



# NORTHERN NEWSLETTER

## FLOWERING TO CUT OUT

Welcome to the next edition of the Northern Newsletter, brought to you by Acres of Opportunity, a collaboration between Cotton Seed Distributors (CSD) and Bayer Crop Science, with contributions from other industry partners.

In this issue, we will be looking at how to capitalise on the peak flowering period, and how to manage the crop through cut out.

### DOZEN DEEDS FOR NORTHERN AUSTRALIA

#### Rule 10. Flowering to cut out is a critical time

Critically, the period from flowering to cut out is when up to 90% of the crop's yield potential is set. The period after cut out is when this potential is fully realised, with 60% of the remaining growth of bolls occurring. To increase your crop's yield potential, you should aim to prolong the flowering period for as long as seasonal constraints allow, to maximise the number of bolls that might be set.

The key is to keep the plant happy by minimising moisture and nutritional stress. If the crop has experienced fruit shedding during late squaring or early flowering, the extension of the flowering period through the production of additional nodes in the upper canopy is the primary mechanism for restoring lost yield potential - essentially you will need to set a top crop.

### Nodes Above White Flower and canopy management

A crop's Nodes Above White Flower (NAWF) will always decrease to a point where it 'cuts out' (four NAWF). This occurs when there are not enough resources to continue producing additional nodes because the 'boll load' in the underlying canopy is taking most of the plant's photosynthate. By extending the period until the crop reaches four NAWF, the crop will flower for longer and if conditions are right, potentially set more bolls, therefore increasing yield potential.

Crop monitoring through this period should include measuring the production of nodes and crop height, tracking NAWF weekly and ensuring that crop inputs such as water and nutrition are optimised. Ideally, flowering should last for at least four weeks after first flower (one open flower per metre row). If weather conditions are favourable for photosynthesis (sunny, temperatures not



exceeding 23°C overnight or 35°C during the day) and moisture and nutrition requirements are met, the plant is likely to rapidly retain a high number of fruiting sites.

If the crop has lost early fruit due to environmental stress, flowering will need to be prolonged to produce replacement fruiting sites higher up in the crop canopy. The production of new nodes will mean that the crop becomes taller, particularly compared to crops that were subject to better conditions during early flowering that were able to retain early bolls. Taller cotton is a by-product of the compensation process following fruit shedding. It is impossible to achieve compensation without new nodes. Keep in mind that nodes are produced both outwards (branch elongation) and upwards (new mainstem nodes). Branch elongation is critical for compensation and the excessive use of mepiquat chloride to reduce crop height can stymie branch elongation, rapidly reducing compensation through the loss of second and third position bolls borne on the upper branches.

The challenge is to balance canopy development to prevent the canopy from becoming unfavourably rank, where it excessively 'self-shades' the lower canopy. This will exacerbate lower canopy fruit loss with the need for ongoing canopy expansion to secure replacement sites. This is not always easy as soil moisture and weather conditions cannot necessarily be controlled and mepiquat chloride can at times be a blunt instrument in the face of variable weather conditions.



Refer to Norpak, pages 45-50 for detailed information on canopy management considerations and mepiquat chloride usage. This information may not be ideal for every scenario, but it provides a comprehensive overview of factors to consider and provides a growth management model that provides some guidance. This model has provided a reasonable basis for canopy management in the Ord during previous seasons although local refinement is the subject of current research.

Refer to NORpak for further information on plant growth regulation in Northern Australia:  
[www.cottoninfo.com.au/tropical-cotton-production](http://www.cottoninfo.com.au/tropical-cotton-production)

## Irrigate to minimise plant stress

### DOZEN DEEDS FOR NORTHERN AUSTRALIA

#### Rule 8. Minimise plant stress

There are a number of important considerations in regards to irrigation management in-crop:

**1. Determine how deep your root system is.** Following the wet season and depending on your soil type, your crop's roots may be a metre deep or confined to the top 20-30 cm of soil. As this will vary between seasons, you need to explore where your crops root system is at so that you can plan your approach post-wet season accordingly.

**2. Crop Stage.** If your crop is young (vegetative or very early squaring) and conditions have turned dry, use this

opportunity to encourage your crop to explore the profile. The crop is very resilient to water stress at this time and a break in the wet weather during this period can allow for better root exploration. Alternatively if your crop is about to commence flowering, or is flowering and it has been subjected to wet conditions and has a shallow root system, be prepared to irrigate early soon after rainfall. Crops with large canopies and small root systems are susceptible to premature cut-out if mismanaged during the transition from wetter to drier conditions. It may be necessary to irrigate these crops within a week of last rainfall.

**3. Be prepared to respond quickly when the weather changes** and take the time to consider where your plant is at and what is going on in your soil profile when making irrigation decisions. No two seasons are likely to be the same.

Last irrigation should be timed to ensure that the soil profile is dry at defoliation and boll maturity is complete. At this time of the season, it will take about 45-65 days from last effective flower (cut out) to crop maturity, depending on sowing date. Given that daily water use is reduced in the later stages of a crop's growth, and presuming there is a full profile, the crop should be able to rely on stored soil water for the last 25-30 days of growth (on most clay soils). Therefore, irrigation water should only be required for the first 20-25 days after last effective flower, although further irrigation may be required if the soil has limited water holding capacity or the crop root system is particularly shallow.





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## RESOURCES AND TOOLS

### Resources

- [NORpak: Cotton Production and Management Guidelines](#)
- [Tropical Cotton Production: Considerations for Northern Growers](#)
- [Growing Cotton in Northern Australia Guide](#)
- [Acres of Opportunity Irrigated Cotton Guide](#)
- [Acres of Opportunity Dryland Cotton Guide](#)
- [Australian Cotton Production Manual](#)
- [Bollgard 3 Northern Resistance Management Plan \(RMP\)](#)

### Tools

- [Cotton Field Weather Network](#)
- [Canopy Temperature Network](#)
- [CSD Day Degree Calculator](#)

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