CottonInfo **Information** *when you need it*

the gwydir grower

September 2021

Water availability and good prices to drive large cotton planting

Welcome to the first Gwydir Grower of the new season.

As we prepare for the start of the 2021-22 cotton season, two key positive factors are lining up - good water availability and strong cotton prices.

A close eye will be kept on weather conditions in the critical planting window and it will be important to read the season with the help of long range forecasts and adjust management as the season unfolds.

BOM Long range weather forecast

- Rainfall for October to December is likely to be above medium much for eastern Australia, although the likelihood of exceeding the median rainfall is higher in October, and lower in November.
- With a weaker negative IOD and approaching La Nina, one would expect cooler temperatures and lower crop ETo through the remainder of the calendar year.
- BOM Climate overview: http://www.bom.gov.au/climate/outlooks/#/overview/summary
- Also look at the latest CottonInfo Moisture Manager complied by Jon Welsh.

Cotton Area

Current estimate for the Gwydir 2021/22 season is 50,000 ha irrigated with strong interest in dryland this season. Having full on-farm water storages and Copeton Dam at 83.1%, the Gwydir has some certainty for 2 years which is fantastic. The 2021/22 General security allocation is 69.3%.

The largest area of cotton planted in Australia was 655,000 hectares in 2011 which produced a record 5.5 million bales. Figure one shows the production area in the Gwydir since 1990. Fully irrigated production in the Gwydir is now around 72,000 ha (dropping back from 90,000 pre-water recovery).

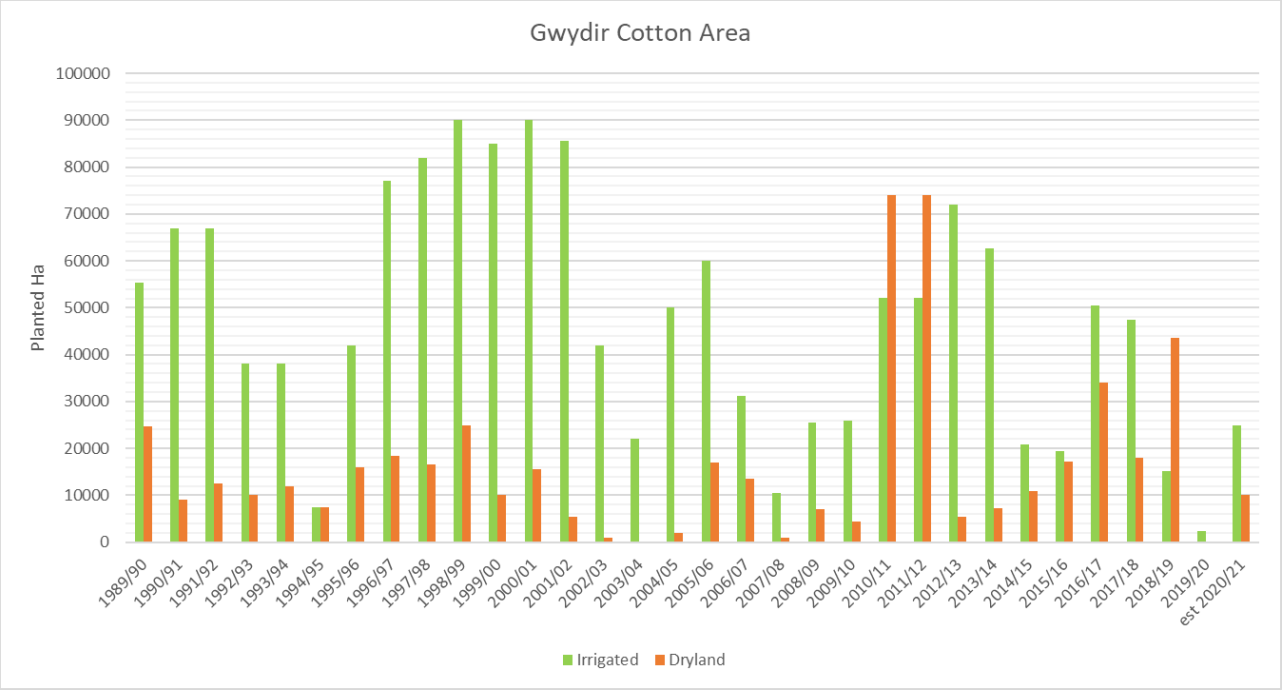


Figure 1: Gwydir irrigated and dryland cotton production since 1990. ***Source: Gwydir Valley Irrigators Association***

Map your Cotton Area

All cotton growers are encouraged to play their part in preventing off-target spray drift damage by mapping their fields in SataCrop this season.

It is really important this map gets completed so ALL susceptible crops are marked out easily for spray applicators and farmers to see.

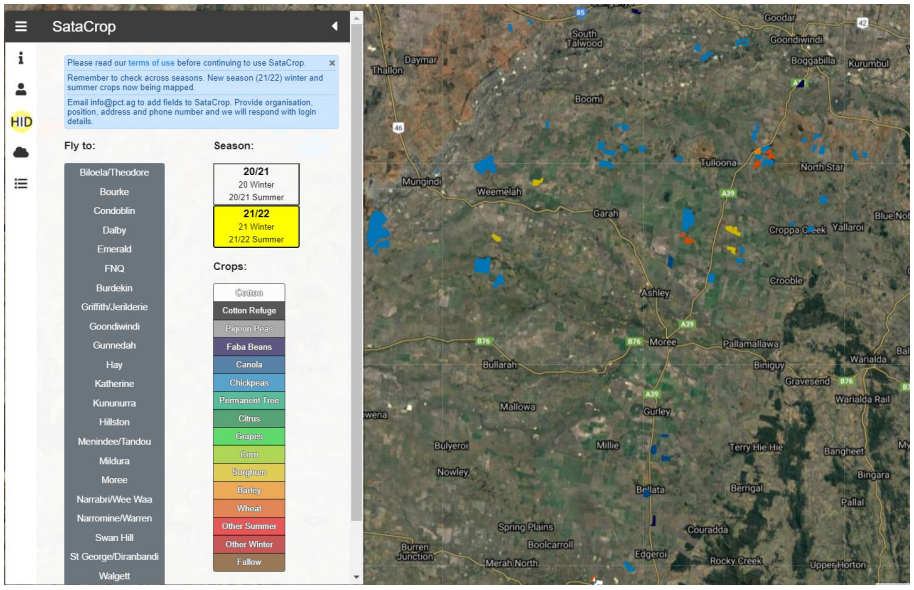


Figure 2: SataCrop Website

To gain access to the SataCrop website for editing purposes, you will need to email Ben Boughton at PCT-agcloud on ben@pct-agcloud.com

A short video to show you how to use Satacrop and add your fields is available at: SataCrop Video- How to add a field.

If you have used SataCrop previously, all you need to do this season is re-colour code your fields, depending on what you have planted where.

“It is vitally important growers do all they can to prevent off-target spray drift from occurring, and by using SataCrop, you’ll be doing your bit to help yourself and your neighbours not be impacted by off-target spray drift” Cotton Australia.

Planting: Do it once, do it right

Planting can begin when there is a rising plane of soil temperature forecasted above 14°C for the next 7 days (where the temperature is recorded at 10cm depth at 8am). Refer to the CSD Soil Temperature Network to see what soil temperatures are doing in the Gwydir district.

Stuart McFadyen has 7 soil temperature sensors installed around the Gwydir district (Figure 3). CSD has 63 installed across the whole industry. Stuart has been busy conducting maintenance and getting these installed in our district over the last month.

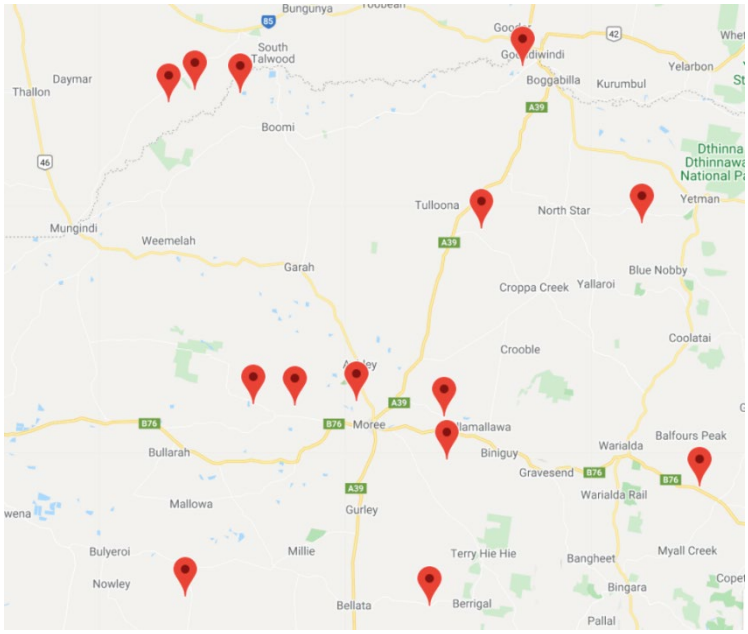


Figure 3: CSD Soil Temperature Network

Temperature affects the time taken for plants to emerge and the longer it takes the greater chance of seedling death through disease and insect damage. Check out the results of a CSD experiment using their thermogradient table – difference in growth at 7-days at different temperatures (Figure 4).

Figure 4: Difference in cotton seed germination and growth at 7-days at 12 °C, 14 °C, 16 °C, 18 °C and 20°C. ***Source: CSD Facts on Friday: Factors that affect Cotton Establishment***

CSD talk about having the **Green Light for planting**, if you have the green light, happy days, Lets GO! A red light indicates that planting condition are definitely unsuitable and an amber light means planting might commence, but you need to be cautious and adjustments, such as planting rate, may need to be made.

The Fast Start initiative is giving you the tools and information to ensure the best start to your crop.

Planting Rate

The cotton planting rate calculator helps you determine the planting rate required to achieve your desired plant stand. It's based on the following factors:

- Variety
- Field conditions
- Disease levels
- Establishment method
- Seed germination percentage
- Soil temp at planting
- 7-day soil temp forecast.

"Growers should aim for 10-12 established plants per meter in irrigated fields" Stuart McFadyen, CSD E&D Agronomist, Moree

The cotton planting rate calculator does the maths for you, but for those old school below are two examples of calculating planting rate comparing sub-optimal and more optimal conditions (Table 1).

Table 1: Calculating planting rate

Example	Poor soil conditions represent cool air temperatures for the week after planting, usually back to back with a field score of 3 to 5 and a low soil temperature (<14°C)	Good soil conditions represent rising warm air temperature post sowing, usually a fallow field with a field score of 2 or above and a warm soil temperature (<16°C)
Desired plant stand	• 10 plants/m • 100,000 plants/ha	• 10 plants/m • 100,000 plants/ha
Divide by estimate plant survival	• 60% (40% establishment mortaliy) • 100,000 / 0.60 = 166,666	• 80% (20% establishment mortaliy) • 100,000 / 0.80 = 125,000
Divide by the germination percentage of your seed	• 89% • 166,666 / 0.89 = 187,265	• 89% • 125,000 / 0.89 = 140,449
Your seedling rate	• 187,265 seeds/ha • 18.7 seeds/m	• 140,449 seeds/ha • 14.0 seeds/m
Divide by seeds/kg for your variety	11,500 seeds/kg	11,500 seeds/kg
kg/ha required	187,265 / 11,500 = 16.3 kg/ha	140,449 / 11,500 = 12.2 kg/ha

Source: FastStart Establishment Guide, Page 40

Seed size and germination data for a variety will have a large impact on the final planting rate, so you need to know this. You can get it via the QR code on your bag of cotton seed.

Put your phone's camera over the QR code and it will take you directly to your Statement of Seed Analysis. Select your variety and seed treatment (circles in green), type in the AUSlot number (Circled in red) and the Statement of Seed analysis will appear

The information is the statement of seed analysis is specific quality data for an AUSlot and includes results for germination, seeds per kilogram, mechanical damage and physical purity. Figure 5 shows an example of the seed variety, technology and quality information that is printed on the bag sticker.

Figure 3: Statement of Seed Analysis for every bag of seed available via the QR code on the bag.

The germination results represent the physiological quality of the seedlot.

Warm germination test: measures the germination potential or seed viability and represents the maximum germination rate under ideal conditions. This is a seven-day test which is conducted under a cyclic 20/30°C temperature regime. To be considered germinated, a seedling must have a length from hypocotyl hook to radicle tip of no less than 40 mm and be free from abnormalities. **The minimum seven-day warm germination percentage for cotton planting seed is 80%.**

Cool germination test: measures seed vigour, which represents the seeds potential for rapid and uniform germination and development of normal seedlings under a range of conditions. This test follows the same protocol but is conducted at a constant 18°C for 7 days. **The minimum value for seven-day cool germination of cotton planting seed is 60%, but typically is above 70%.**

Data is also provided on physical purity, as well as mechanical damage, which is assessed as a percentage of seeds with physical defects such as cracked or holed seed coat, or broken seed.

All germination values reported are for the whole sample including mechanically damaged seed

For further information look in the Australia Cotton Production Manual on page 88.

Do you know what's required for to give your crops the best start? It's all in the FastStart Accreditation Course - iMOVIE QUIZ! A great resource put together by the CSD E&D Agronomists.

FastStart Awards Open for 2021/22 season

Irrigated and dryland cotton growers who are pleased with their cotton stand establishment this season could win themselves an expenses-paid trip (Australian destination TBC) courtesy of Cotton Seed Distributors (CSD) and Syngenta.

To enter the 2019 FastStart™ Cotton Establishment Awards growers are encouraged to submit planting details and establishment figures, along with a supporting photo, with awards on offer for the best irrigated and dryland crops.

Further information can be found at http://faststartcotton.com.au/ while the on-line entry form can be found here.

Pre-irrigate, or water-up?

CottonInfo has recently released a CottonInfo e-news comparing the advantages and disadvantages of pre-irrigating and watering up. It includes some on-ground observations from Mike Stone, ICMS, Moree and Jim Purcell, Aquatech Consulting, Narrabri.

Check for soil pests prior to planting

A recent CottonInfo e-newsletter focused on how to check for soil pests prior to planting. Soil pests such as wireworms and, occasionally, earwigs can decimate plant stands while post-planting control options are largely ineffective. It is better to get a handle on numbers prior to planting and implement control measures such as in-furrow insecticide sprays at planting, if required.

The true wireworm is a soft-bodied, cream-coloured larva with a flattened, dark brown head. 20mm (Photo: L. Wilson)

Several species of false wireworms may occur in any particular crop, depending on locality, soil type, organic matter and tillage practices. Larvae feed on germinating seed and chew on seedling roots and shoots, resulting in patchy stands. 35mm (Photo: L. Wilson)

The black field earwig can be a pest and a predator. They can be a seedling pest in a wide range of crops, and also a predator of larvae, pupae and wireworm. 14mm (Photo: K. Power)

Adult true wireworms are grey to brown elongated beetles that jump and click when disturbed. They are known as click beetles. 25mm (Photo: J. Wessels)

Adults of the large false wireworm (20mm - left) and the southern false wireworm (9mm - right). (Photo: D. Ironside)

The common brown earwig is a nocturnal predator of caterpillars. 24mm (Photo: K. Power)

How to check?

Digging randomly in the soil is generally ineffective and **bait sampling** 3-4 weeks prior to planting is regarded as the most effective technique.

Bait sampling involves the burial of soaked grain or cut potatoes at several (or more) sites in a field for 5-7 days then checking for the presence of the pests or damage to the bait (easier to see with the potato). The baits attract pests to the site so that they can be identified in the soil. Bait sampling guidelines are outlined in the Cotton Pest Management Guide 2020-21 (CPMG) and a video on how to conduct bait sampling is available on the CottonInfo Youtube channel.

How Many is Too Many?

While there are no specific thresholds developed for cotton, summer grain crop thresholds can be used as a guide. One or more wireworm larvae per bait is considered damaging and 2-3 earwigs per bait (50 across 20 baits) is likely to warrant control measures. See the CPMG for more detail and control options.

Spring – a critical time to monitor mice numbers before summer crop planting

Mice have survived the winter months and numbers have increased in the Gwydir district during recent warmer weather. While numbers are still patchy across the district, some fields have had low to moderate numbers and crop damage has been observed. Baiting has commenced across the district.

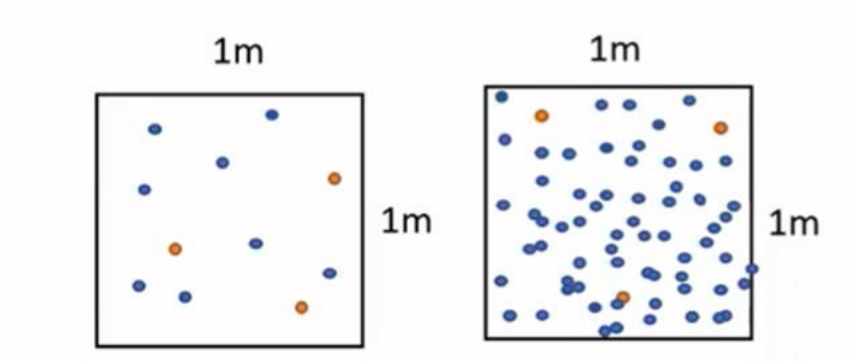
THERE IS NOTHING IN THE NEXT 6-8 WEEKS THAT IS GOING TO MAKE MOUSE NUMBERS GO DOWN

We need to be sure we make a dint in them this spring and continue to vigilant throughout summer and autumn.

Steve Henry, CSIRO resident Mice Expert says:

- In spring, you must determine the problem and take action
    - Numbers now establish the breeding potential
- We are at a very critical time as grain begins to fill. (Consultants say it's too late once you have reached milky dough stage to bait).
- Once there is an alternative food source, the mice won't bother chewing the chew cards, the crop is thick so it's difficult to see burrows, you can really only monitor obvious damage (dead heads, chewed nodes), so difficult to monitor numbers.
- Once there is an alternative food source, the bait will not be as effective.
- **You MUST bait before the crop ripens.**

Here is a good visual showing why you need to bait before there is an alternative food source – red dots are the bait, blue dots the cereal or pulse grains! The alternative food source is competing with the zinc phosphide for the attention of the mouse. So, you have to give mice the best chance of discovering the bait!



If you missed Steve Henry's latest GRDC webinar (Mouse update - spring management in winter crops and in the lead up to summer crop sowing), it's well worth a look (or just listen to it) as there is some really useful information and an interesting Q&A at for the last 30 minutes.
Further information is available on the GRDC website:
https://grdc.com.au/resources-and-publications/resources/mouse-management

Irrigation Pumps & Systems – September 27-28

This Irrigation Australia course is designed to provide participants the knowledge and skills to operate and maintain irrigation pumping systems and install, test and maintain pumping systems to a national standard.

Course learning outcomes:

- The ability to determine system types & requirements
- Knowledge of different types of irrigation systems
- An understanding of pump curves, selection, and installation
- Knowledge of how to maintain and test irrigation pumps
- Knowledge of how to install and commission irrigation pumps
- Hydraulics of irrigation systems including friction calculations

Entry-requirements: Participants of this course will need to have access to two (2) irrigation pump units to complete the post-course assessments.

Course program: This course is delivered over 3 x 4 hour Virtual Classroom session

For further information and to enrol: https://www.coie.com.au/course/irrigation-pumps-systems/

Latest CottonInfo Factsheets:

Here are two fact sheets that have just been updated and are topical at the moment.


fact sheet

September 2021

Managing for black root rot

The pathogen

Black root rot is caused by the pathogen *Berkeleyomyces rouxiae* (formerly *Thielaviopsis basicola*). *Berkeleyomyces rouxiae* is an early season pathogen that stalls crop growth and crop development and delays the onset of flowering. The fungus blackens the tap root and cortex (exterior) of the hypocotyl and reduces lateral root growth. As soil temperatures warm, normal root growth resumes and the fungus sloughs off the roots and adds to the spore load in the field for the next host crop. The pathogen can infect the centre of the tap root, causing a 'black heart'.

Black root rot (BRR) occurs in all cotton growing regions however the regions that experience cooler planting temperatures show higher incidence and severity of the disease. Cooler starting temperatures will slow cotton seedling development and it makes it difficult for seedlings to 'outrun' disease.

Black root rot and the interaction with the other seedling diseases can stall a crop's development. Black root rot steals crop development time in short-season environments. Black root rot pathogen spores will build up over time when a host is grown in the field. Cotton is the main host and we are now seeing patches of black root rot in new growing regions after five or six cotton crops – even with rotation with cereals. However, a sensible cotton–wheat–fallow rotation or other non-host crops will delay disease build-up and help reset any compaction in the field.

Growers and advisors in southern NSW have measured the impact of BRR and in worst-affected fields it is necessitating re-planting or abandoning the crop completely. Where the crop is grown through to picking, BRR frequently reduces yields by 2 to 4 bales/ha.

Typical black root rot symptoms.

Previous and ongoing research

Fungicides

Extensive trials over the last 20 years have looked at potential seed fungicide treatments and combinations to reduce the incidence and severity of BRR. Results have been variable with only a few candidates showing some degree of promise.

The search continues – ongoing field and laboratory trials of novel chemistries and biological products is being conducted each season by cotton pathologists. The current recommendation for fields with BRR incidence is to use the seed treatment fungicide Vibrance® Complete which contains Acibenzolar-S-methyl (Bion®).


fact sheet

August 2021

Decontaminating spray equipment

Successful decontamination of a spray boom is vital to ensure herbicide injury does not occur to your crop and to avoid inadvertantly reducing spray and equipment efficacy by mixing incompatable products. As well as decontaminating at the end of each day, this process should also be part of a general maintenance program for your boom to ensure that it is working efficiently.

The cleaning process takes time, as there are many steps involved, depending on the chemical application history of the boom. Spray tanks and booms generally need to sit overnight with the cleansing agent to be fully effective.

The following checklist can help you to minimise self-inflicted damage:

✓ Flush out and clean at the end of each day's work. This makes cleaning much easier when changing between crop types.

✓ Clean and rinse the tank, boom and nozzle bodies thoroughly based on past chemical history, with an appropriate cleaning agent.

✓ Is your boom plumbed at the centre or at the ends? For centre plumbed booms, these can be harder to clean deposited contaminants (such as triazines, SC's) as it can be difficult to attain an adequate turbulence and velocity to dislodge deposits. Centre-plumbed booms should be cracked at both ends and an external high pressure water source used.

✓ Not all tank cleaners are the same. Different classes of chemistry need different types of cleaners, so make sure the product you are using is right for the job. Most product labels provide information on cleaning product information to remove residues.

✓ Replace contaminated rubber fittings from the tank, pump, boom and nozzles with decontaminated spares - this will include 'O' rings, diaphragms, hoses and seals.

✓ It is critical to decontaminate every water carrying part of the boom. No short or blind plumbing can be ignored, including induction hopper, input hoses, recirculating plumbing, and sight tubes.

✓ When purchasing spray equipment, always keep the decontamination process in mind. Does the design lend itself to a simple effective decontamination process with less wastage? It's worth considering.

Regards

Janelle

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