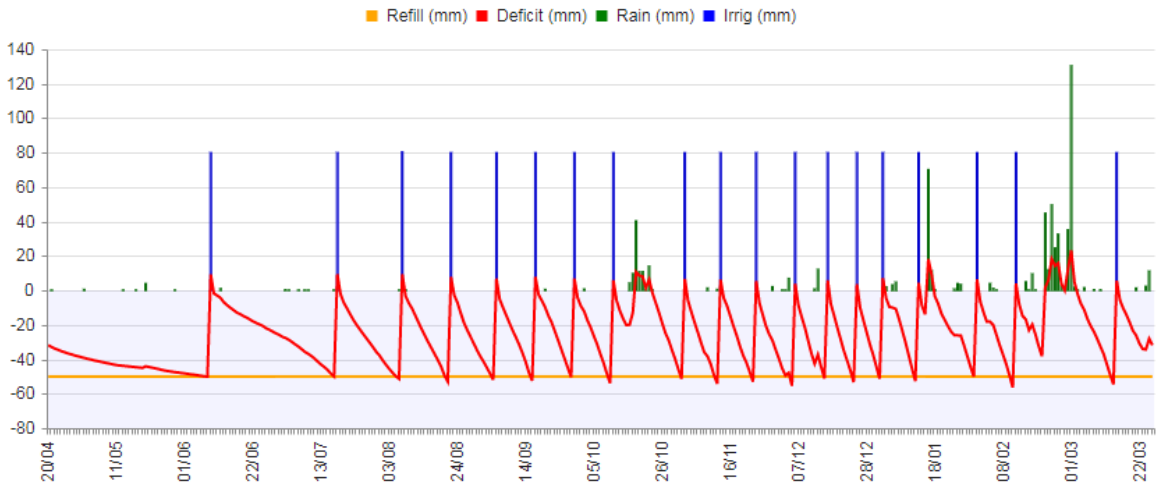
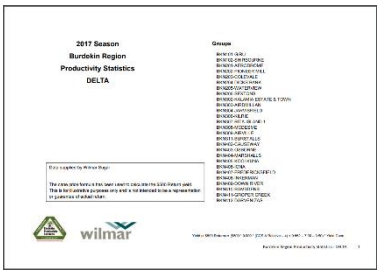


Figure 4. Irrigation schedule for a crop planted on good moisture. First irrigation is about 6 weeks after planting, second irrigation about 5 weeks after that

If this all sounds too complicated, BPS has access to a crop model – IrrigWeb – which can help make these irrigation decisions easier! It uses current weather data to grow the crop, which determines crop canopy development and crop water use. This is combined with information about the soil type to develop the appropriate irrigation schedule. Access to IrrigWeb is free for BPS members thanks to funding from the Rural Water Use Efficiency and SmartCane BMP programs. For more information contact one of the extension team.

PRODUCTIVITY REPORTS

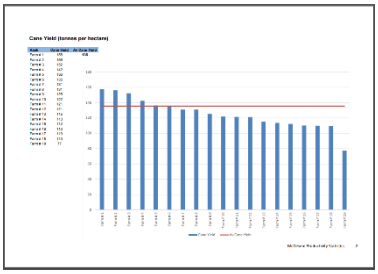

2017 Season
Burdekin Region
Productivity Statistics
DELTA
wilmar

The 2017 productivity reports were presented at the last round of shed meetings that were held in February and early March. These reports have now been loaded to the BPS website; they can be found under the BPS News tab.

The group reports show the ranking for each farm within that group for tonnes of cane per hectare; CCS; tonnes of sugar per hectare and $ returns. It is important to remember, because these are rankings, that Farm #1 for tonnes of cane will be different to Farm #1 for CCS. Growers who would like to know where their farm falls on each graph should contact the BPS extension staff for more information.

The district reports show the overall performance of each productivity group. They also include variety performance information for either the BRIA or Delta groups – note that some Invicta groups have been included in the Delta report because their soil types are more typical of the delta than the BRIA.

This year, variety by soil type information was also available. This information is the average performance across the whole district. When looking at these graphs remember that Q240 is mostly plant, first and second ratoon.


Cane Yield (tonnes per hectare)

BPS would like to thank Wilmar Sugar for providing the data for the productivity reports.

UPCOMING EVENTS

Burdekin Region Grower Update 2018

SRA and BPS invite you to our Grower Update to share the latest research developments in your region.

You will have the opportunity to speak directly with the people conducting the research, as well as those who have implemented outcomes of research in their farming operations.

Program

Varieties

New breeding target
Jason Eglinton, SRA
Local Variety Update
Rob Milla (BPS) and Catherine Kettle (SRA)

Local Update

Irrigweb
Rob Milla (BPS) and Marian Davis (BPS)
BMP Update
Terry Granshaw (BPS)
Nutrition and EEF6O
Nicholas Hill (SRA)

Harvesting

Harvesting Project
Phil-Anthony Patane (SRA)
Implementing harvest best practice
Michael Russo (Grower)

Yellow Canopy Syndrome

Mobilise or perish
Gerard Scalia (SRA)
Agronomy and insect trials
Davey Olsen (SRA)
What's new with YCS
Frikkie Botha (SRA)

Details

Date:
Tuesday, 22nd May 2018

Time:
8.30am – 2.00pm

Venue:
The Ayr Showgrounds

Address:
Bruce Highway, Ayr

Please RSVP as smoko and lunch will be provided on the day:

Mark Rickards (BPS) on 4783 1101 or mrickards@bps.net.au

ReneeVan Drunen (SRA) on 3331 3324 or rvandrunen @sugarresearch.com.au

This event is free of charge.

SMARTCANE BMP SELF-ASSESSMENT WORKSHOPS

BMP self-assessment workshops will be held fortnightly on Monday mornings (9-11 am) starting April 9, 2018.

The self-assessment is the first step towards BMP accreditation. Growers who have completed the self-assessment and would like to continue on to accreditation should also contact Terry or Jasmine.

Please RSVP to:

Terry Granshaw – 0437 553 149
Jasmine Connolly – 0438 934 601

IRRIGWEB WORKSHOPS

IrrigWeb workshops will be held fortnightly on Thursday mornings (9–11 am) starting April 12, 2018.

Workshops will cover: setting up a farm and paddocks; determining the irrigation point; and entering irrigation information.

You will need an internet capable laptop or tablet. Phones are suitable for recording irrigation events but their screens are too small for the initial setup. If you don't have a laptop or tablet please let us know so we can organise one.

Please RSVP to Marian Davis – 0428 927 079

STAFF CONTACTS

Contact	Title	Contact Number	Email
Office		(07) 4783 1101	reception@bps.net.au
Fax		(07) 4783 5327	
210 Old Clare Road, Ayr QLD, 4807 PO Box 237, Ayr QLD, 4807			
Rob Milla	Manager	0490 036 329	rmilla@bps.net.au
Mark Rickards	Commercial Manager	0427 834 800	mrickards@bps.net.au
Marian Davis	Extension Agronomist	0428 927 079	mdavis@bps.net.au
Cherrie Johnson	Trainee Extension Agronomist	0447 069 887	cjohnson@bps.net.au
Terry Granshaw	Extension Officer	0437 553 149	tgranshaw@bps.net.au
Jasmine Connolly	Extension Officer	0438 934 601	jconnolly@bps.net.au
David Paine	Field Officer – Kalamia/Pioneer	0427 167 159	dpaine@bps.net.au
Brendan Arboit	Field Officer – Invicta	0427 372 124	barboit@bps.net.au
Ashley Taran	Field Officer - Inkerman	0407 960 057	ataran@bps.net.au
Maddy Molino	Trainee Field Officer	0407 167 159	mmolino@bps.net.au