



the gwydir grower

September 2023

Cotton Area

The current cotton area estimate for the Gwydir 2023/24 season is 65,000 ha irrigated. [Copeton Dam](#) is 90.6% the [2023/24 General security allocation](#) is 143%.

The current estimate for the Mungindi 2023/24 season is 20,000 ha irrigated. [Glenlyon Dam](#) is 90.6% and [Pindari Dam](#) is 80.6%. The [2023/24 General security B allocation](#) is 19% and [General security A allocation](#) is 100%.

It's a really important season for us to get even more data on our XtendFlex varieties. Bayer has 23,000ha of XtendFlex allocated to growers in the Moree, Mungindi and Goondiwindi regions. The CSD extension team have 14 variety trials across this area (including St George) and 17 Ambassador sites planned for the 2023/24 season, so there will be plenty of opportunity to see these new XtendFlex varieties and talk to the growers growing them.

A few fields have begun to be pre-irrigated, generally back-to-back fields, but being so dry and relatively warm growers are definitely concerned about how much water these irrigations may take. Most growers indicated they will water up after planting.

In this newsletter I have provided information on planting dates for Gwydir crops, germination tests and the impact of cold irrigation water on soil temperature.

As your CottonInfo Regional Extension Officer, I'm here to help and if I don't know, after working in the cotton industry for almost 30 years, I know who to ask. So please don't hesitate to contact me.

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

The [FastStart Cotton Establishment awards](#) are now open, there’s 11 prizes for regional winners in the form of \$1000 gift cards to Total Tools. The two overall winners will also receive a Kincome tool kit for their ute or workshop valued at nearly \$5000 each. [Enter here.](#)

Planting Date

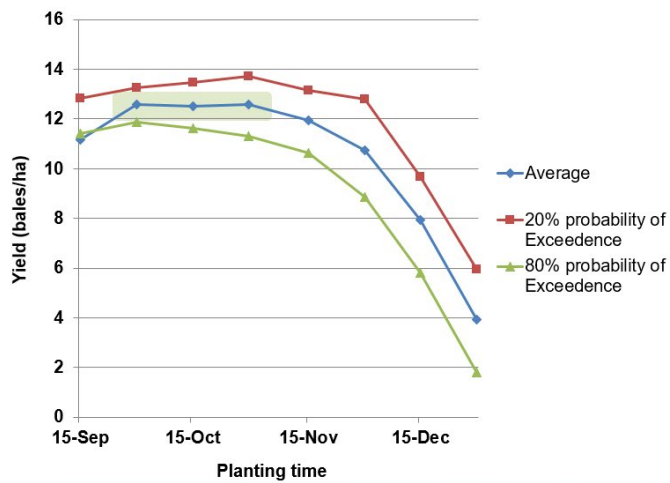
I published this article last year, but its handy information. With the warm start to spring some growers are keen to start planting, however the models tell us that if you plant between 1st Oct and 15th November variability is lower, and you are more likely to achieve average yields, which are also at their highest value (Figure 1). Read on.....

The following figures can be used as a guide in your planting date decisions. Produced by Mick Bange by using the OZCOT cotton crop simulation model initially developed by Dr Brian Hearn for CSIRO.

The model uses detailed knowledge of cotton crop physiology and growth and predicts impacts of management, soil conditions, variety and environment (e.g., rainfall, radiation levels and temperature) on lint yield. The model can predict yield for each cotton season where information on soil and weather data exists. **The simulation exercise here has OZCOT estimating yield for each cotton season from 1957 to present day (around 60+ years) for a range of planting times. The average of the 60+ years for each date is the point on the graph.** The crop is managed in a way that there is no water or nitrogen limitations and uses a variety with high fruit retention (like Bollgard[®]3 varieties).

Figures 1 & 2 show the average yield for each planting time as well as the 20% and 80% probability of exceedance. The 20% probability of exceedance means that over the range of yields estimated with OZCOT, yields at that point (planting date) were exceeded 20% percent of the time. I.e., 20% of the 60+ years we got values above the 20% line at that particular planting date.

Moree Planting Time

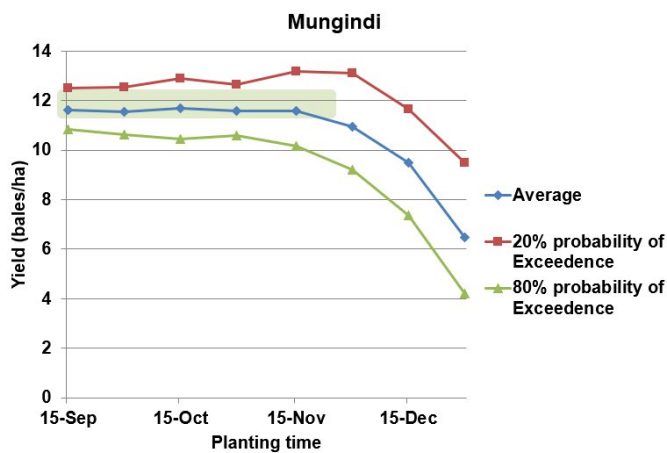


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Figure 1: Moree

Mungindi Planting Time



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Figure 2: Mungindi

Similarly, 80% probability of exceedance means that at that point 80% of yields were above this value (or conversely yield below this value 20% of the time).

The average yield over that 60+ years for those planting dates as modelled by OZCOT is the blue line in the middle.

The shaded area on the graph is an attempt to highlight the time when yields are optimal and there is lower variation in the predicted yields.

When looking at this graph it's important to look at the decline and the variability. As the distance between the 20% and 80% lines increase, the more variable the data.

So, this is a risk and probability decision – between 1st Oct and about the 15th of Nov variability is lower, so more likely to be achieve average yields, which are also at their highest value.

However, remember it does not take into account pests, diseases, poor nutrition so keep that in mind.

These models suggest that planting dates after mid-November for Moree and late November for Mungindi, will potentially have greater variability in yield outcomes with the average yield starting to decline. By December planting dates, the yield potential declines more rapidly and growers may need to consider:

- Dialling back their yield expectations
- Adjusting nutrition to these yield expectations
- Monitoring the seasonal potential via seasonal outlook models
- Determine appropriate cut out dates with your consultant and stick to them
- In some cases, factor in possible quality discounts

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 Extension.

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 ([FastStart Establishment Guide, Page 40](#))

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

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 (circled 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 3 shows an example of the seed variety, technology and quality information that is printed on the cotton bag sticker.

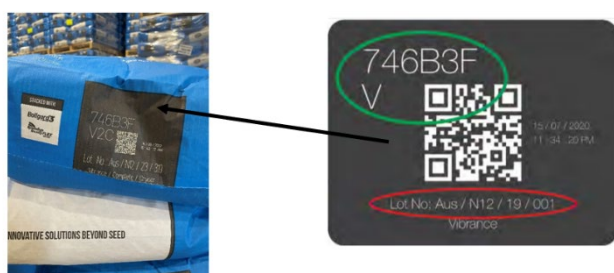


Figure 3: Statement of Seed Analysis for every bag of seed available via the QR code on the bag

Grower Question:

What is the temp impact on germination when your using cold river water into very dry soils? Do we need adjust planting rate?

Quick answer depends on the impact on soil temperature! If the water temperature reduces soil temperature below 14°C at 8am and forecast is not on a rising plane, then yes, you will need to adjust your planting rate.

What is my irrigation water temperature?

This link: [Real-time water data \(waternsw.com.au\)](http://waternsw.com.au) will take you to the water quality data collected by Water NSW, scroll down to find the water temperature data, see Table 1.

Table 1: Water Temperature at three Gwydir Stations for last 7 days at 6am.

Water quality (electrical conductivity and temperature)

These data values are taken from the recording nearest to 6am.

	Monday 25-Sep-2023	Sunday 24-Sep-2023	Saturday 23-Sep-2023	Friday 22-Sep-2023	Thursday 21-Sep-2023	Wednesday 20-Sep-2023	Tuesday 19-Sep-2023
MYALL @ MOLROY (418017)							
Flow (ML/day)	7	7	7	8	8	8	9
Water Temp (DegC)	14	14	15	15	15	14	15
EC 25DegC (uS/cm)	1,627	1,625	1,619	1,621	1,614	1,621	1,615
GWYDIR @ YARRAMAN BD (418004)							
Flow (ML/day)	228	215	152	162	174	136	139
Water Temp (DegC)	20	19	20	19	20	20	20
EC 25DegC (uS/cm)	461	549	646	797	970	1,025	1,026
MEHI RIVER @ BRONTE (418058)							
Flow (ML/day)	0	0	1	2	5	8	11
Water Temp (DegC)	18	18	18	18	19	19	19
EC 25DegC (uS/cm)	872	870	867	864	858	852	847

Water temp in the in the Gwydir at Yarraman and Mehi at Bronte was around 18-20°C on September 25, so pretty good. But no doubt in some seasons and some releases the water could be cooler.

Figures 4 and 5 show the temperature forecast for the rest of [September](#) and [October](#) temperature for Moree. We have a rising plane, a bit cooler forecast 6-8th Oct as shown in AccuWeather graphs below. This information can be used as a guide when planning to irrigate and if it coincides with a possibly cooler time.

TEMPERATURE GRAPH

°C

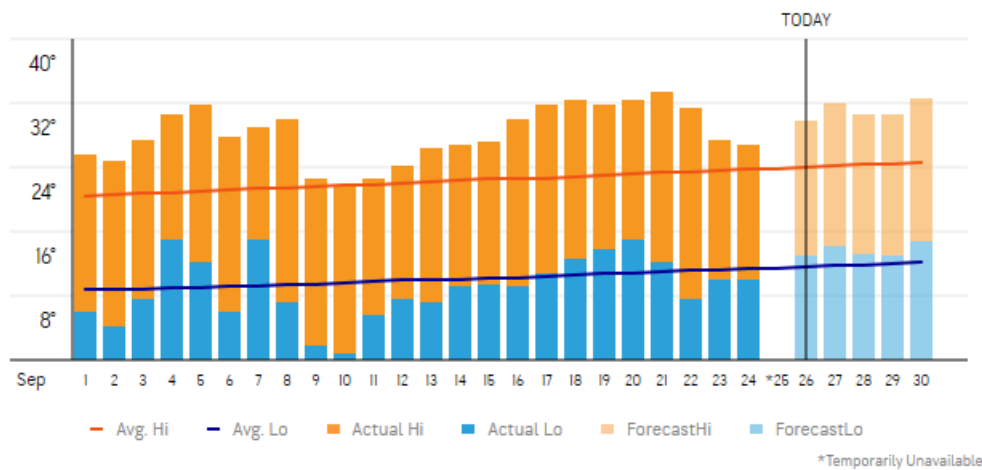


Figure 4: September actual and forecast minimum and maximum temps as of 26/9/23

TEMPERATURE GRAPH

°C

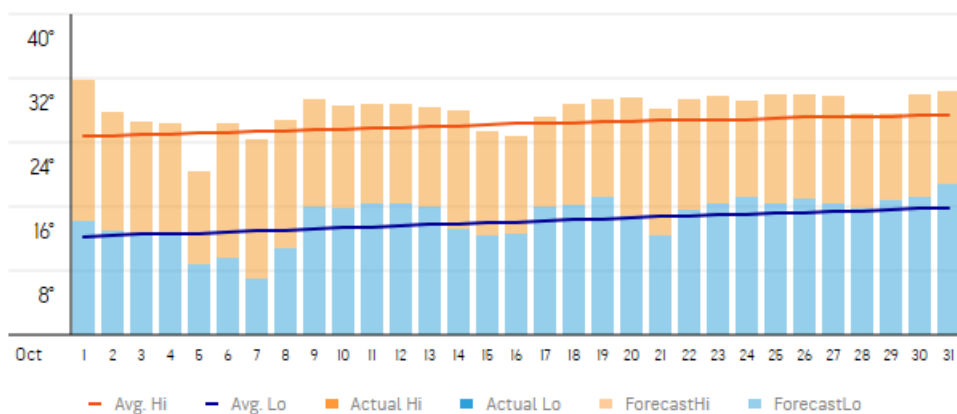


Figure 5: October forecast minimum and maximum temps as of 26/9/23

“CSD has measured a drop in soil temp of 2-5 degrees on the planting irrigation in the past. We need a soil temp of 14°C at 8am at 10cm depth for planting. Anything that drops that is going to slow germination and emergence. This will have other impacts in regards to seedling vigour, and the ability of the plant to withstand both disease and insect pests during the critical establishment phase.” James Quinn CSD

Temperature plays a vital role in the germination and development of a cotton seedling.

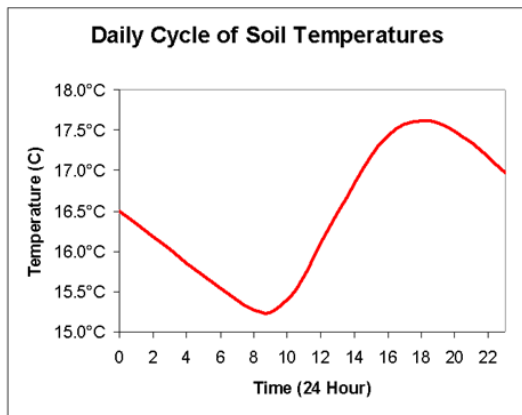


Figure 6 shows the daily cycle of soil temperature and what we are dealing within a 24-hour period. FASTSTART research shows we need a soil temp at 8am of 14°C and the following weeks forecast on a rising plane.

Below 14°C, the growth of a cotton plant is significantly impacted, and the cotton plant won't function properly until temperatures are above 15°C.

Figure 6: Daily cycle of soil temperature

Figure 7 shows the strong relationship between establishment and soil temperature. The higher the temp (up to 35°C), the faster the germination. We want our plant to get out of the ground as quickly as possible, as the slower germination and establishment is, the greater chance of seedling death through disease and insect damage. This is shown in Figure 8.



Figure 7: Effect of temperature on germination after 7 days.

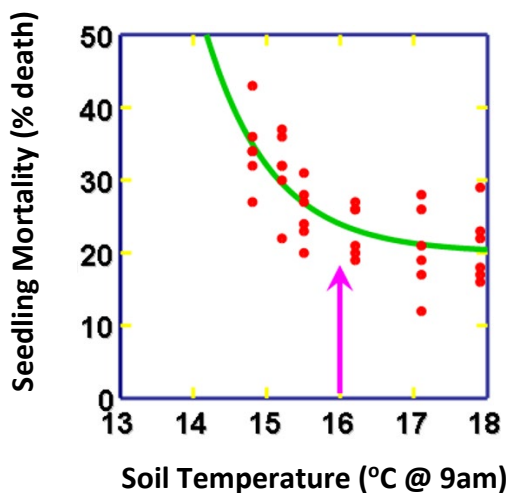


Figure 8: Seedling Mortality (% death) Nehl, NSW DPI

“Beyond germination and establishment. If the water drives soil temperatures below 15.6°C (note this is the average temperature during the day) roots would most like cease to function normally therefore impeding growth and development which affects yield. I would suspect that when you have soil temperatures anything less than 20°C, things would simply be slower”, Mick Bange CSD.

Gwydir Area Wide Management Meetings

Gwydir CGA invite you to our 1st Area Wide Management Meetings for the 2023/24 season. These meetings will concentrate on early season insect management. Hear from Paul Grundy, QDAF on the results of a 4-year crop compensation trial. Jamie Hopkinson, QDAF will discuss insecticide resistance and product choice this season.

Date: Thursday 23rd November 2023

Time: 7:15 for 7:30 am sharp start

Venue: Ashley TBC

RSVP to Janelle Montgomery M. 0428640990

All welcome. Look forward to seeing you. **A bug checker workshop will follow the AWM meeting for those that are interested.**

Date: Thursday 23rd November 2023

Time: 3:30pm

Venue: Mallowa Racecourse, Mallowa

RSVP to Janelle Montgomery M. 0428640990

All welcome.

Bug Checker Workshops

Date: 23rd November 2023

Time: 9am (after AWM meeting)

Venue: Ashley TBC

Date: Friday 24th November 2023

Time: 9am NSW TIME

Venue: Mungindi (TBC) Need a minimum of 6 to run the workshop.

RSVP

Stuart McFadyen M. 0428 950 005 E: stuartm@csd.net.au

Janelle Montgomery M. 0428 640 990 E. janelle.montgomery@cottoninfo.net.au

Join Paul Grundy, IPM Tech Lead CottonInfo and Jamie Hopkinson, Entomologist QDAF

Content:

- ID of pests and beneficials
- Insect sampling techniques & record keeping
- Basic crop physiology
- Integrated Pest Management

And one final thing ...

Are you handy behind the camera? Have a beautiful library of images of your farm? Then we'd like to know about it! **Submissions for the CottonInfo 2024 Calendar: Water in Focus are now being called for!** Maybe you've got a cracker photo of a beautifully irrigated crop in flower, or a pic of your bankless system, or a special one of Mum starting the siphons after Christmas dinner 😊 Whatever it is, if it features water in a cotton setting – then we'd love to see it.

Send your submission in to megan.woodward@crdc.com.au by October 15. The photo chosen for the front cover of the calendar will receive a prize!

Regards

Janelle Montgomery

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