Trial Update: Canopy management using mepiquat chloride across cotton growing regions

At this time of year, many would be considering managing vegetative growth of their cotton crop. Mepiquat chloride is a growth regulator used to manage excessive vegetative growth of cotton crops. However, there can be positive or negative effects associated with its use.

Last season, grower/consultant-led research trials overseen by Katie Broughton (CSIRO) and supported by CRDC and the CSD Richard Williams Initiative, aimed to develop a better understanding of crop growth and productivity responses to mepiquat strategies across several cotton regions. The trials were hosted on four farms to demonstrate the effects of various alternative early season mepiquat chloride application strategies on cotton growth and yield (see Table 1).

Key research questions raised by co-operating growers and consultants included:

- How early and "hard" should we apply mepiquat chloride?
- Is there a difference in varieties and how we should use mepiquat chloride?

Application timings varied from early squaring to mid flowering, depending on individual locations and treatments chosen by co-operating growers and consultants.

Table.7¿Experiment.details.for.grower-~~c~~onsultant.supported.investigations.of.early.use.of. mepiquat.chloride¡

Experiment Location	Treatments	Rate RX380™
Cecil Plains QLD	1. Control 2. High Rate Early 3. Grower Rate	None 60 ml/ha (at early flowering) 120 ml/ha (at cut-out)
Wee Waa NSW	1. Control 2. High Rate Split 3. Low Rate Split	None 60 ml/ha (x3)* 25 ml/ha (x3)*
Aberdeen NSW	1. Control 2. High Rate Split (Includes both Sicot 606B3F and Sicot 748B3F)	None 60 ml/ha (x2 at early flowering and mid flowering)
Griffith NSW	1. Control 2. High Rate Split 3. Low Rate Split	None 60 ml/ha (x2) then 100 ml/ha (x1)* 25 ml/ha (x1) 60 ml/ha (x1) then 100ml/ha (x1)*

*application times for these treatments were at first square, early flowering, and mid flowering

How early and hard should mepiquat be applied?

Although there were no statistically significant differences in yield between mepiquat chloride treatments across all sites there were tendencies for yield to be improved in the southern growing regions with mepiquat chloride applied early. The relative yield (the yield difference

between the control and the mepiquat treatment) was up to one bale/ha more with applied mepiquat chloride compared to the control (see Figure 1). Little differences were recorded in Wee Waa and Cecil Plains.

It was evident that a good understanding of the implications of applying mepiquat chloride is essential. At the Griffith site, there were more gains in relative yield with a low rate split compared with a high rate split of mepiquat chloride.

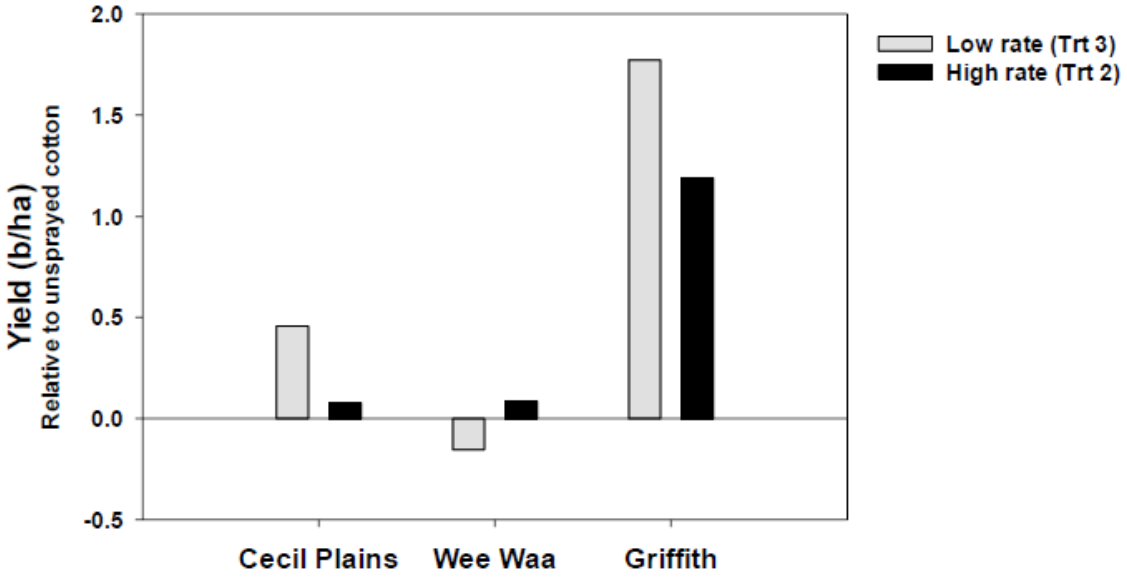

Figure.7¿Relative.yield.(bales~~-ha~~).of.cotton.applied.with.two.alternative.mepiquat.chloride. strategies.across.three.locations.spanning.the.Australian.cotton.industry¡.Note.that.differences. were.not.significant.(P~6¡6❶¡

Is there a difference in varieties and how we should use mepiquat chloride?

The trial site at Aberdeen compared early applications of high rates of mepiquat chloride on Sicot 748B3F and Sicot 606B3F. There was no significant difference determining a specific early season mepiquat chloride strategy for those two varieties (results not shown). The trial results emphasise that decisions for mepiquat application should be based on in-crop measurements, rather than variety alone.

This season, experiments are underway to explore the use of mepiquat chloride, particularly managing crop growth to enhance resource use efficiency in a farming systems context.

Further information

CSD's Mastering Cotton Forum, August 2024. https://csd.net.au/blogs/catch-up-on-the-2024-csd-mastering-cotton-forum/

Australian Cotton Production Manual, 2024 and read more in Chapter 15. Australian Cotton Production Manual 2024 | CRDC