



Irrigation Management after cutout

Crops within the Macquarie are either at or getting close to cutout. Cutout occurs when the plant has 4 -5 nodes above white flower (NAWF) and generally occurs late January to mid February (Refer Cotton Tales 11). This is the time of the last effective flower and can be used to plan irrigations after cutout.

Depending on sowing date and temperature, the last effective white flower will take 50 to 65 days to reach maturity. This means for early sown crops there are at least 50 days left in the growing season in which you need to manage your irrigations and preferably not stress the plant so as to enable this last flower to reach maturity.

At the time of first open boll, crop water use may be 5-7mm/day, but this can decline to only 3-4mm/day during the last 2 to 4 weeks prior to defoliation.

If roots are extracting to a good depth (at least 1m) at cutout, plants can easily extract 70 percent of the available water prior to last boll maturity. In cracking clay soils, plants can extract 125 to 150mm soil moisture, which is equivalent to 25 to 30 days water use (5mm/day) with little effect on yield or quality.

Therefore on most cotton soils unless water use is above 5mm/day there is no need to irrigate in the 20 to 25 days before defoliation. Any new flowers that develop in that last 25 days will not have time to mature with the last bolls making up a small contribution to yield. Hence, you only have only 25 to 30 days in which to schedule irrigations.

Assuming an irrigation is made at cutout and the final irrigation will occur 25 to 30 days later, you can plan to apply 1 irrigation or 2 irrigations between the cutout irrigation and the final irrigation depending on soil type, the deficit you prefer, rooting depth and plant water use.

If water is becoming limiting you can stretch irrigations **after** cutout because the water use drops off significantly

in the second half of February and early March. Stretching irrigations **prior to** cutout results in significant yield losses (Yeates et al 2008).

Steve Yeates (Research Agronomist, CSIRO) has been investigating the impacts of stretching irrigation interval **after cutout** on yield and fibre quality of Bollgard II®.

Trials at Narrabri showed that by having 1 rather than 2 irrigations after cut out and timing this irrigation to occur between the normal 2 irrigations reduced yield by 10 to 18 per cent if there was no rainfall and as little as 0 to 9 percent if good timely rain fell after this final irrigation (>40mm). In this trial the one irrigation applied after cutout was stretched to 21 days. Steve suggests that if the irrigation interval was only 14 days, then the yield reductions would have been even less.

In the same trial he also found little impact on fibre quality as a result of stretching irrigations after cutout (Table 1). Where there was no irrigation and no rainfall after cutout fibre length decreased 0.02", strength decreased 1.2 g/tex and micronaire increased 0.28. Table 1 shows the effect of no irrigation and only 1 irrigation after cutout on fibre quality, compared to a fully irrigated crop.

Table 1: Effect water stress after cut out on fibre quality. Comparison with fully irrigated*

	2006 (Sicot 71BR) No irrigation or rainfall after cut out	2007 (Sicot 71BR) 1 irrigation after cut out + no rainfall	2008 (Sicot 70BRF) 1 irrigation after cut out + no rainfall
Difference			
Length (inch)	-0.02	-0.03	+0.07
Strength (g/tex)	-1.3	-1.4	+0.06
Micronaire	+0.28	+0.17	+0.17

* Data for hand picked areas where plastic sheet prevented rainfall on dry treatments. These experiments were conducted at Narrabri.

Thanks to Steve Yeates (Research Agronomist, CSIRO, Narrabri) and Janelle Montgomery (NSW DPI) for providing the information for this article.

Yeates, S. et al (2008) Towards better water management of Bollgard II cotton. Paper presented at the 2008 Australian Cotton Conference.

Cotton Industry BIG DAY OUT Presented by: Cotton CRC and CRDC

Thursday 26th Feb 10:30am

Headlining 'Keytah' Moree – winner of 2008 Innovative Cotton Grower of the Year

Featuring farming practices that can make no-till cotton a reality!

Funding is available to help subsidise cost of travel to event – please contact Sal if interested. It would be great to get a group of growers from the Macquarie together to travel up to this event.

NSW Irrigators Council

Sharing the Knowledge

Irrigation Efficiency Techniques: for irrigators by irrigators
Narromine RSL 4th Feb 9am