



the **gwydir grower**

September 2022

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 2022-23 cotton season, two key positive factors are lining up - good water availability and strong cotton prices.

A close eye will have to 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 September to November is likely to be above medium for much of eastern Australia.
- The latest season model survey shows wetter rainfall conditions likely for Sep-Oct-Nov, while temperature predictions suggest a cooler period ahead for cotton growing areas.
- BOM Climate overview: <http://www.bom.gov.au/climate/outlooks/#/overview/summary>
- Also look at the latest [CottonInfo Moisture Manager](#) compiled by Jon Welsh.

Cotton Area

Current estimate for the Gwydir 2022/23 season is 75,000 ha irrigated with strong interest in dryland this season. Full on-farm water storages and [Copeton Dam is at 100%](#), and the [2022/23 General security allocation](#) is 161% which is fantastic.

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).



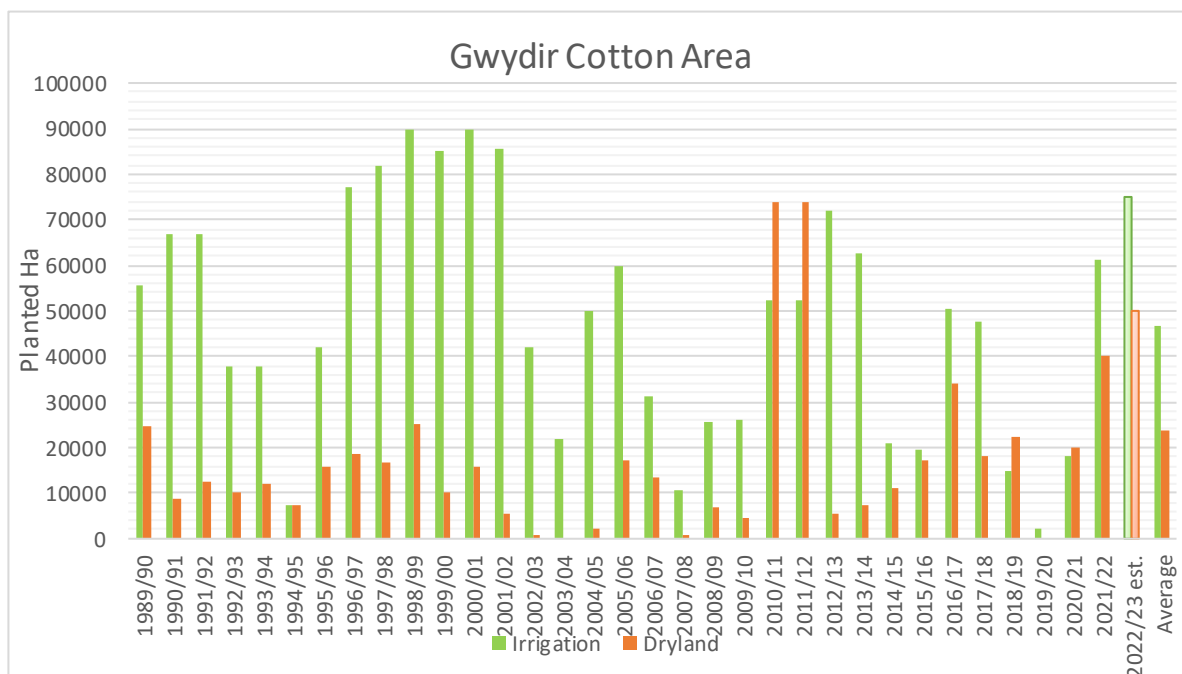


Figure 1: Gwydir irrigated and dryland cotton production since 1990. Source: Gwydir Valley Irrigators Association

Planting: Do it right, do it once

- 1) Use the [TRAFFIC LIGHT FOR PLANTING](#)
- 2) Soil temperature 14°C and rising for the week following planting
- 3) Plant into a firm, well structured, well prepared seed bed
- 4) Make sure your planter is ready, well maintained, calibrated, ensure planting speed, depth and pressure are correct for the situation. See [Planter Checklist](#)
- 5) Have accurate seed quality information

“IF YOU CAN’T MEET THESE REQUIREMENTS ADJUSTMENTS WILL NEED TO BE MADE”

The [Fast Start Initiative](#) is giving you the tools and information to ensure the best start to your crop.

Traffic Light for planting:

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.

	RED LIGHT	AMBER LIGHT	GREEN LIGHT
Soil temperature at 10 cm depth above 14°C at 8am (AEST)	✘	✔✘	✔
Forecast average temps for the week following planting on a rising plane	✘	✘✔	✔
	STOP!	STEADY	GO!

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 AEST). Refer

to the [CSD Soil Temperature Network](https://csd.net.au/membership) to see what soil temperatures are doing in the Gwydir district. You will need to be a CSD member to access the weather stations (remember the reason CSD had to go to membership is because their variety and trial data was going overseas via clicks on the website). It costs \$20/yr and you'll get it back just by using the weather network, let alone the other tools and resources on the website. You can join here: <https://csd.net.au/membership>

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.

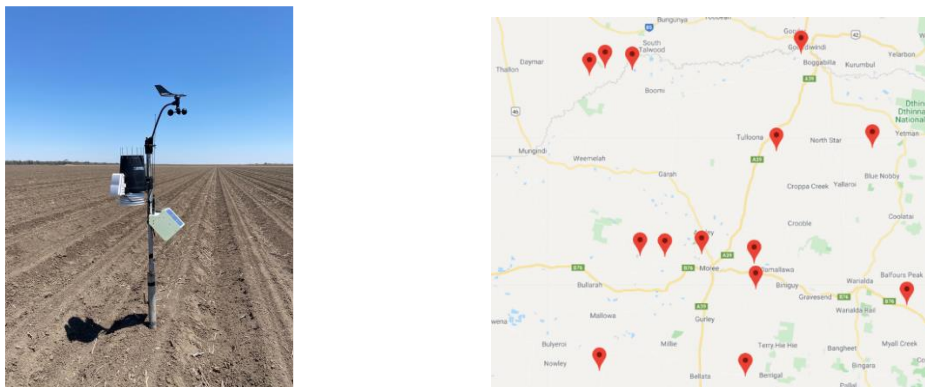
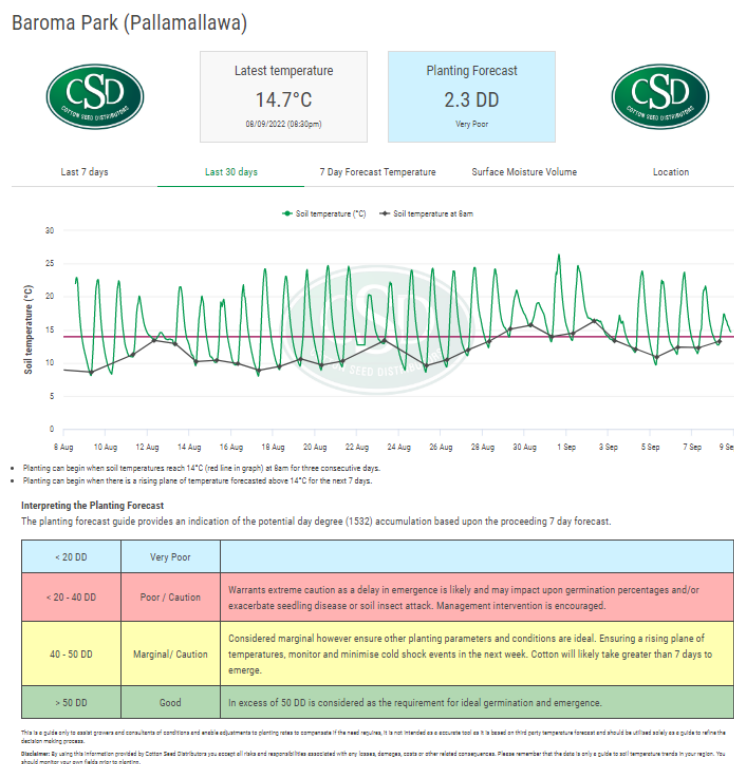


Figure 3: CSD Soil Temperature Network, <https://csd.net.au/soil-temperature>

This is an example of the CSD Soil temp network output. You can choose a station nearby and quickly see what the current soil temperature is and if you are on a raising plane. Even if soil temperatures are looking ok, don't forget you need to look at the forecast!



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).

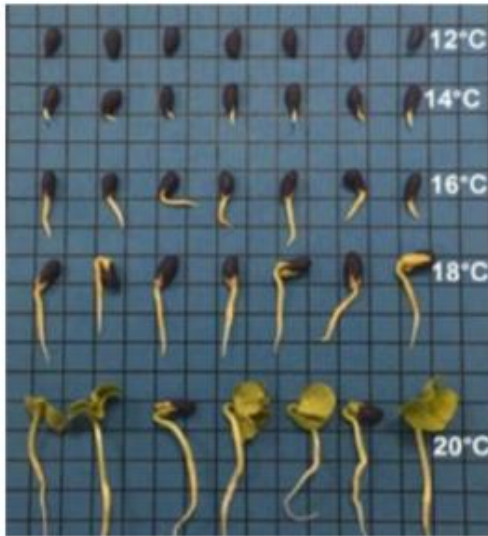


Figure 4: Difference in cotton seed germination and growth at 7-days at 12 °C, 14 °C, 16 °C, 18 °C and 20°C. Source: CSD Facts on Friday: [Factors that affect Cotton Establishment](#)

Seed Bed

With the wet weather we have been facing turning country around has and continues to be a challenge. Uneven or cloddy conditions can result in uneven seed placement, poor seed/soil and therefore seed/moisture contact, resulting in staggered germination and gappy stands. If your seedbed is less than ideal you may have to increase your planting rate and/or take extra care at planting by reducing speeds to ensure accurate seed depth and make sure the traffic light is giving you the Green for Go.

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	<ul style="list-style-type: none"> • 10 plants/m • 100,000 plants/ha 	<ul style="list-style-type: none"> • 10 plants/m • 100,000 plants/ha
Divide by estimate plant survival	<ul style="list-style-type: none"> • 60% (40% establishment mortality) • 100,000 / 0.60 = 166,666 	<ul style="list-style-type: none"> • 80% (20% establishment mortality) • 100,000 / 0.80 = 125,000
Divide by the germination percentage of your seed	<ul style="list-style-type: none"> • 89% • 166,666 / 0.89 = 187,265 	<ul style="list-style-type: none"> • 89% • 125,000 / 0.89 = 140,449
Your seedling rate	<ul style="list-style-type: none"> • 187,265 seeds/ha • 18.7 seeds/m 	<ul style="list-style-type: none"> • 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 quality information

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 in 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.

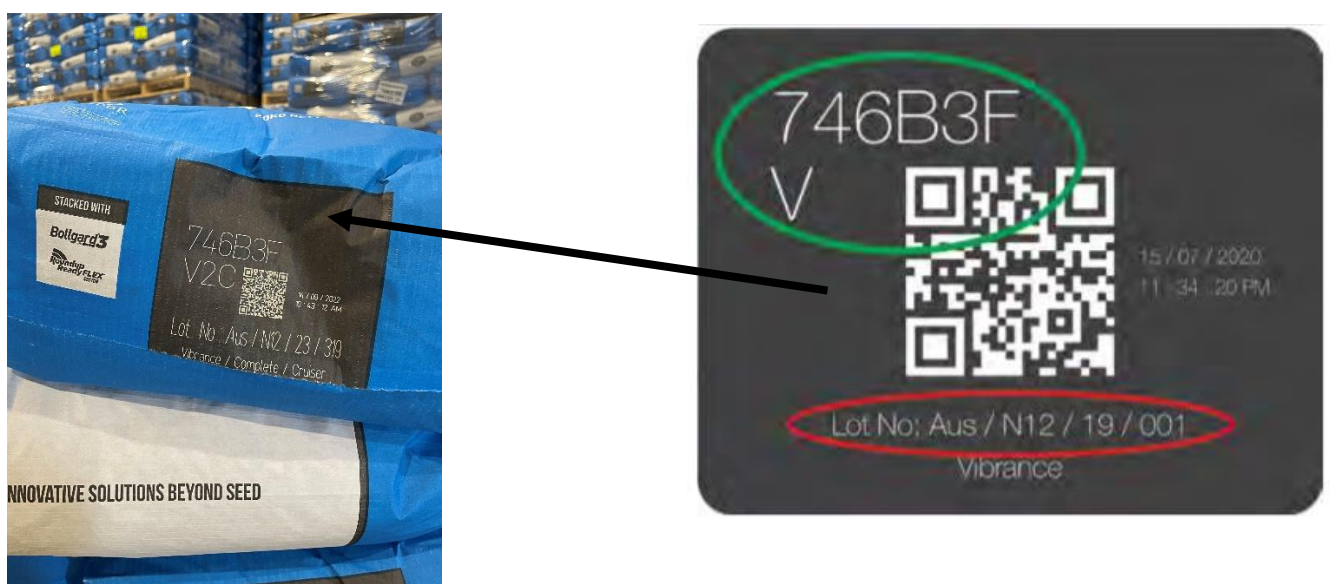


Figure 5: Statement of Seed Analysis for every bag of seed available via the QR code on the bag.

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 90.

Recommended reading/listening/watching for COTTON ESTABLISHMENT

Sam Lee, CSD E&D Agronomist gave a great talk summarising all the establishment trials at CSD at the 2022 Cotton Conference. See his presentation here: [Well sown is half grown](#)

CSD Facts on Friday: [Factors affecting cotton establishment](#)

[Australia Cotton Production Manual](#) chapter 15 Crop Establishment, page 89.

Cotton Podcasts

Some excellent cotton podcasts - very relevant for this season. Check them out:

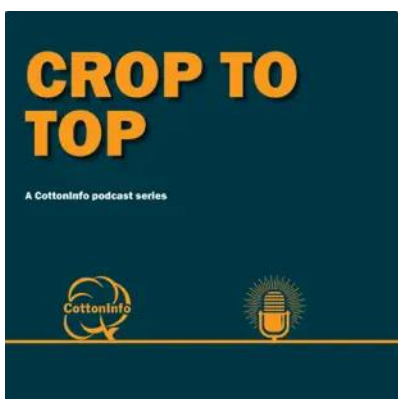


[Do's & Don'ts of Back to Back Cotton.](#)

[Planter Maintenance](#)

[Black Root Rot in Cotton](#)

[Nitrogen & Nitrogen use efficiency](#)



[Herbicide resistance: Lessons from the United States](#)

[Bats on cotton farms - how these tiny mammals can help you](#)

[Jumping in boots and all to a four metre wheel spacing](#)

SOIL PESTS MIGHT BE LURKING

With wetter conditions in most areas as we head towards planting for the 22/23 season, soil pests may be more abundant compared to recent years. The difficulty with soil pests is that little can be done to control them after sowing other than wait for the crop to outgrow the pests – hopefully, quick enough to prevent the loss of the plant stand. Post-sowing, insecticide application (to either the plant line or soil surface) or baiting with insecticide treated cracked grain will be ineffective.

Soil insect damage can be insidious, accruing over several weeks. It can be patchy, causing additional complications for re-planting decisions due to lost time and difficulty in targeting field areas for re-sowing.

How to check?

Digging randomly in the soil is generally ineffective and **bait sampling** 4-6 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). Older potatoes that have begun to sprout eyes work better than freshly dug crisp potatoes.

Earwigs and wireworms can decimate plant stands early in the life of the crop, during germination and following emergence until the crop surpasses 5-6 nodes. These pests affect establishment by feeding on the root tip during germination, or after emergence through chewing damage to the tap root or hypocotyl under the soil surface.

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.



If soil insects are abundant, reliance on proprietary seed dressings alone may not offer sufficient protection. Consider also implementing an in-furrow application of registered insecticide during the planting operation to provide an additional level of protection when faced with high soil pest numbers.



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)

[This CottonInfo video](#) shows how to use bait sampling to determine soil pest numbers in your field. This method is also described in the [Cotton Pest Management Guide](#).

Regards

Janelle

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