



Grower Update

ISSUE 35 – OCTOBER 2019

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



This issue contains:

BPS Soil and Water Testing Service

AgTriX Farming App

AGM Report

Mid-Year Shed Meeting Summary

Variety Development

Agronomy

Climate Factors

IrrigWeb Update

Productivity Award Winners

Staff Contacts

SPECIAL EDITION

Welcome to this special edition of the BPS newsletter.

A big thank you to all the growers who attended the last round of shed meetings in July and August. At the request of growers who were not able to attend at the time, we have put together this special edition that provides a summary of the topics discussed.

If you have any further questions or queries about any of the information presented, please get in touch with any BPS staff or the SRA adoption team. We would also appreciate feedback you may have and to hear about what topics would interest you for the next round of meetings in early 2020.

BPS SOIL AND IRRIGATION WATER TESTING SERVICE

At a recent BPS Board meeting, where directors and management reviewed BPS services and fees, it was decided that the soil testing service will now be offered at \$125 + GST and irrigation water testing service at \$50 + GST for BPS members. Given that soil testing is an important part of farm planning, and is a requirement under regulations, the new cost structure will provide a benefit to all members. As part of this service to members, BPS will collect soil samples, send away for analysis and provide an independent recommendation on the optimal nutrient requirements for your crop. Allow **10 days** for this process to be completed, so be organised ahead of time.

Please contact any BPS staff member to discuss your soil testing requirements, and remember the best time to collect a soil sample for your upcoming plant crop is immediately after plough out of the old crop.

NOTE: DO NOT request a soil test after planting has been completed as this may contravene regulations and financial penalties may be applied by government following a compliance audit.

AGTRIX

In addition, BPS has responded to member requests for a record keeping program for members. BPS has a regional licence for Agtrix Farming, which means all BPS members can use the software at no cost. Agtrix Farming allows growers to record all on farm practices in a simple to use website, or as a phone app. The program uses your farm map to record block by block information, and any data is stored securely and is not able to be accessed by anyone except yourself. Please contact any BPS staff member for assistance in accessing and setting up your farm.

AGM REPORT

On the 27th August, 2019 BPS held its Annual General Meeting at the Ayr Showgrounds Hall. Although a quorum was present, a better outcome would be if more members attended. General opinion was that the meeting was informative and the presentations were of an excellent standard.

Chairman Bryce Davies declared the meeting open at 1.30 pm and welcomed members and guests before presenting the Chairman's report for the period from 1st April, 2018 to 31st March, 2019. He thanked Alternate Director Chris Lyne for his services and welcomed board members elected for the next term.

Details in the Chairman's report included an outline of the board structure; an assurance to members of ongoing pest and disease support from BPS management and staff; an opportunity of bursary assistance for Burdekin students wishing to study Agricultural Science; the importance of maintaining a cash reserve; and a review of seed cane plot activity. In summary, Bryce urged all members to take advantage of the services provided by BPS.

Chairman Bryce Davies also offered a brief explanation of the strategy that would carry the company forward to 2020 and identified six goals contained within the Strategic Plan 2018-2020.

These are:

1. Minimise pests and diseases through seed cane supply and crop monitoring
2. Deliver a wide-ranging extension service to members
3. Participate in industry and Government funded projects that deliver value to growers and millers
4. Administration practices based on sound corporate governance and secure fiscal planning
5. Develop IT systems to enhance the collection, storage and communication of data
6. Adoption of new technologies to advance industry efficiencies.

At the conclusion of the Chairman's report, Manager Rob Milla delivered his annual report to members. Rob provided an overview of productivity group results, variety performance, seed cane sales, key pest and disease management issues, externally funded project work, trial data, and other extension activities.

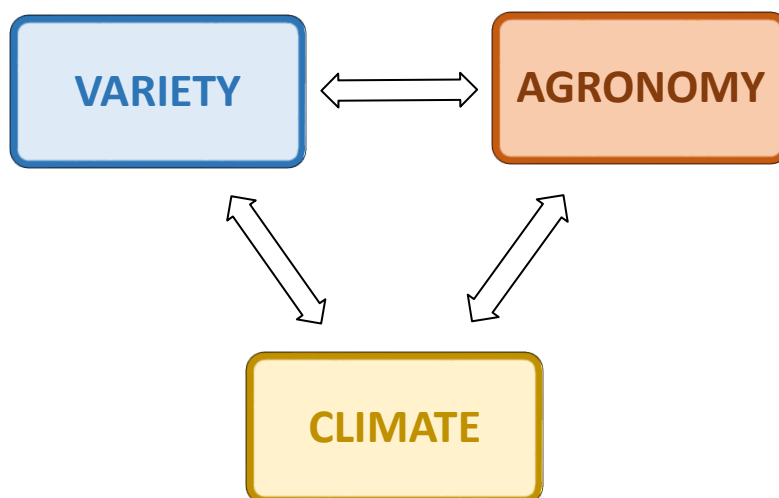
The financial statements were presented by Company Secretary Mark Rickards. These showed that BPS remains in a sound financial position and that services provided to members have increased while the levy has remained unchanged at 7 c/tonne.

Guest Speaker Mr. Graham Brodie (University of Melbourne) then presented on "The Use of Microwave Technology to Control Weeds." This presentation was very interesting from a weed control point of view and all present showed their appreciation by congratulating Mr. Brodie on his research thus far.

MID-YEAR SHED MEETING SUMMARY

Theme: 'What factors go into growing cane and ultimately your sugar yield?'

No one factor is solely responsible for yield. It is the interaction of varieties, agronomy and climate factors that determine performance from year to year.



Each of these factors was examined in detail and its impact on yield was discussed.

VARIETY DEVELOPMENT

At the shed meetings, Anthony from the SRA adoption team ran through the sugarcane breeding process to help us get a clearer idea of what goes into creating a new variety and the frequency at which varieties are released.

Although SRA's variety breeding process is world leading, has an invaluable seed bank, and utilises international connections, there is still need for further efficiency to deliver regionally tailored varieties to maximise whole-of-industry profit for sugar production. This will be done via a new genetic evaluation system that will use genetic markers to improve yield, sugar content, fibre and disease resistance.

The plant breeding process is long and complex. From crossing to release can take up to 12 years! SRA is currently looking at ways to fast track this process, understanding that growers want more rapid access to new, beneficial varieties.

SRA PLANT BREEDING PROGRAM: OVERVIEW

The Australian sugarcane industry has six major regions that have different production considerations. e.g. geography, climate, pests, diseases and soil types.

SRA's breeding program operates one crossing facility (Meringa) and four selection programs; Northern (including Herbert), Burdekin, Central and Southern (including NSW).



SRA's breeding program operates one crossing facility (Meringa) and four selection programs; Northern (including Herbert), Burdekin, Central and Southern (including NSW).

THE PLANT BREEDING PROCESS: CROSSING TO RELEASE



Parent Selection, flowering and crossing (SRA Research Station, Meringa).

The SRA breeding program identifies and selects for crossing parents with traits that will enhance clone performance. Parent selection is reviewed annually and is the foundation for improving SRA's invaluable germplasm bank.

How is this done?

- SRA has a collection of approximately 2000 core (high performance) or elite parents.
- The SRA variety exchange program exchanges varieties with 17 countries around the world, including Brazil and the USA. In any one year, SRA can import 50-60 new varieties into Australia.
- Historical variety collection: SRA has access to every variety ever released during the history of the Australian sugarcane industry.
- Introgression hybrids or the 'wild' species of cane, which are closely related to the domesticated canes, are used to capture valuable traits such as vigour, ratooning ability and disease resistance.

Flowering and crossing occur at the Meringa research station (20km south of Cairns) as the climate here is considered ideal for initiating flowering. There are two ways in which flowering occurs at Meringa:

1. In field (naturally)

Depending on climate, in field flowering initiation can range from 16% to 65%. Flowering is triggered by a reduction in photoperiod (day length) when the plant is not under stress. Optimal conditions are 12¼ to 12¾ hour day lengths for at least 20 uninterrupted days, and night temperatures above 18°C.

2. Photoperiod houses

SRA has also invested in three photoperiod houses located at Meringa. These high-tech and fully automated facilities precisely control the climatic factors that induce flowering to improve flowering initiation up to 90%. This means more crosses are possible, as varieties that are traditionally hard to initiate flowering in can be tricked into doing so.



Photo from Meringa station depicting differing flowering events.



Photoperiod house-trams (left) and photoperiod house (right) at Meringa station.

Once flowering has been successful it's time for the crossing process. First, the breeding staff need to determine the flowers viability and sex. This is not a simple procedure that can be done by eye, it needs an intimate understanding of plant physiology and access to a suitably equipped lab. Once the two parent flowers are confirmed, the sugarcane flowers are crossed in specialised facilities to produce seeds.



SRA field technicians collect flowers or inflorescence (sugarcane arrow)



Lanterns are used to contain and aid the cross-pollination process.



Seeds are collected, documented and characterised.



A 'family' of seedlings is grown from the seeds of a single cross. Germination can be done either in a greenhouse or in a hot room/incubator (36 °C and high humidity of 80-85%).

The seeds from each cross are planted into trays. Each of these trays are a new 'family' created from a cross of two single parents. Individual, germinated seeds are genetically different and have the potential to become a new variety.

This marks the end of the crossing process and the start of the complex selection process ([STEP 1-5](#)).

NB: Get in touch with Anthony Curro from SRA if you'd like to visit Meringa and check out the plant breeding facilities!

Selection Process

The selection process incorporates an Inter Station Exchange (ISE) program. This method of exchanging elite clones (steps 2-5) between the other Plant Breeding Programs (North, Herbert, Central and Southern) facilitates earlier adoption of new varieties from other regions.

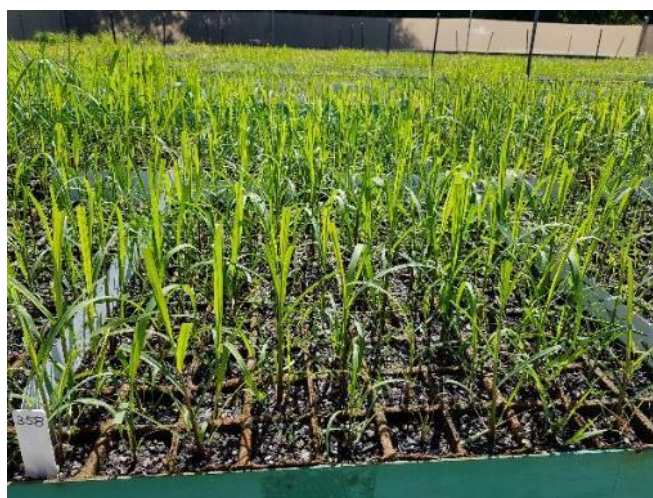
STEP 1) PAT (progeny assessment trial or family trials) - Year 1

25,000 seedlings are distributed between the four regions, i.e. there are 100,000 new seedlings or potential new varieties in the system every year.

STEP 2) CAT (clonal assessment trial) – Year 3

This occurs at the SRA propagation facilities at the Brandon station. Seedlings from each 'family' are planted in the field. The average yields from each family are then compared to choose which crosses go through to the next assessment trial.

The initial selection process reduces the original 100,000 seedlings to 10,000 clones identified from families (2,500 clones by 4 regions).



Seedlings being prepared for propagation on the Brandon research station.

STEP 3) FAT (final assessment trial) – Year 5

Standout stools of cane are chosen from CAT families and propagated. Each FAT series runs for 3 years, i.e. plant to second ratoon.

Clonal numbers are now reduced to approximately 150 per region i.e. down to 600 potential new varieties across the industry.

- Wilmar also conducts FATs, so that approximately 350 potential new varieties are assessed locally in our conditions and soils. Other regions screen approximately 150 clones each.
- Additional tests are also completed at this step, including disease, fibre and milling assessments. Potential new varieties advancing through the selection program are screened for disease resistance to smut, Fiji leaf gall, leaf scald, mosaic, and yellow spot at Woodford; and for pachymetra root rot at Tully by SRA pathologists. This means disease ratings are available early before variety release decisions are made.



Aerial shot of propagation plots on the Brandon research station.

Facts about the Burdekin breeding program:

- The Burdekin has a stable, consistent environment ideal for growing sugarcane.
- All top performing varieties are assessed, for not only performance, but also suitability for the industry. Physical features such as lodging, arrowing, suckering, side shooting and bud prominence are taken into consideration.
- Largest program for clone testing in the industry.
- The Burdekin tests significantly more clones than any other region.
- Leaf scald and smut in are the main disease issues in the Burdekin, but as pachymetra is not a problem here, susceptible varieties can be released.
- The most superior clones developed in the Burdekin are distributed to other sites, through inter station exchange.

STEP 4) Regional Variety Committee (RVC) – Year 10

- Approximately 10 new varieties are available for assessment per year.
- The RVC is made up of Burdekin grower collectives, mill and industry representatives.
- Reviews all potential varieties against current Burdekin specific tonnage and sugar benchmarks and considers pest and disease management needs and milling characteristics.
- Benchmarks set by high performing varieties such as KQ228, Q240, Q208 and Q183.
- In short, the Burdekin production benchmark is quite high and can be the reason why very few varieties make it through to release in the region.

STEP 5) Released to BPS for propagation and distribution – Year 12

- Here in the Burdekin we are well-positioned for high volume clean seed distribution.
- If a new variety from SRA is showing promise, BPS can plant it into propagation plots to speed up the last few years of the plant breeding process.

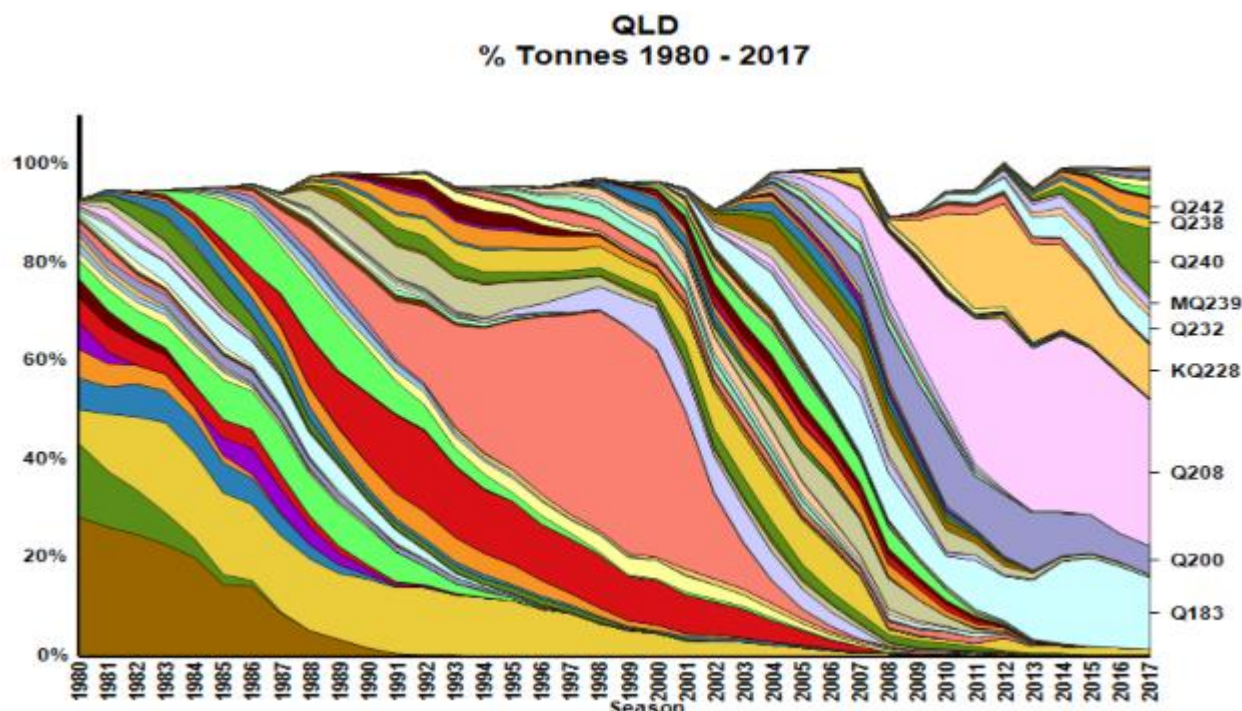
New releases on the horizon in the Burdekin:

- **WSRA17** (2020): high TCH, below average CCS; intermediate – susceptible smut rating. WSRA17 will be available next year on a kg/ha quota. Chat to your BPS field officer for orders by the end of 2019.
- **SRA23** (2021): average TCH, average CCS; smut resistant. With the hot and dry Burdekin conditions being ideal for smut, it is important to have more smut resistant varieties to lower overall disease pressure.

The variety breeding process is complex and time consuming for the following reasons:

- Sugarcane **needs a certain day length** (photoperiod), humidity, temperature, and low levels of overall plant stress to flower. This is why SRA has invested in photoperiod houses, and with them, they've even been able to induce flowering in Q183.
- Due to the **genetic make-up** of sugarcane plants, two parent plants can result in a huge amount of trait variability in the seedlings. Each seed collected from a single cross is a potential new variety.
- To speed up the screening process, **SRA is developing a new Genetic Evaluation System** which aims to use genetic markers earlier in the breeding process to increase efficiency in selecting potential high quality clones.

There is always an **inherent risk in adopting new varieties**. The less time the plants are observed by the SRA research team, the more risk is transferred onto growers and the industry in testing these new varieties. Although SRA screens varieties against diseases and pests and selects for favourable traits, varieties will respond to differences in soil types, seasonal weather, and new pests and disease pressures in diverse ways. We are all responsible for managing this risk, observing variety performance over time and sharing what we learn.



The above graph depicts all sugarcane varieties released (by colour) Queensland wide from 1980 to 2017. The width vertically is the % area planted by variety. The most recent varieties are noted on the right axis. This tells a story of how the variety program has performed over time. A certain variety can have a strong economic effect across industry, but then suffer a downturn if a disease incursion occurs. These are soon replaced by other varieties as a result of the SRA plant breeding program.

AGRONOMY

Agronomy / on-farm management of your crop includes:

- Variety selection
- Nutrient and soil management
- Irrigation
- Weed management
- Pest and disease management
- And many other factors

There is a widely recognised concept in agronomy called **Liebig's Law of the Minimum**.

It can be conceptualised by thinking of your farm as a wooden barrel full of water. The aim is to fill the barrel with as much water as possible - the water represents yield.

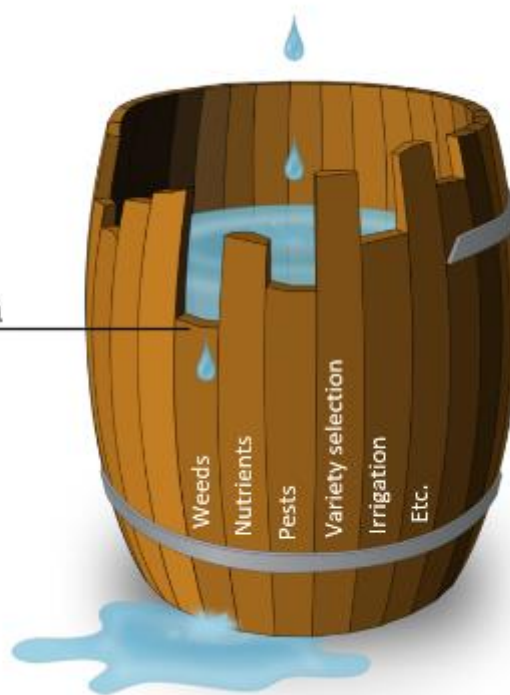
However, the barrel is constructed of wooden boards, each one representing an agronomic factor of farm management (nutrient, irrigation and weed management etc.). So, the highest point the water can fill to is limited by the height of the shortest wooden board. Whatever this board is represents the limiting factor overall.

In this example (right), weed management is the shortest wooden board. Perhaps there is a sorghum infestation in a plant cane block that got away and is competing with the cane enough to severely reduce yield. While still important, it wouldn't matter if you had perfected your irrigation schedule on this block, yield would still be limited by the weed competition.

Although we all have certain methods by which we manage our blocks, sometimes it can be useful to take a step back and look at the big picture of your farm and all the ingredients that go into growing good cane. Every farming system has a limiting factor somewhere, and by identifying and addressing yours you can get the most bang for your buck in your management decisions.

BPS is here to help with exactly this, so contact any BPS staff for assistance.

Minimum



NUTRIENT AND SOIL MANAGEMENT

Soil is such a crucial component of agriculture, and how we manage nutrient levels, soil structure and other indicators of soil health can have significant, and long-term impacts on yield.

- Nutrients work to the same barrel analogy. Ideally, soil management includes getting to know the soil characteristics of your blocks and **addressing the most limiting factor first**.
- A **soil test** is a useful way to get a clear, quantifiable picture of **soil nutrient levels** and chemical constraints (e.g. sodicity, salinity).
- Nutrient management plans and fertiliser recommendations use this information to enable you to **bring levels of nutrients up to non-limiting yield potential**. It also means you can tailor the amount of N, P, K and S applied to match what your soil/crop specifically needs, and not waste money on unnecessary inputs.
- This is why it's best practice to get your soil test done at the lowest nutritional status of the soil, which is generally straight after harvest. Soil testing after harvest also allows time for the application of ameliorants (gypsum and lime) if they are required.

Understanding organic carbon and nitrogen management

- Soil tests use **organic carbon (OC)** as a proxy measure for **organic matter (OM)**. Testing OC% is relatively easy, testing OM% is not.
- Organic matter is an important component of soil as it:
 - Improves physical soil conditions / **soil structure** / soil tilth
 - **Increases water infiltration** and water holding capacity
 - **Reduces erosion losses** – because of improved structure
 - Increases **CEC**, therefore increasing **nutrient holding capacity**

- Supplies plant nutrients through **mineralisation**. Mineralisation is a continuous cyclical process where microbes break down organic matter to release nutrients such as nitrogen. The microbes themselves then die and return to the soil as part of the OM pool.
- This, in turn, makes the N in the soil more available to plants, and hence different amounts of N will be required with changing OC levels (see table below).

Therefore **nitrogen (N) fertiliser rate recommendations** are based on your soil's organic carbon level. SIX EASY STEPS and BMP guidelines are based on this also.

This table is an extract from the SIX EASY STEPS guidelines. In the following example, let's assume recommendations for ratoon N rates and a district yield potential of 180 tc/ha. If the block has a very low (VL) organic carbon of less than <0.40%, the recommended N rate is 220 kg/ha. However, if the organic carbon in the soil is medium-low (ML), at 0.81-1.20%, then less N can be applied at 200 kg/ha. This is because with more soil carbon, the more the soil is able to provide plant available nutrients to the crop.

Nitrogen (N)								
Table 6 – Nitrogen (N) fertiliser guidelines								
District Yield Potential	Crop	Organic C (%) range, N mineralisation index and N application rate (kg/ha)						
		< 0.40	0.41 – 0.80	0.81 – 1.20	1.21 – 1.60	1.61 – 2.00	2.01 – 2.40	> 2.40
150 tc/ha	Plant after bare fallow	150	140	130	120	110	100	90
	Replant and ratoon	190	180	170	160	150	140	130
180 tc/ha	Plant after bare fallow	180	170	160	150	140	130	120
	Replant and ratoon	220	210	200	190	180	170	160

Also underpinning the SIX EASY STEPS guidelines is the baseline knowledge that growing cane requires 1.4 kg of N per tc/ha for the first 100 t/ha produced. After 100 tc/ha, the plant requirements decrease slightly, and 1 kg of N is needed per tc/ha. This information underpins the district yield potential quantities. For example, if you have a yield potential of 180 tc/ha, the amount of N kg/ha recommended will be based on:

1.4 kg N for the first 100 tc/ha ($100 \times 1.4 = 140$ kg N/ha)

And 1 kg N for the remaining 80 tc/ha ($80 \times 1 = 80$ kg N/ha)

= 140 kg N/ha + 80 kg N/ha = 220 kg N/ha baseline nitrogen rate

This rate of 220 kg N/ha is then overlaid with the soil's organic carbon profile (and therefore soil and nutrient accessibility) to determine the final recommended rate.

Managing organic carbon in the Burdekin:

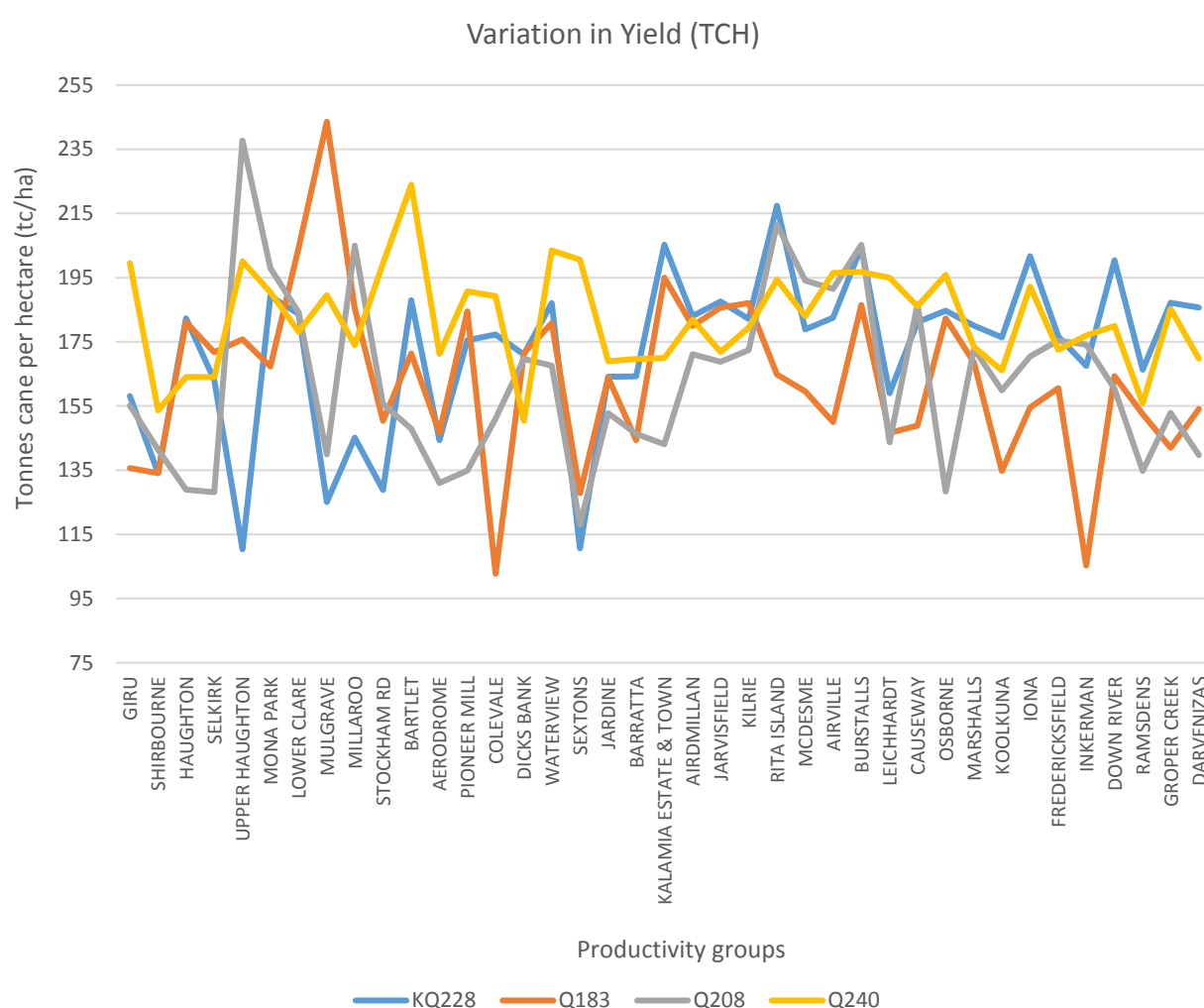
- Levels of OC are quite low in the Burdekin. Soil tests with over 1.2% OC are pretty good, over 2% is outstanding!
- Increasing OC is difficult in our environment. Soils in the **tropics have high mineralisation rates** (turn over) due to warm temperatures and high soil moisture levels.
- Some ways to work towards **increasing OC and OM** include returning crop residues (i.e. trash blanketing), mill mud application, minimum tillage, and others.

VARIETY SELECTION

Some varieties are more suited to certain soil types than others. Knowing your soil type and planting schedule can help ensure you are optimising yield. Utilise [QCANSelect](#) to inform variety selection on your farm and get in touch with BPS if you'd like further advice.

For balanced risk management it is recommended that no more than 40% of each farm is planted to the same variety. Diversity is our first line of defense against pest and disease outbreaks.

The graph below shows the maximum yield recorded for four common varieties (KQ228, Q183, Q208, Q240) across productivity groups in 2018. This highlights that most varieties have the potential to produce high tonnages, but this is largely dependent on other agronomic factors as each is suited to slightly different certain soil types and growing conditions. Even in a year with lower production due to climatic conditions, all 4 major varieties recorded yields over 215 tc/ha in certain productivity groups.



IRRIGATION

- The key to irrigation is matching:
 - **Volume of water applied**
 - **Crop water use**
 - **Soil water holding capacity**
- There are some easy checks you can do to improve irrigation efficiencies before making large infrastructure investments (i.e. variable speed pumps, solar power etc.)
 - **Check your tariff** matches your water use patterns to save on electricity costs
 - New tariffs coming out in the future. You can stay on your current tariff (even if it is an old one) for another two years. However, from now on, you can only change to a new tariff.
 - It is worth checking Ergon's EnergyCheck
<https://www.ergon.com.au/retail/business/account-options/energycheck>
 - **Review your irrigation schedule and cut off times**
 - IrrigWeb is a useful scheduling and record-keeping tool available for free for BPS members.
 - It works on a crop growth model that has been validated in the Burdekin.
 - Combining IrrigWeb scheduling with a grower's on-farm experience can be a great way to investigate water use and crop growth optimisation.
 - Come along to an IrrigWeb workshop with Marian from BPS and get in touch with BPS to try out using IrrigWeb on your farm. IrrigWeb workshops are held on Thursdays, fortnightly.

WEEDS

During the shed meetings, Rob Milla from BPS reviewed research that compared the effect of timing of weed control on yield. The trial was data from multiple sites in QLD, including the Burdekin. Although the trial was completed in the late 1990s, it still conveys a relevant message about the importance of controlling weeds in early crop growth stages. A similar overall trend of the effect of weeds on young cane growth was observed at all trial sites.

The following table is an extract from the research paper. It details the difference in yield (t/ha) between treatments where weed control was delayed following crop emergence. Full control represents implementing weed control at the time of plant emergence. Note: weeds were hand pulled to remove the possibility of a herbicide phytotoxic effect skewing the data.

Delay in weed control	Yield (tc/ha)	Loss tc/ha (compared to full control)
Full control	145	-
3 weeks	135	10
5 weeks	120	25
8 weeks	118	27
12 weeks	108	37
No control	105	40

There are a few lessons that we can take away from this research:

- The most effective time to control weeds is within the first 4 weeks if yield loss is to be avoided.
- Therefore, it's important to address weeds when they are at an early development stage. Otherwise, the effect of weed competition will have had longer to take effect and potentially more expensive herbicides will have to be used to get them under control.
- Effective weed management starts with control during fallow periods.
- It is also important to note here that a noticeable increase in yield will only be had if weed management is the limiting factor on your farm. You can find the full report [here](#).

**PESTS AND DISEASE**

At this round of shed meetings BPS and SRA also held a **pest and disease showcase** for growers.

In the spotlight were the following pests and diseases:

SMUT

- A fungus which infects the plant via the buds, and then lives in the cane at growth points.
- It is active in all Australian sugarcane regions, and unfortunately, smut does best in warm, dry climates such as the Burdekin.
- Produces a whip-like structure that allows black fungal spores to be wind dispersed.
- Spores can survive in the soil for more than 2-3 months in dry, favourable conditions.
- **Management tips:**
 - Variety selection is our main form of defense against smut.
 - Fungicides such as flutriafol (Sinker) can protect cane from reinfection for several months after planting or being hot water treated.
 - When smut is present in a crop and starting to impact yields, following the block and planting a resistant variety will assist in the management of the spore loading, which will take the pressure off the surrounding varieties with varying levels of resistance.



ITCH GRASS

- Annual grass growing to 3 metres. It can be identified by its red-green aerial roots, hairy stems and blue-green, rough-edged leaf blades that grow to approximately 50cm long. It is easily confused with sorghum when the plant is young. The seed head is quite distinctive (bottom left).
- Grows vigorously and competes with cane for resources.
- Produces thousands of seeds that can remain viable in the soil for up to seven years.
- **Management tips:**
 - Integrated weed management planning combining spraying, machine hygiene and fallow management is an important tool in the management of itch grass.
 - Avoiding slashing affected areas can assist in reducing the spread of itch grass.
 - **Contact BPS** to assist with management of itch grass if you are concerned about an incursion.



WEEVIL BORER

- Eggs are deposited into damaged areas of the stalk rind and the larvae feed on the soft tissue of the stalk.
- **Management tips:**
 - Ideal variety traits that minimise weevil borer damage are: harder rinds, higher fibre content and free trashing; whereas varieties that are prone to growth cracks and piping create cavities for eggs to be laid in.

- In severe cases, fipronil insecticide (Regent 200SC) sprayed at the first millable internode stage can be used to control infestations. However, be sure to work out the economic feasibility of spraying first.



MOTH BORERS

- Eggs are laid under leaf sheaths of young grass, including young sugarcane stalks and other grasses (i.e. guinea, crowsfoot, rhodes and red natal grasses). Caterpillars bore through the rind of the plant and will usually move between multiple young stalks within the six-week life cycle.
- **Management tips:**
 - Moth borers can be managed through control of in-crop weeds and keeping headlands clean.
 - There are several other beneficial insects (including parasitoid wasps and flies) that prey on the caterpillars.



TERMITES

- Reduce cane growth by hollowing out cane stalks or billets and can be hard to spot as the outside of the stalk can remain intact.
- Damage is usually not extensive and only along block edges.
- **Management tips:**
 - Cultivating along the edge of a block can disturb the soil and deter termite tunnels.
 - No insecticides are registered for termite control in sugarcane.



COLD / HEAT CHLOROSIS

- Not actually a disease or a pest, although it is commonly mistaken for one!
- It is a normal plant response to a cold snap or excessive heat during the growth period and does not cause a significant impact on cane growth.
- Cold chlorosis is often seen in Q240.



CLIMATE AND SUGARCANE GROWTH

While annual climate factors are out of our control, they still impact on growth and yield and therefore yearly crop performance. So, when comparing your crop performance between good and bad years, it can be useful to consider if year to year differences have been caused by climatic variations or if there is an agronomic/variety management factor that needs tweaking instead.

COMMON CLIMATE INFLUENCES TO CONSIDER:

Germination

Soil temperature is a critical variable for sugarcane germination and emergence. Time to germinate differs between varieties but relies on accumulating temperature-day units. At higher soil temperatures cane germinates and establishes faster than at lower temperatures. Cane establishing using fewer days at higher soil temperature will reduce loss through disease and insect damage. Cane should not be planted when soil temperatures at the sett are below 18°C.

Growth

Growth in sugarcane is inhibited when ambient temperatures are above 35°C. Above 34°C photosynthesis declines as respiration increases and over 38°C growth completely ceases.

Solar Radiation

Measured with a pyranometer or solarimeter in units of MJ/m²/day (megajoules/square metre/day). A sunny day is typically 28-30 MJ/m²/day; and 10-15 MJ/m²/day in the winter on Queensland coast. Sugarcane generally requires 18-36 MJ/m²/day for 10 to 14 hours.

The 2015/2016 season was considered a nearly perfect year climatically, whereas in comparison 2017/18 was a wet and cloudy year and caused reduced growth in cane (yield penalty) by over half a million tonnes. When a crop is supplied with optimal agronomic management, solar radiation can become the limiting factor.

Bringing it all together

Productivity is affected by a range of factors, some of which we can control (nutrition, weeds, irrigation, varieties etc), and others which are out of our control (rainfall, solar radiation etc).

By considering all of the aspects that we can manage and determining which are the most limiting factors, productivity and profitability can be optimised. Simply focussing on one or two areas e.g. nitrogen rates or varieties will not lead to improved productivity if these are not the most limiting factors.

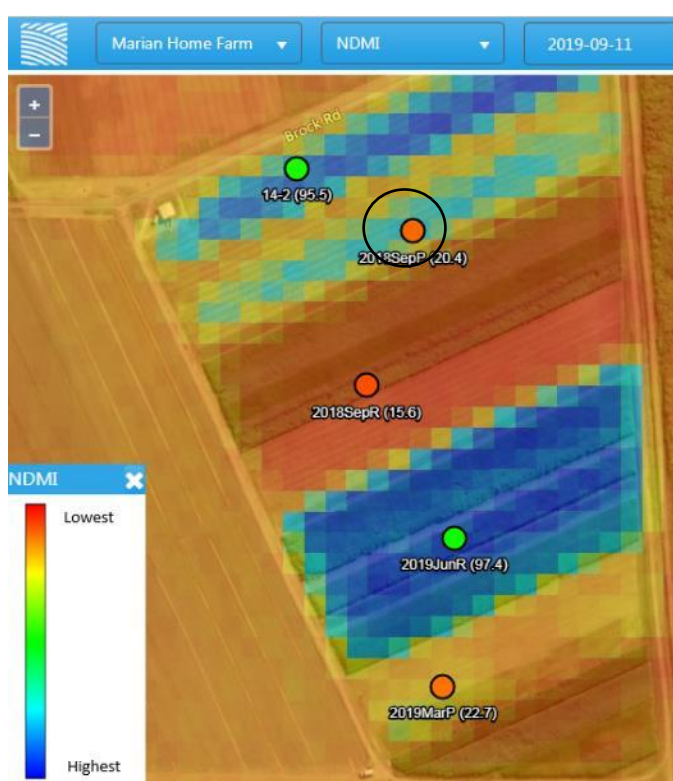
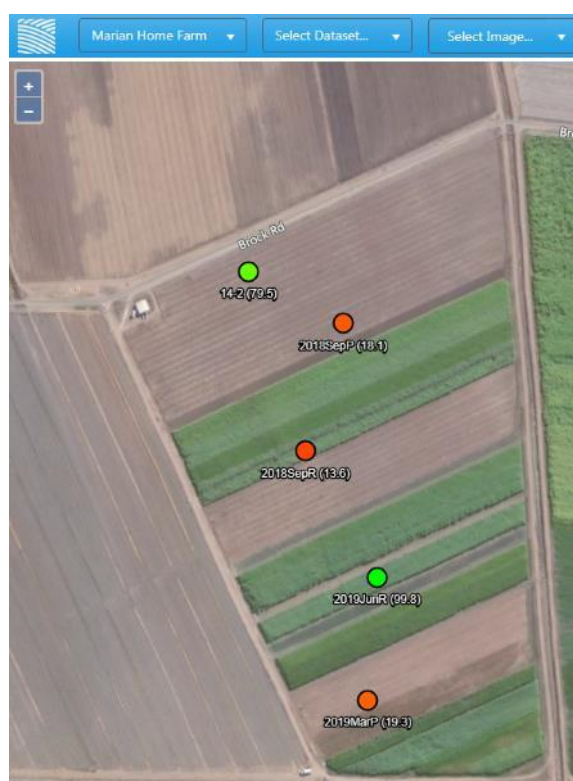
IRRIGWEB UPDATE

IrrigWeb is an irrigation scheduling and record keeping tool that has been developed specifically for sugarcane. With funding from BPS, and the Farm Water Futures and BMP programs, BPS is able to provide our members with free access to the program.

Recently there have been some changes made to the functionality and feel of IrrigWeb. These changes include:

- Adding a map function which allows users to visualise the moisture status of their crops via a coloured dot (below left).
- Including satellite imagery of normalised difference vegetation and moisture indices (NDVI & NDMI). NDVI is an indication of crop vigour or how well it is growing. NDMI provides an indication of moisture stress levels (below right).
- New, simplified water use report that shows total water application (irrigation and rainfall), run-off and deep drainage.
- New yield report that calculates tonnes of cane grown per megalitre of water applied - if the user has recorded their yield data.
- The ability to choose what information to include in the weekly scheduling email.
- The option to have the map set as the default landing page.

The images below show how the NDMI imagery can be used to compare the IrrigWeb soil moisture deficit (coloured dots) to the crop's moisture stress level. The circled example is a paddock where IrrigWeb calculates that the soil water level is low, while the paddock colour shows that the crop is not stressing. Further investigation showed that no irrigations had been recorded against that paddock; this was causing IrrigWeb to think that the crop was stressing.



For more information about IrrigWeb please contact any of the BPS extension staff.

2018 PRODUCTIVITY AWARD WINNERS



Above left to right: Mark Rickards (on behalf of Vin Sorbello) accepts the highest CCS award from Greg Watson (QSL); Rob Dwyer, Incitec Pivot, presenting the highest tonnes of cane award to John Rapisarda; and Ben Nielson receiving the sugar producer of the year award from Menno Bokma (Wilmar Agservices)

2018 Productivity Award Winners

The 2018 season productivity awards were presented at the AGM on August 27.

Award winners were:

Highest Farm Average CCS: V Sorbello and Company - 16.71 CCS; Award sponsored by QSL

Highest Tonnes Cane per Hectare: Rapisarda Enterprises - 243.6 tch; Sponsored by Incitec Pivot

Sugar Producer of the Year: BJ, BN and DA Nielson - 24.4 tsh; Sponsored by Wilmar Agservices

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
Claire Bailey	Extension Officer	0437 134 043	cbailey@bps.net.au
David Paine	Field Officer – Kalamia	0427 167 159	dpaine@bps.net.au
Leigh Chapple	Field Officer – Invicta	0427 372 124	lchapple@bps.net.au
Wayne Johnstone	Field Officer – Inkerman	0407 960 057	wjohnstone@bps.net.au
Maddy Molino	Field Officer - Pioneer	0407 167 159	mmolino@bps.net.au
Tahlia Kinrade	Trainee Extension Agronomist	0439 375 411	tkinrade@bps.net.au