

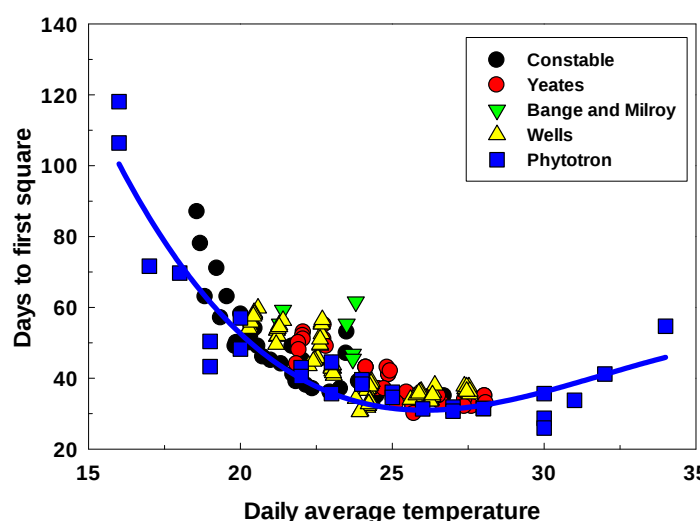
Feeling Hot, Hot, Hot

The question was put to me the other day, about whether the high amount of Day Degrees that we're up to will have an impact on the growth of the plant. In other words, in the same way a cold shock will limit plant growth, is there a max temperature at which the growth will be affected (regardless of water)? Is there a number to factor in to the Day Degrees calculation for high temperatures as there is for cold?

The short answer is no, as none of the day degrees targets are calibrated for high temperature thresholds. I spoke with Mike Bange (CSIRO) about this and he aims to look at this in his next project.

Mike provided the following graph that shows the slowing down of development with high temperatures. Note that the rate does not progress more quickly when **daily averages** go above 25 degrees Celsius.

A daily average of 25 equates to say a minimum of 16 and a maximum of 34.



Disease Research Update

Last month I went along to the annual Fuscom Forum in Toowoomba, which gathers together all the Australian cotton disease researchers, as well as this year four researchers from the United States. The information load was heavy, but really interesting, so I've picked out some key points from various speakers:

Fusarium is having a big impact in the US on Pima cotton and is causing many growers there to stop growing this variety. They are also having trouble with both Reniform and Root Knot nematodes and came here to share their experiences and knowledge.

Fusarium and Verticillium is increasing in its reach and has meant some growers have had to move out of cotton here as well and into other crops. These diseases have always been in the soil and only became pathogenic to cotton through continuous cropping. Over half the fields in the Gwydir (as an example) had Fusarium as found in the recent disease survey. Thankfully resistant varieties are helping to manage its effect so far. Verticillium is decreasing in all areas except for the Namoi thanks to more resistant varieties also but why it is increasing in the Namoi is still a mystery. Potassium deficiency will increase the effect of these pathogens.

Reniform Nematode in Theodore caused up to 2 bales per ha in yield loss. It is suspected they have always been there but increased after flooding, although their pattern of effect is not explained by the flood. Dr Linda Smith and her team did an amazing job sampling the whole Theodore region to establish thresholds. So far corn, sorghum, rice, peanuts and fallows are known to be good rotations. As yet they are not sure about mungbeans and chickpeas and soybeans do seem to be a host but not a good one.

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Paul Grundy spoke about soil borne pests like symphyla, earwigs and wireworms with the last 2 having quite severe impacts on cotton crop establishment. He mentioned that in one trial soil tests showed no or very little numbers of pests but when crops did not thrive, potato baits (as pictured above) showed the soil amass with earwigs and wireworms. More stubble in our system has increased numbers. As seed dressings are not very effective the plant really relies on a strong robust start. Part of Paul's project is to get more qualitative data on seed dressings and thresholds. He is seeing compaction play a negative role here also. The take home message was to sample your soil prior to sowing.

The good news is that Lily Pereg told us of the existence of super microbes which fix Nitrogen, produce plant hormones, enhance root systems and improve water uptake. She just needs to work out how to utilise them.

Finally, probably the most important message out of the forum was the importance of growers reporting suspect disease occurrences. Please let me know if you see anything suspect and we can go through the process to get it identified and take whatever action is necessary, from both a production and biosecurity perspective.



Pathologists getting into the spirit of Melbourne Cup

Weeds

Dr Sudheesh Manalil (NSW DPI, based at ACRI) is doing a weed survey throughout all cotton valleys this year looking at the amount of glyphosate resistance about and also some control experiments at ACRI. He will take samples back to ACRI and test for resistance so if you suspect some problem weeds let me know and we may be able to take some samples. Sudeesh has already met with a handful of growers and started doing some surveys, but if you're keen to be involved please give me call.

GVIA Research Project

Lou Gall has kindly provided the following update on this year's component of the GVIA Irrigation Project:

Part 2: of the Grower led irrigation research in the Gwydir Valley is underway at Auscott and at Keytah. This season we are focused on Optimised Furrow Irrigation.

The trial is looking at maximising the yield potential from a number of different row configurations. We will be measuring all the water on and off each of the four different spacings. The row spacings being investigated are 75cm (30 inch), 100cm (40 inch), 150cm (60 inch) and 200cm (80 inch). The data we

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collect will be useful to help growers make more informed decisions regarding row configurations when water is limiting.

To add to the value of the information being collected the GVIA will be installing a canopy temperature sensor in each of the row configurations at each of the sites. As such we will be working closely with Rose Brodrick and Oniroide Coast at CSIRO.

A huge thank you must go to the agronomy and irrigation teams at both Keytah and Auscott.



Irrigating the 30 inch at Keytah

Trial Update

The 'Filling the Research Gap' project which is looking at nitrous oxide emissions through irrigation water at Redmill is already showing some interesting results.

Samples are collected each irrigation across the 3 treatments (will be 250, 320, 370 units N by end of season, but are currently all 250) about 3m in from the tail drain, as well as 3 samples from the head ditch. Nitrate strip tests are used to get an immediate indication of nitrate levels in the water.

The pre-irrigation had no water run urea, and hence readings of 0 on the head ditch strip tests. Readings at the tail drain, however were in the vicinity of 100-250 mg nitrate / L water. This shows that the water had

picked up the NO₃ from the anhydrous ammonia that was applied back in July. These also all showed excess nitrite.

In the first in-crop irrigation, 100 units N was water run. This was picked up by the strip tests in the head ditch. But again, the readings at the tail drain were high - the strip test said over 500 mg NO₃/L for some, but further analysis in the lab has had these readings up around 740 mg NO₃/L. The rows that had been gassed were also clearly higher than the non-gassed, and therefore watered rows. It should also be mentioned that nitrate and other nitrogen compounds are not stable in the tail water and will be converted to nitrogen gases and lost to the atmosphere or consumed by microbial biomass in the water.

This project is shaping up to present some really interesting information about N loss pathways. The



nitrate strip test is also a cheap and easy way to look at your N losses, but further analysis is underway at CSIRO. Stay tuned!

Sampling the second irrigation at Redmill

Dates for the Diary

POSTPONED until the New Year - Soil Compaction Field Walk, 'Redmill'

Tues 16th Dec - CGA AGM & Research Forum, Royal Hotel Moree

Thurs 12th March 2015 - Grower of the Year Field Day, Hilston

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