



# Macquarie bale up

**JANUARY 2023**

## SEASON SUMMARY

I will start off by saying I could work at the local lolly shop for the amount of times I say “it’s a real mixed bag” but for about the 100<sup>th</sup> time over the last three seasons, so far it’s a “real mixed bag”. There is a large scatter on the planting dates and crop development. Early crops started fruiting at node 6-7 and are just at first flower now or next week and the later crops starting fruiting at node 7 and are possibly 2-3 weeks from first flower. Insect pressure has been low in general, with a few Mirids starting to turn up now mostly due to the later harvest and stubble getting ploughed in.

Unfortunately, there was another spray drift event across the valley prior to Christmas and it has affected fields in several locations. Please contact Cotton Australia and log the details if you have been affected. SOS are currently working on beefing up their strategies and getting some media out over the next few weeks.

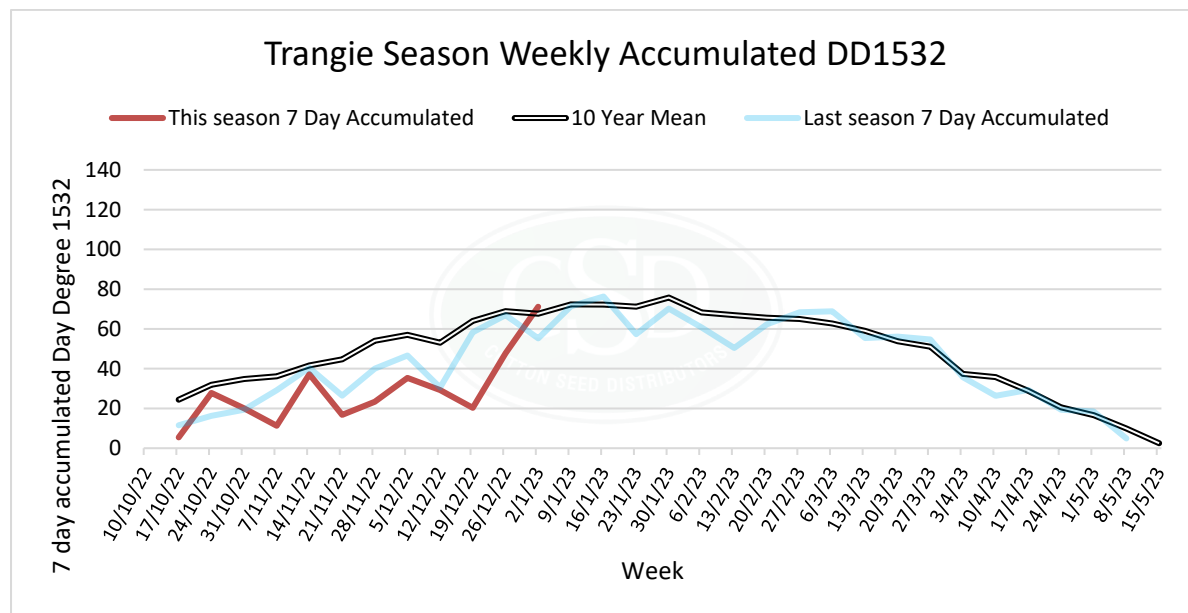


Fig 1: Source csd.net.au 7 Day Degree Accumulation early season.

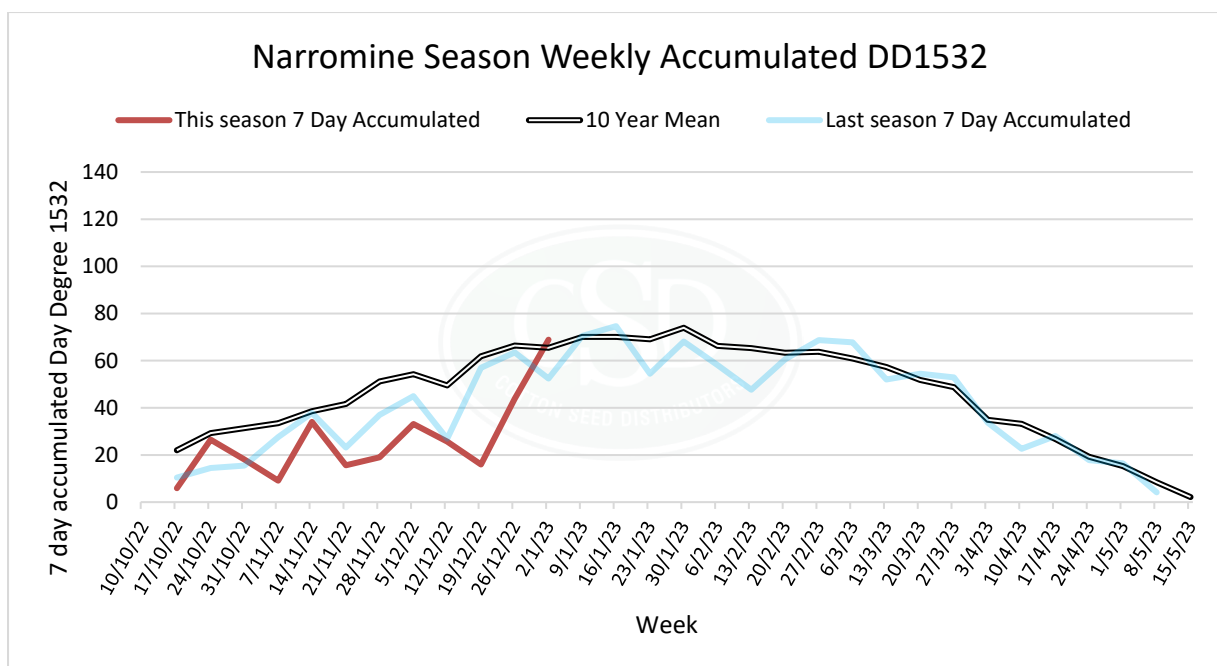


Fig 2: Source csd.net.au 7 Day Degree Accumulation early season.

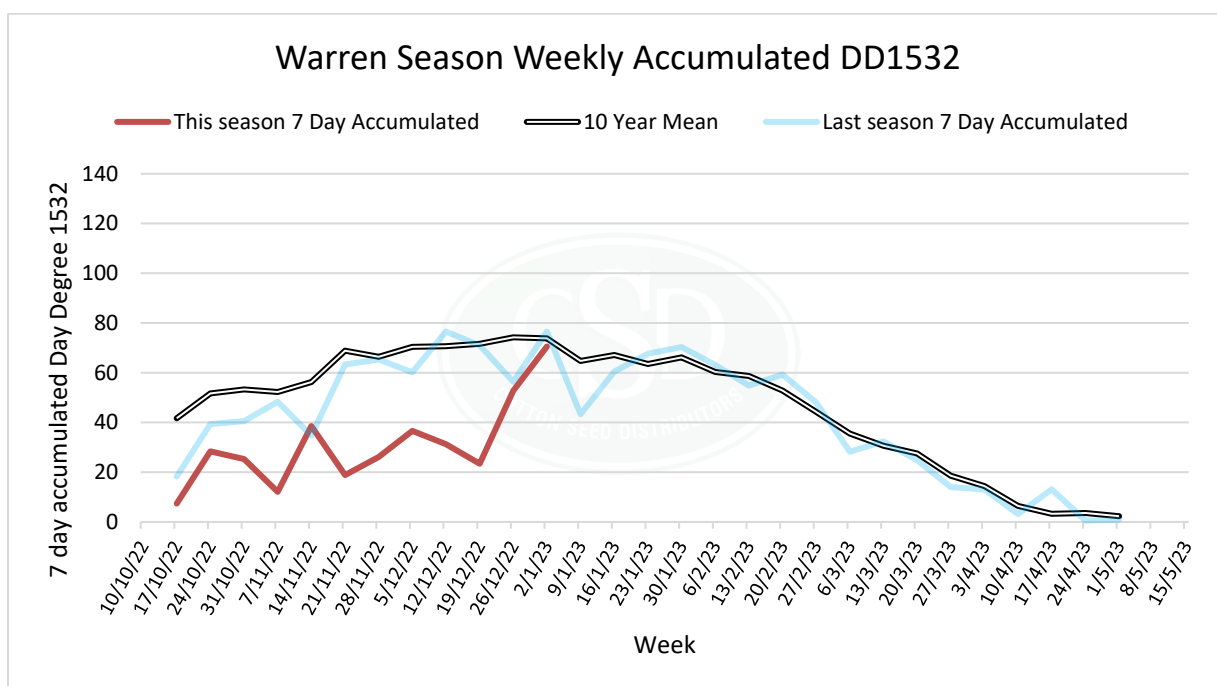


Fig 3: Source csd.net.au 7 Day Degree Accumulation early season.

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## Early season retention and compensation

When crops are behind due to late planting or slow day degree accumulation it is a different scenario. A plant having developed and lost retention, in the former scenario the plant doesn't yet have the "engine room" up and running, however the latter scenario it does. The documents below outline what can happen if a plant is growing well then suffers a setback in terms of fruiting sites at pre and post flower.

The initial aim of the work was to simulate insect damage and the impact it can have early season. However, it also has a fit when crops suffer hits from hail or hormone damage as it looks at the impact of squaring along four different scenarios across all the growing regions.

The CottonInfo team under the direction and tutelage of Paul Grundy (QDAF and CottonInfo IPM Technical Lead) we have been doing some simple (yet very labour intensive) trials that allow us to explore how and when our current varieties compensate for early season fruit loss.

An undamaged control and three primary damage treatments were replicated 4 times at all sites within a randomised complete block design. Plots were located within a uniform area of each field.

The three primary damage treatments entailed the **removal of all squares** (except very small pin squares) on all plants from:

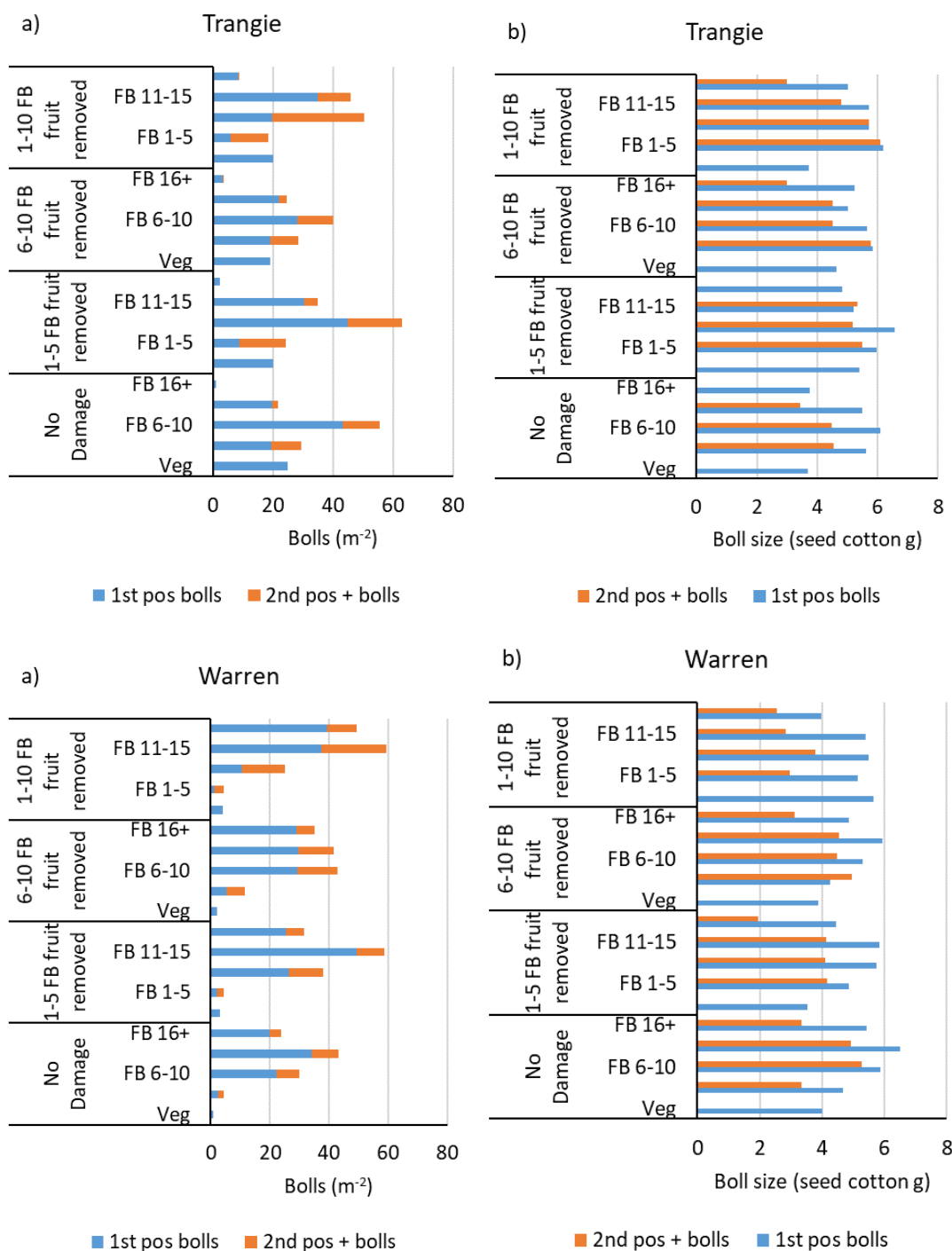
- a) the first five bottom fruiting branches (sympodia 1-5) one week prior to flowering
- b) fruiting branches 6-10 (leaving sympodia 1-5 intact) one week after first flower
- c) fruiting branches 1-10 (with damage implemented on the occasions above); compensatory squares initiated on the first five sympodia were left intact during the second damage event.

Damage was implemented manually with small spring-loaded bent nose pliers to 'pinch' the square bud (Fig 1), resulting in square abscission 2-3 days later. Using this method avoided damage to the underlying sympodia.

## 2020-21 Season

In the 2020-21 Season I did this work on two farms one northern end of the valley and one at central part of the valley. The results lined up with what we saw across other valleys, however in the cooler regions such as Leeton there was a yield penalty. In the excerpt of the paper from Paul Grundy below please note we are not included in the "Southern Sites".

- Final crop maturity was materially unaffected by square loss, although the pattern of boll opening was altered due to compensatory boll set which is a likely contributor to yield and lint quality factors at southern sites.
- Compensatory fruiting sites were primarily initiated on more distal FB positions (>P2) and vegetative branches immediately adjacent to lost positions. This explains the general lack of consistent treatment impact for yield and quality.
- Minimal compensation occurred via additional main stem fruiting branches, with only 1-3 additional bolls produced above the 15<sup>th</sup> FB for treatments FB 1-5 & FB 6-10 and 6 bolls for the extreme FB 1-10 square removal treatment.



Segmented picking data showing first position (P1) and outer fruiting branch position bolls (P2+) for the fruiting branches (FB) 1-5, 6-10, 10-15 and  $\geq 16$  and vegetative branches (Veg)(a) bolls number per meter (b), boll size across each treatment for P1, P2+ and vegetative branch bolls

(Source) Impact of early season retention on yield potential in high-yielding Bollgard® 3 cotton Paul Grundy et al. Department of Agriculture & Fisheries November 2021

## 2021-22 SEASON

### Results

For the Macquarie the trial was only conducted at the Trangie site and had very similar results to the previous season at the local level. When looking at the results from all sites square removal from FB1-5 caused no significant yield loss but increased ( $P<0.05$ ) yield at Wee Waa (14%), and Goondiwindi (11%) (Figure 2). Removal of squares just after first flower from FB 6-10 negatively impacted yield ( $P<0.05$ ) at Cecil Plains, Leeton & Wee Waa by 10, 6 & 12% respectively (Fig 2). Each of these sites were planted to Sicot 606B3F. The FB 1-10 treatment reduced yield significantly at 5 sites (Cecil Plains, Goondiwindi, Leeton, Moree and Wee Waa) by 11-23% (Fig 2). The increase in yield for FB1-5 and decrease for FB6-10 were largely due to weathering losses reducing the pickable boll counts on the first 5 fruiting branches. For the FB1-5 treatments, compensatory bolls above the lower canopy avoided these losses whilst underlying bolls lost from the FB6-10 damaged treatments compounded the loss.



**Figure 2.** Lint yield (bales/ha) picked from each of the experiment sites. Leeton and Goondiwindi were machined picked whilst the remaining sites were hand-picked. Bars denote standard error. Treatments are undamaged (Control), and squares removed from fruiting branches (FB) 1-5, 6-10 and 1-10.

Significant differences were detected for some lint quality parameters at some sites (Table 2 below). However, the magnitude of differences was very minor regardless of treatment or location, falling well within the Australian basis for micronaire, strength and length parameters.

Final boll number was largely unaffected by the damage treatments except for a significant reduction ( $P<0.05$ ) of final boll counts for the FB6-10 and FB1-10 treatments at Cecil Plains and Leeton where Sicot 606B3F was grown (Table 2). Final boll weight for the FB1-10 treatments was also significantly reduced compared to the other damage treatments and control at these two sites. No significant differences occurred at Leeton for boll number or size where Sicot 746 and 714B3F were sown. (Table 2).

**Table 2.** Final boll number and boll size (calculated from maturity picks) and fibre quality parameters for each trial site. Despite some minor significant differences for various lint quality parameters, all parameters remained well within the Australian basis for quality.

Location & Treatment	Final boll number	Mean boll size	Micronaire	Length	Strength
<b>Moree</b>					
Undamaged	135.1	5.9	4.9	1.26	32.4
FB 1-5	143.5	6.3	4.9	1.29	32.4
FB 6-10	135.3	6.0	4.9	1.26	31.8
FB 1-10	113.1	6.2	4.7	1.29	32.6
<b>Wee Waa</b>					
Undamaged	157.6	5.4	4.6	1.18a	29.0a
FB 1-5	149.6	5.5	4.3	1.25b	32.2ab
FB 6-10	150.0	5.7	4.3	1.26b	31.7b
FB 1-10	142.6	5.3	3.9	1.25b	34.0b
<b>Trangie</b>					
Undamaged	121.4	5.5	4.4	1.31	31.6
FB 1-5	121.6	5.4	4.1	1.29	32.2
FB 6-10	114.6	5.4	4.4	1.28	30.8
FB 1-10	110.8	5.4	4.0	1.28	31.6
<b>Leeton</b>					
<b>Sicot 714B3F</b>					
Undamaged	140.3	5.8	4.7	1.22	31.0
FB 1-5	146.6	5.5	4.7	1.23	30.4
FB 6-10	141.8	5.6	4.6	1.24	30.7
FB 1-10	134.2	5.6	4.4	1.24	29.3
<b>Sicot 606B3F</b>					
Undamaged	147.9a	5.4a	4.7a	1.27	32.1
FB 1-5	149.1a	5.2a	4.5b	1.26	32.8
FB 6-10	138.6ab	5.3a	4.4bc	1.26	32.3
FB 1-10	130.8b	5.0b	4.2c	1.26	31.7
<b>Sicot 746B3F</b>					
Undamaged	153.8	5.1	4.4	1.26	30.7
FB 1-5	146.0	5.2	4.5	1.23	30.2
FB 6-10	148.8	5.2	4.3	1.25	30.9
FB 1-10	158.4	5.1	4.2	1.24	30.7





## Conclusions

The 2021-22 season data continued to show that compensation is rapid, with compensatory fruiting sites (excess to requirements) produced prior to the undamaged controls attaining cut-out. This largely explains why yield, lint quality and final maturity were mostly unaffected, particularly for the FB 1-5 treatment, which is indicative of pre-flowering square loss. Importantly, across every trial conducted since 2019, yield compensation has been attained without any alteration to agronomic management (as each trial site was managed as per the whole field, which was effectively represented by the control). The damage implemented at many sites was in addition to any insect damage that may have occurred.

Overall, the research has demonstrated that Bollgard® 3 varieties are well placed to achieve timely and effective compensation particularly following the loss of squares from the early branches (FB1-5). The complete square removal from these branches was extreme compared to the typical management target of 60-70% retention for this crop stage. Insecticide intervention for managing retention would therefore be best targeted towards the late square stage onwards as opposed to the early squaring period.

*(Source) Impact of early season retention on yield potential in high-yielding Bollgard® 3 cotton Paul Grundy et al. Department of Agriculture & Fisheries November 2022 contact me to get the full reports for all these experiments.*

I have now completed a demonstration of this trial again this season I have done the first removal of squares at a handy crop at Warren and will look to have cotton catch up there to look at the results in February some time. Please keep in mind that walking into your crops is important this year, it not going to be a “go by the rule of thumb or calendar approach, getting back to the basics in terms agronomics will be essential. One hot button topic is the application of Mepiquat it will be very important to get this right in a season like this. You can see from the DD accumulation we are clawing our way back, one simple tool that anyone can do is [to monitor the VGR](#) one hack is the get some markers and identify some uniform plants once you do it once you can put peg or tag on the plant to be able to update the weeks growth in a quick and easy manner. Here are some links to other useful videos [How to measure top 5 retention](#).

**PHYSIOLOGIST IN THE HOUSE** - I know you have some burning questions around all of these topics plus much more and with that in mind we will have Dr Mick Bange and Peter White come to our neck of the woods on **Monday 16<sup>th</sup> of January 2023**. If you would like them to come and have a look at anything or would like to join them and Craig McDonald for dinner please get in touch and we can pencil this in.

## WAR ON WEEDS

**Windmill/Blow away grass:** It's been a hell of year for some of the most problematic weeds we have on our cotton farms, and we are seeing some weed numbers explode and they are not being controlled with herbicide options that have worked in the past. In this newsletter we are looking at Windmill grass (*Chloris Truncata*) as it was voted most popular to succeed (in resistance) by growers across the valley last season. It is a prolific seed producer and has been on the increase since zero till has increased. This plant can be perennial with large root systems making it very hard to control. Eric Koetz from CottonInfo has pulled together this fact sheet that will help growers to get on top of this ever growing problem. See link <https://bit.ly/2udfDxe>

## DATES FOR THE DIARY

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|-----------------|--|
| <b>16/01/22</b> | <b>Mick Bange and Peter White to do a farm visit (please get in touch for further details)</b> |
| 24/02/23        | <a href="#">GRDC Grains Research Update Dubbo</a>  |
| 1/03/23         | <a href="#">CSD Namoi Valley Research and Extension Field day</a>                              |
| 15/03/23        | Grower of the year (2021) field day at “Muntham” Trangie (more info out soon)                  |



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