



the cotton thread

Border Rivers, St George and Dirranbandi

September 2022

2022/23 Season Kicks Off

Welcome to the first edition of the Cotton Thread for the 2022/23 season. This issue will focus on establishing the crop and considerations for managing this process.

Strong prices and full water supplies (Beardmore, Glenlyon, Coolmunda and Pindari dams are all +100%) are likely to ensure a big crop for the industry again. The main impediment at present is gaining access to wet fields to complete either bed preparations (fertiliser, herbicide, soil tilth) or sowing.

The weather outlook is for wetter and cooler than normal conditions and growers are encouraged to monitor conditions to ensure they are suitable for planting and establishing an adequate plant stand.

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.






Source	Temp Forecast	Precipitation outlook				
		Emerald	Sth Q'ld	N-NSW	C-NSW	S-NSW
ACCESS-S 	Colder days Warmer nights	Above normal OND	Above normal OND	Above normal OND	Above normal OND	Above normal OND
UK Met 	Cooler	Above normal OND	Above normal OND	Above normal OND	Above normal OND	Above normal OND
IRI NMME 	Cooler	Above normal OND	Above normal OND	Normal OND	Normal OND	Above normal OND
ECMWF 	Cooler	Above normal OND	Above normal OND	Above normal OND	Above normal OND	Above normal OND
CMCC 	Cooler	Above normal OND	Above normal OND	Above normal OND	Above normal OND	Above normal OND
JMA 	Cooler	Above normal OND	Above normal OND	Above normal OND	Above normal OND	Above normal OND

Figure 1: Seasonal Model Outlook for Oct-Dec, from September Issue CottonInfo Moisture Manager

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.

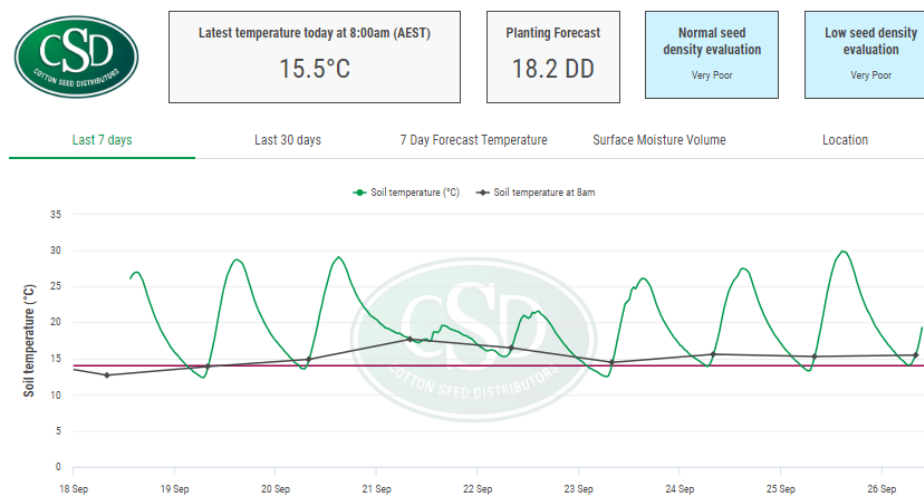
	RED LIGHT	AMBER LIGHT	GREEN LIGHT
Soil temperature at 10 cm depth above 14°C at 8am (AEST)	✘	✔✘	✔
Forecast average temps for the week following planting on a rising plane	✘	✘✔	✔
	STOP!	STEADY	GO!

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 "Very Poor". Note these sites have been updated to reflect day degree data based on the 1532 day degree system.

St George



- Planting can begin when soil temperatures reach 14°C (red line in graph) at 8am (AEST) for three consecutive days.
- Planting can begin when there is a rising plane of temperature forecasted above 14°C for the next 7 days.

Interpreting the Planting Forecast

The planting forecast guide provides an indication of the potential day degree (1532) accumulation based upon the proceeding 7 day forecast.

Normal seed density	Low seed density	Evaluation	
≤ 20 DD	≤ 29 DD	Very Poor	
20 - 40 DD	29 - 46 DD	Poor/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/Caution	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 Bloat 714835, Bloat 711899 and Bloat 812869. 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 a accurate tool as it is based on third party temperature forecast and should be obtained 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

With the wet weather, 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, 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	<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

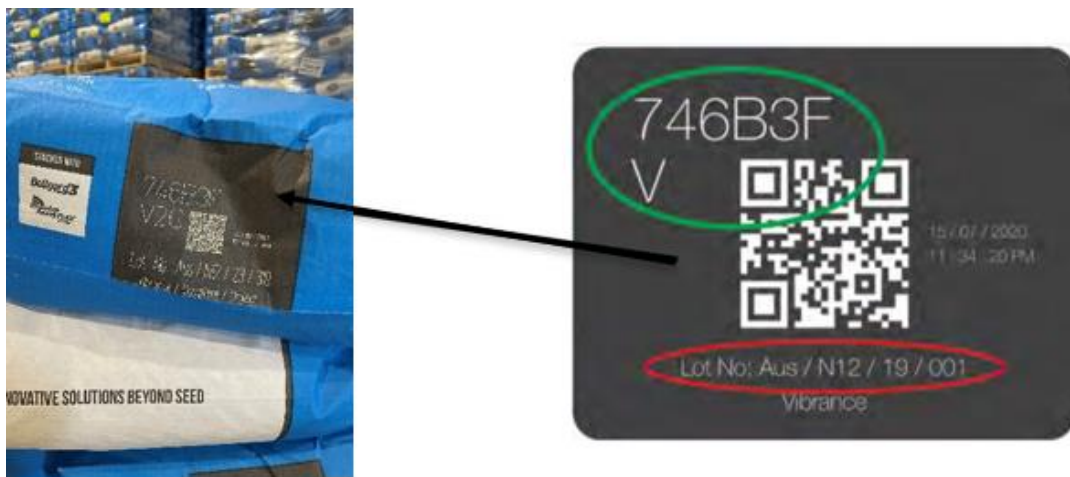
Table 1: Calculating Planting Rate. Source: [FastStart Establishment Guide](#), Pg 40

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.



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.

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](#).

Bug Checker Training Workshop

CottonInfo is organising a training course for bug checkers in early December at Goondiwindi. This will be presented by the CottonInfo Technical lead for IPM and QLD DAF entomologist, Paul Grundy.

Details for the event will be distributed shortly. Contact me (details at end of newsletter) for further information or to express interest in the workshop.



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](#).

CRDC news

News from CRDC includes:

- Final chance to apply for the Science and Innovation Awards
- CRDC in the news: Cotton fibre quality targeted in new research
- Applications for 2023-24 investment now open
- Cotton's 2023 Nuffield scholar to explore sustainable land development
- Cotton Conference returns! Read the highlights in the latest CRDC Spotlight magazine

For more details on these, click [here](#).

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