



# the cotton thread

Border Rivers, St George and Dirranbandi

**September 2023**

## Season Imminent

Warming weather and a forecast suggesting this will continue through the coming weeks, will see the “early-bird” growers keen to get wheels turning and seeds in the ground.

Given the circumstances, the focus for this issue will be on establishing the crop and considerations for managing this process. Apologies for the length of the newsletter however I have tried to cover a full range of considerations for planting.

Prices are currently strong, in the \$650-700 range for the 2024 crop, however water supplies (Beardmore 14%, Glenlyon 97%, Coolmunda 94% and Pindari 83%) are a mixed bag and will reduce the area, particularly in the Balonne, compared to last year’s bumper area. Recent estimates indicate around 27,000ha for the Balonne and 40,000ha for the MacIntyre. Field preparation has mainly been hampered by inability to obtain fertiliser which has a number of growers still doing ground passes to get this applied.

The 3 month weather outlook is for hotter and drier than normal conditions although the BOM is indicating the [minimum temperatures](#) over the coming weeks are likely to be in the “normal” range. This will need to be considered in planting decisions. Growers are encouraged to monitor conditions to ensure they are suitable for planting and establishing an adequate plant stand.

## Long range weather forecasts

- The BoM outlook for [rainfall September to November](#) is likely to be below medium for much of Australia and is supported by the CottonInfo Moisture Manager outlook.



- The maximum temperature outlook is for above normal while the minimum is likely to be normal until late September then likely to be above normal for the next couple of months.
- BOM Climate overview: <http://www.bom.gov.au/climate/outlooks/#/overview/summary>
- Also look at the latest [CottonInfo Moisture Manager](#) compiled by Jon Welsh.



Source	Temp Forecast	Precipitation outlook				
		Emerald	Sth Q'ld	N-NSW	C-NSW	S-NSW
ACCESS-S 	Hot	Drier	Drier	Neutral	Drier	Drier
UK Met 	Warmer	Drier	Drier	Drier	Drier	Drier
IRI NMME 	Warmer	Drier	Drier	Drier	Drier	Drier
ECMWF 	Warmer	Drier	Drier	Drier	Neutral	Neutral
CMCC 	Warmer	Drier	Drier	Drier	Drier	Drier
JMA 	Warmer	Drier	Drier	Drier	Drier	Drier

Figure 1: Seasonal Model Outlook for Sep - Nov, from August 2023 Issue CottonInfo Moisture Manager

### What's On:

- 18 Sept: Dirranbandi CGA AGM, Dirranbandi Pub, 12:30pm  
 18 Sept: St George CGA AGM, QC/AgNVet offices, 4pm

### Planting Tips:

- 1) Use the CSD [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](#) or listen to the [Cotton Yarns Podcast on planter maintenance](#).
- 5) Have accurate seed quality information

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

The [Fast Start Initiative](#) (from CSD and Syngenta) provides tools and information to ensure the best start to your crop. Growers can also participate in the [FastStart Cotton Establishment Awards](#) for a chance to win a Kinchrome Truck Toolbox with tools – see link for more information.

**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 unsuitable, while an amber light means planting could commence, but you need to be cautious and make adjustments, such as planting rate, for sub-optimal conditions.

	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 once soil temperature at 10 cm depth is above 14°C at 8am (AEST) and the forecast average temperatures for the following week are on a rising plane. Refer to the [CSD Soil Temperature Network](#) to see what soil temperatures are doing in your district.

*You will need to be a CSD member to access the weather stations (remember that CSD moved to membership because Australian cotton industry variety and trial data was going overseas). 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>*

Below is an example of the CSD Soil temp network output. In this case, the 8am soil temperatures are above the 14°C target however the forecast temperatures are low, generating a planting forecast rating of “Poor” for low seed density varieties. *Note these sites have been updated to reflect day degree data based on the 1532 day degree system.*

**AFF Koramba (Boomi)**



Latest temperature today at 8:00am (AEST)

16.5°C

Planting Forecast Evaluation

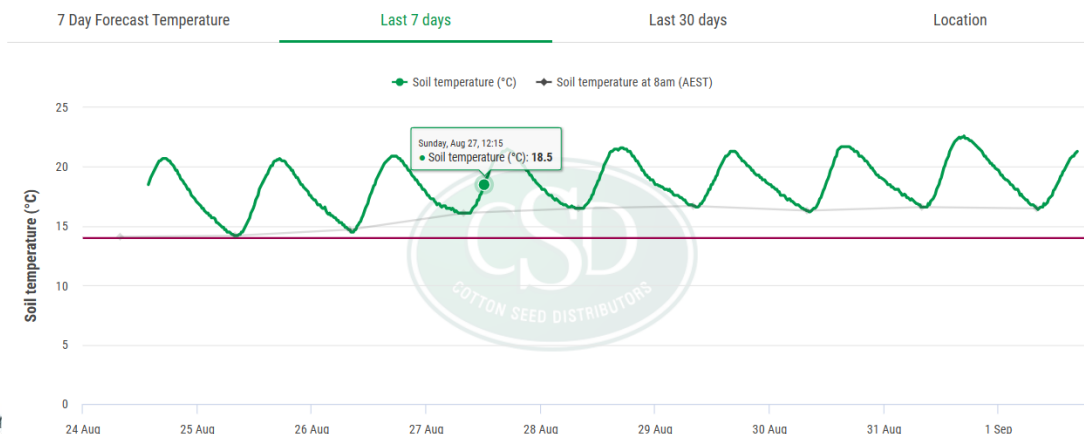
28.8 DD

Normal seed density evaluation

Caution

Low seed density evaluation

Poor



- Soil temperatures above 14 degrees at 10cm at 8.00am (AEST) are suitable for planting.
- Planting can begin when there is adequate day degrees for the next 7 days and it remains on a rising plane (see 7 day forecast Temperature Tab).

### Interpreting the Planting Forecast Day Degree Accumulation

The planting forecast guide provides an indication of the potential air temperature day degree (1532) accumulation forecast for the next 7 days. More day degrees mean there is the potential for more heat to enter the soil.

Normal seed density	Low seed density	Evaluation	
=< 20 DD	=< 29 DD	Poor	
20 - 40 DD	29 - 46 DD	Caution	Warrants extreme caution as a delay in emergence is likely and may impact upon germination percentages and/or exacerbate seedling disease or soil insect attack. Management intervention is encouraged.
40 - 50 DD	46 - 50 DD	Marginal	Considered marginal however ensure other planting parameters and conditions are ideal. Ensuring a rising plane of temperatures, monitor and minimise cold shock events in the next week. Cotton will likely take greater than 7 days to emerge.
> 50 DD	> 50 DD	Good	In excess of 50 DD is considered as the requirement for ideal germination and emergence.

Normal seed density varieties are Sicot 714B3F, Sicot 711RRF and Sicot 812RRF. The rest of CSD's varieties are considered low density seed varieties. This is a guide only to assist growers and consultants of conditions and enable adjustments to planting rates to compensate if the need requires, it is not intended as an accurate tool as it is based on third party temperature forecast and should be utilised solely as a guide to refine the decision making process.

Disclaimer: By using this information provided by Cotton Seed Distributors you accept all risks and responsibilities associated with any losses, damages, costs or other related consequences. Please remember that the data is only a guide to soil temperature trends in your region. You should monitor your own fields prior to planting.

## Why Is Forecast Temperature Important?

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 2).



Figure 2: 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

Uneven or cloddy conditions can result in uneven seed placement, poor seed/soil and therefore seed/moisture contact, leading to 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.

### 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.

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.

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 mortality) • $100,000 / 0.60 = 166,666$	• 80% (20% establishment mortality) • $100,000 / 0.80 = 125,000$
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

Table 1: Calculating Planting Rate. Source: [FastStart Establishment Guide](#), Pg 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. Below shows an example of the seed variety, technology and quality information that is printed on the bag sticker.

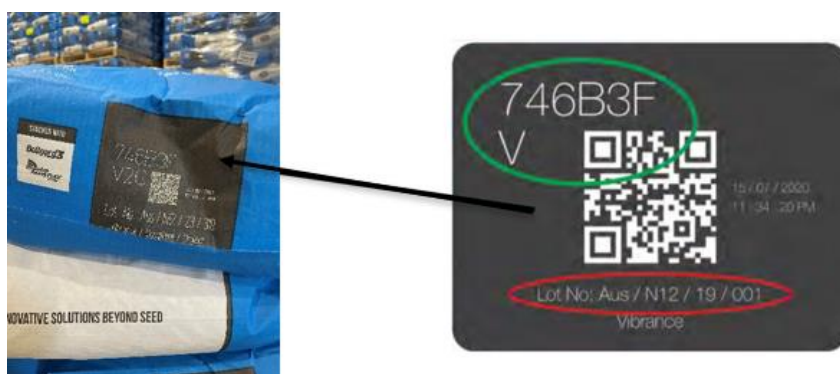


Figure 3: Statement of Seed Analysis for every bag of seed available via the QR code on the bag

**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 see the [Australia Cotton Production Manual](#) on pages 81-86.

## SOIL PESTS MIGHT BE LURKING



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)

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.

[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](#).

## Spray Inversion Network

Grains Research and Development Corporation (GRDC) and Cotton Research and Development Corporation (CRDC) are working in partnership with Goanna AG to develop a spray drift hazardous weather warning system that will provide real-time weather data and alerts to growers and spray operators about the presence of temperature inversions.

Goanna Ag will establish, operate and maintain a network of 100 Profiling Automatic Weather Stations (PAWS) across the grain and cotton regions of NSW, southern and central Queensland. The PAWS have remote sensing capability and new proprietary software providing both real-time data (updated every 10 minutes) plus a 24-hour predictive forecast for hazardous inversions. The network is expected to be operational for the 2022/23 season. For more information, and to register for network updates, [click here](#).

## CSD, CRDC and Cotton Australia news links

[CSD News](#)

[CRDC News](#)

[Cotton Australia News](#)

### Andrew McKay

Regional Extension Officer - Border Rivers, St George & Dirranbandi | CottonInfo

**M** 0407 992 495 | **E** [andrew.mckay@cottoninfo.net.au](mailto:andrew.mckay@cottoninfo.net.au) | **W** [www.cottoninfo.com.au](http://www.cottoninfo.com.au)

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