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

24 January 2020

Crop Check – Moree (Jan 20)

CROP STAGE -

- 18 to 26 Nodes
- Good retention, some bottom fruit hit by hot weather.
- Up to 5th or 6th water for season, some concern about having enough water to finish season.
- 6 to 9 NAWF

INSECTS/BENEFICIALS -

- Insect pressure remains low
- Mirids low, no mirid sprays on some fields
- Thrips low
- SLW increasing, but still low levels, starting to find nymphs.
- 1 report of admiral applied to an isolated cotton crop due to increasing SLW (Jan 21)
- Gwydir Pyriproxyfen window 20th Jan – 20th Feb.

WEEDS -

- Nothing reported

DISEASE -

- Nothing reported

GENERAL COMMENTS -

- Crop very uneven in fruiting. 1st squaring node highly variable, anywhere between 5th and 11th node. Also seeing vege branches after first fruiting branches (see article regarding this below).

Day Degrees 1st Nov 2019 – 23rd Jan 2020

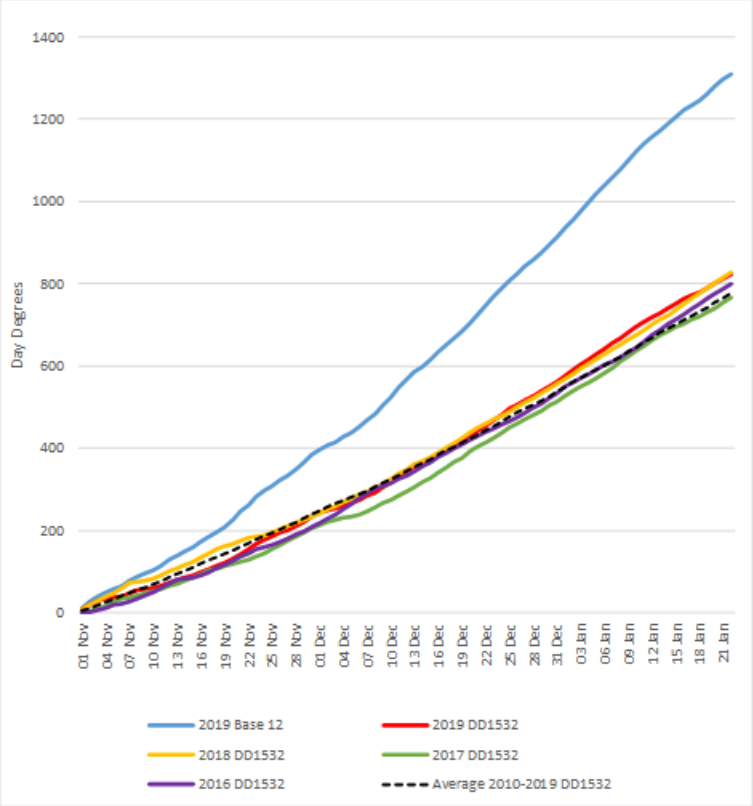


Figure 1: Accumulated Day Degrees 2019 DD 1532, 2018, 2016, 2010 & 10-year average (2010-2019) DD 1532 compared to 2019 Base12
Source: https://www.csd.net.au/ddc

Table 1: Day Degrees seasonal comparison 1/11/19 – 23/01/20

	2019	2018	2016	2010	10 year mean 2010-2019
Base 12	1310.4	1274.5	1192.5	1261.5	1194.9
DD1532	823.1	828.6	766.4	799	777.6
Cold shock days	5	2	3	8	2.9
Days above 36°C	47	35	31	34	26.5
Nights above 25°C	14	4	7	10	5.1
Days above 40°C	13	9	5	12	6
Average temperature (°C)	27.7	27.3	26.3	27.1	26.3

Source: https://www.csd.net.au/ddc

CSD Ambassador Update (January) – Gwydir

In the last Gwydir Grower we introduced you to the new CSD tool STEFF (Simulated Time to Establish First Flower). This tool enables us to predict when the crop would reach first flower (1/m) based on location and time of watering up. STEFF was very close to predicting the actual date of first flower in all but one CSD Ambassador sites in the Gwydir (see Table 1). The average First Flower snapshot for the 5 irrigated ambassador sites is presented in Table 2.

Table 1: STEFF prediction for first flow vs actual first flower date

Water Up date	Site	STEFF Predicted FF	Actual FF
22/10/19	1	28/12/19	31/12/19
24/10/19	2	30/12/19	30/12/19
28/10/19	3	2/1/2020	8/1/20
31/10/19	4	4/1/2020	5/1/20
11/11/19	5	11/1/2020	12/1/20

Table 2. Average of first flower data for CSD Ambassador sites in the Gwydir Valley*

First Flower Date	4/1/2020
Days After Sowing	67.4
Day Degrees at FF	1044
Squaring Nodes	9.8
Total Nodes	17.5
Nodes Above White Flower	9.2
1St Position Retention	85.1
Plant Height	48cm

*Alice Curkpatrick, CSD E&D Agronomist for the Gwydir Valley has 6 Ambassador sites in the Gwydir Valley this season, 5 of which are fully irrigated and one semi irrigated (December plant). Unfortunately, the prevailing drought means there are no dryland Ambassador sites this year. The data in Table 2 is the average of the 5 fully irrigated ambassador fields.

The CSD tool BARRY (Biometric Agronomy for Realising Representative Yield) can be used to assists growers and consultants to assess their yield potential at key growth stages and utilises the large dataset of the CSD Ambassador Network and Variety Trial programs. The input data required for BARRY is listed on the attached Cotton Tracka Template.

If growers would like to track their crop through BARRY and Cotton Tracka please make contact Alice Curkpatrick, CSD E&D Agronomist (Gwydir Valley) M. 0418 818 142 E. acurkpatrick@csd.net.au

Silverleaf Whitefly Management Update

Silverleaf Whitefly (SLW) are starting to occur in crops in the Gwydir. While numbers are still very low, now is a good time to think about your management options over the coming six weeks:

- The 30-day application window still applies for the use of Pyriproxyfen (eg. Admiral®).
- Pyriproxyfen windows for the Gwydir Valley is 20th Jan to 20th Feb.
- There is a new restriction of just 1 spray per season for spirotetramat (Movento®).
- Conserve natural enemies and the *Eretmocerus* SLW parasitoid with good Integrated Pest Management (IPM). This can be as simple as avoiding unnecessary sprays for mirids and if you do need to spray use the most selective option you can afford. Refer to Table 3 pages 10-11 in the CPMG for the impact of various insecticides on beneficial insects and bees Cotton Pest Management Guide.
- Keep an eye out for nymphs and adult SLW as the crop moves towards peak flower.
- The SLW decision matrix for control is undergoing review as it does not always accurately predict changes in population. Research will soon be complete that will underpin updated guidelines. In the interim, as crops approach cut-out pay particular attention to SLW numbers. Both nymphs and adults can be used to determine abundance. The key is to identify is populations are increasing from week to week. If they are increasing and the crop is approaching cutout, consider your control options.
- When deciding on control, keep in mind – The time until first open bolls, level of honey dew, nature of population (is it rapidly rising or increasing a little each week), insecticide mode of

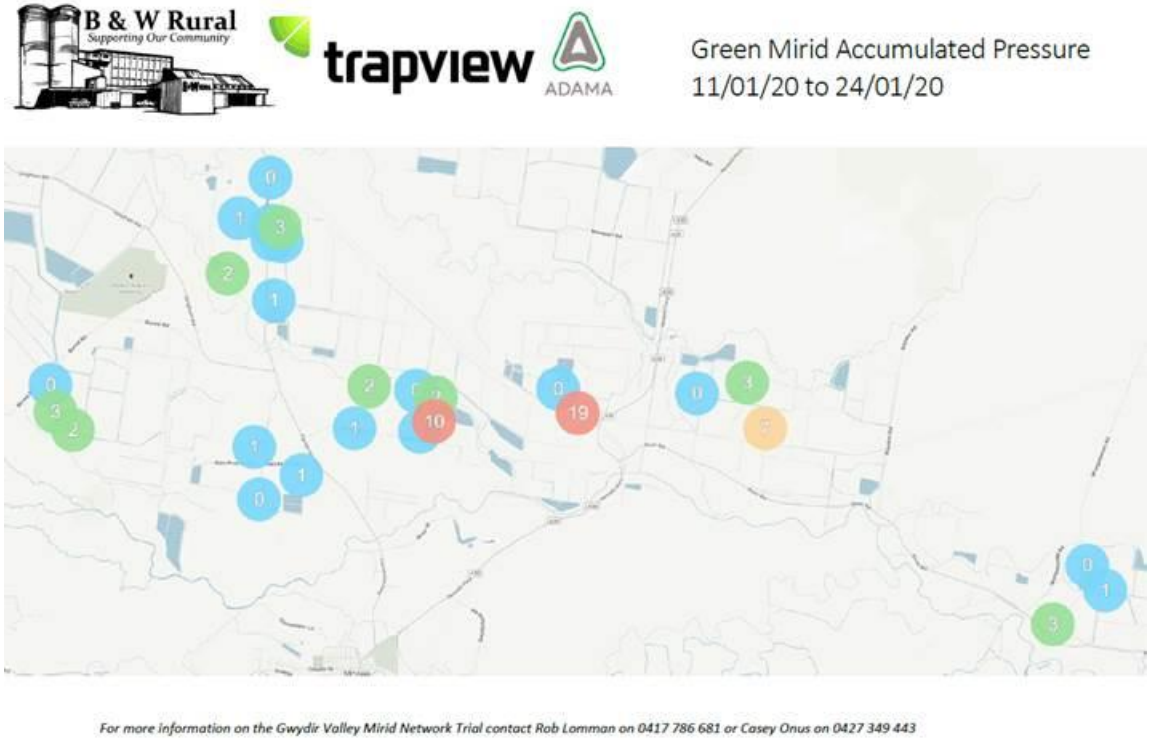
action and resistance considerations. Products such as Admiral require at least 2 weeks to work and will perform better on a more open canopy.

- Products such as Pyriproxyfen (eg. Admiral®) are best targeted with a rapidly rising population when your crop is 2-3 weeks away from first open boll.
- As the performance of Pyriproxyfen also depends on adequate spray coverage, targeting your application prior to canopy row closure may also be beneficial.
- Review the top tips for Pyriproxyfen use for mid-season management of SLW here.
- Spirotetramat (Movento®) is a good option if you have a large crop as its systemic action can help you target nymphs in the lower canopy (remember, that this product can only be used once per season as it is very prone to resistance if misused).
- Once bolls have begun to open shift your focus onto preventing honey dew contamination of the bolls. This may entail a follow up application for some crops following earlier intervention with an IGR. When selecting an option for cotton with open bolls, consider the canopy health and time to defoliation and leaf drop. A knockdown style product may be appropriate within 1-2 weeks of defoliation. On a crop with further to go with a healthy canopy, a product such as Movento with its systemic action may be more appropriate.
- A demonstration of sampling techniques and other SLW management related videos can be found on the CottonInfo YouTube channel, in the Insect management section:
    - SLW in cotton: sampling and the SLW threshold matrix
    - Identifying parasitism in SLW
    - SLW in Cotton: When population increases don't match the matrix

Gwydir Valley Mirid Network Trial

The Gwydir Valley Mirid Network Trial ultimately aims to better understand the ecology of green mirids across the Gwydir valley. Trapview units have been strategically placed in high densities across cotton fields within the Gwydir Valley to evaluate their effectiveness in providing relevant real time data in addition to current crop scouting practices. The trapview units utilise pest specific pheromone lures to attract pests which are then trapped inside the unit on a sticky roll. Images of the sticky roll are taken daily and automatically processed overnight to provide an overview of any activity across the network, with alerts set up to notify consultants of any new activity. Notifications can be customised to provide numerous alerts for varying levels of activity and spray applications can be logged to provide further insight when reviewing the data.

The figures below show the cumulative number of Mirids caught between 1st and 10th January and the 11th Jan and 24th January 2020 in each of traps.



More information on Adama's Trapview units can be found at https://www.adama.com/australia/en/innovation/adama-trapview.html
Thanks to Casey Onus, B&W Rural and Rob Lomman, ADAMA for sharing this information.

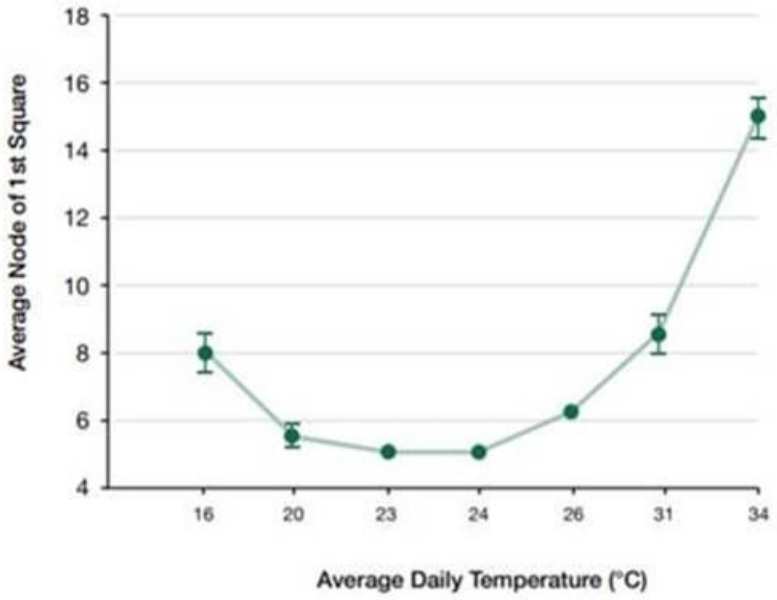
Why differences in nodes to First Fruiting Branch?

I asked Alice Curkpatrick, CSD E&D Agronomist for the Gwydir: "Its temperature driven, so planting date will have an effect. However, it's not a linear relationship, it's a j-curve (see Figure below), a non linear relationship, it can be too hot or too cold. Ambassador data supports the theory that

higher Nodes to first fruiting branch (NFFB) can adversely affect yield potential. I have also seen some plants put on a vege branch or two after a fruiting branch, again its temperature driven.

This image (source Chris Teague) is of 18-19 node cotton, FFB at 9th node (imbibed 27th Nov = high average temperatures leading up to first square) as you can see it started fruiting then switched to vegetative for 2 nodes and back again to fruiting. It's a consequence of seasonal conditions and how the plant has responded to a potential stress - working back down the plant at roughly 3 to 3.5 days per node will give a rough time scale. However, be mindful that the choice of vegetative or fruiting branch is determined at node initiation, consequently this may be an additional week prior, this timeframe may provide some insight to what was influencing the plant at the time when it changed from fruit to vege or vege to fruit.

The figure below shows the time to first square under differing average temperature regimes. The optimal average temperature is between 24 and 28°C. At cooler average temperatures the time required to reach squaring can double if the average temperature is below 20°C. Conversely, high average temperature regimes can also have detrimental effects on the rate of the cotton plant's development. (Bange CSIRO, 2014).



Source: FastStart Cotton Establishment Guide

Keep the Spray on the Weeds

Anyone lucky enough to get under these recent rain falls may have some spraying to do. Check out the "Keep the Spray on the Weeds" poster.

"Regardless of the active ingredient or what crop you grow or where you grow it, as a chemical user, it's your responsibility to keep product on your land. If you're not achieving this, then your equipment, practices & most likely your attitude need urgent review" **Mary O'Brien**

SOS (Stop Off-Target Spray) Gwydir Valley

An initial meeting with representatives from SOS Macquarie Valley was held in Moree during November 2019. This sparked an interest in setting up a similar group in the Gwydir Valley. SOS Gwydir Valley was formed in December 2019 in a bid to reduce the occurrence of off-target drift through promotion/education of better and safer spraying techniques.

The overarching goal of SOS Gwydir Valley is to ensure spraying takes place in the correct weather conditions and with compliant spray quality from any platform (hydraulic boom, PWM, optical etc) to get the best job possible in the field sprayed and stop off target spray drift.

To date SOS Gwydir Valley has 40 supporters including all Moree chemical resellers, along with a number of private consultants, two aerial operators, four spray contractors and most importantly 14 broadacre farmers. Anyone passionate about preventing drift and learning about the latest best spray practices should join up! If you would like to show your support and join other farmers in the district, please email SOS Gwydir Valley E.sosgwydirvalley@gmail.com with your contact details.

2020 CottonInfo Calendar

2020 is the UN's International Year of Plant Health, so each month this year, the CottonInfo Technical Lead for Biosecurity, Sharna Holman, will be bringing you her top tips for your plant health.

Biosecurity top tips – January. Monitor, manage, report

Exotic plant pests and diseases can reduce yields and profitability, affect our environment or change the way we manage our crops and farms. Being familiar with the pests that represent the greatest risk to the cotton industry is important so that you are able to respond quickly to a suspected exotic pest. Early reporting of a pest incursion provides the greatest chances for successful eradication.

The regular monitoring of crops allows crop managers to do two things:

1) Implement appropriate management strategies, taking in considerations of pest thresholds, plant physiology and desired yield outcomes
2) Keep an eye out for anything unusual. What's considered 'unusual'? Sightings of anything unusual can include unexpected crop failures, abnormally high mortality rates in plants or sudden and unexplained crop damage or yield loss.

Read the entire CottonInfo Blog here.

WHS & HR FUNDAMENTALS!

Do you want to improve WHS and staff management in your business?
Do you want to understand the bones of a great WHS management system?
Do you want to understand your legal obligations when it comes to staff?
Do you want some tips on attracting and retaining staff?
Do you want to effectively manage staff performance and get the best out of your team?
Do you want to ensure your paperwork and systems are practical but compliant?
IF YES, this course is for you!

In response to industry request, Tocal have developed a WHS & HR course for supervisors and managers (and those aspiring to those roles). It is tailored to meet the requirements of the cotton and grains industries and will be delivered regionally through face to face workshops and online.

It is a partnership with NSW Farmers, acknowledging the incredible talent they have in IR and the great support they provide to producers in NSW.

Moree Workshop
Date: 5th March, but must register by 10th February
See attached flyer for more details.

What are the researchers up to?

CSIRO SLW Monitoring

Tanya Smith and Shoobie Hamilton, Technical Officers with CSIRO, have been in the Gwydir Valley monitoring Silverleaf Whitefly (SLW). They collect 200 leaves (11th node) from a field and count adult SLW and nymphs. Not many SLW or nymph were found the day I caught up with them in the field (14th January). They will be making weekly trips back up to the Gwydir for collection over the rest of the season.
This work is part of a CRDC Project that is developing a SLW Decision Support Tool (DST), led by Richard Sequeira. If local consultants are interested in road testing the DRAFT SLW DST your feedback would be very valuable to the project. Please contact Richard.
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Shoobie Hamilton & Tanya Smith, CSIRO, Narrabri

Checking Soil Health

Thanks to Will Carrigan, John Mulligan and Ian Seery who have all buried some undies in the name of soil health! CottonInfo continue to run the "Soil your undies" campaign to examine soil microbial activity. We simply bury some cotton undies 5cm below the soil surface and dig them up 2 months later. We look forward to showing you the results. Did you know there can be over 50 Billion bacteria, kilometers of fungi and other numerous soil organisms in a teaspoon of soil. Attached is a how to guide on soiling your own undies!

Meet your cotton researcher – Dr Tim Weaver, Research Scientist, CSIRO, Narrabri

Your background: *I was born in Quirindi and grew up in Werris Creek completing senior years in school in Taree and then onto University in Sydney before moving to Barraba and then finally landing in Wee Waa.*

How did you end up in Cotton Research: *After completing my degree in agricultural science, I wanted to move back to the north west of NSW. I applied for a position in soil research with Dr Nilantha Hulugalle. I completed my PhD whilst working with Dr Hulugalle and continued to work in long term cotton rotation systems.*

What is something we don't know about you? *I play tenor saxophone in the local Wee Waa Community band. We play at local events and I really enjoy meeting others that are musically minded.*

What are your current research projects? *I lead and manage several projects: 1) Future Farm – Targeted N (CRDC – QUT lead), 2) University of Western Sydney – Biologicals*

Project (CRDC - Lead by UWS), 3) Improving the nitrogen use efficiency of cotton crops through better understanding the role of dissolved organic N – (CRDC – Lead by Dr Ben MacDonald) and 4) CSD Ltd – Matching management to variety for improved performance (CSD Ltd Funded).
What is the Nitrogen project about? *Targeting N use in cotton and species of N that is taken up by cotton varieties.*
How will it benefit the grower? *Understanding varietal response to N and how best to manage N uptake to improve its efficiency.*
How will it benefit the industry? *Understanding the interactions will help to identify better strategies to improve nitrogen use at key growth stages for differing varieties.*
What are your key findings to date? *N uptake dynamics differ within the same variety in different regions, yet they can achieve the same yield. The current varieties are resilient under differing environments and management. How can we exploit these interactions further to improve industry yield?*
Thanks Tim. For more information Tim Weaver E. Tim.Weaver@csiro.au P. 02 6799 1594

Dates for the diary

- **Friday 14th February - GVIA Field Day**
- **Thursday 5th March Workshop 1: WHS & HR FUNDAMENTALS. Flyer attached**

Janelle Montgomery

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