



NORTHERN NEWSLETTER

CUTOUT TO PICKING

Welcome to the latest issue 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 Cotton Australia, CSIRO, the Cotton Research & Development Corporation (CRDC), the Department of Agriculture & Fisheries, Queensland (DAF) and AgEcon.

DOZEN DEEDS FOR NORTHERN AUSTRALIA

Rule 11. Harvest/picking

Do not defoliate too early - ensure the crop and fibre is mature.

Using long term temperature averages, calculate 800 Day Degree Sum (DDS) forward from last effective flower to give the predicted picking date. If a DDS cannot be calculated, estimate the days from last effective flower (e.g. if in April then assume 60-65 days to picking; if in May or June assume 70 days to picking).

Refer to **NORpak - Burdekin** or **NORpak - Ord River Irrigation Area** for more details.

Finishing the crop

Exceptional fibre quality has been seen from cotton produced in Northern Australia in recent times. The region has a natural advantage of sunny and rain free conditions for the later part of the boll filling and maturation period. It is important to not drop the ball on crop management in this late stage of the crop's development and spoil the hard work put into growing the crop.

Timing the final irrigation

Plan the last irrigation to allow the crop sufficient time to begin natural senescence and the soil to dry without affecting yield or quality. A cotton crop can extract 75% of plant available water prior to picking without affecting yield or quality. This takes about 20 days for a soil with 100 mm (sandy / loamy textured soils or shallow root system) of total plant available water and about 30 days for a soil with 150 to 180 mm of available water (clay or deep root system in sand / loam) during May to July. If the soil has not been adequately dried there is a risk the crop will re-shoot before picking and require an additional defoliation. Monitoring soil water availability using capacitance probes will greatly assist this process.

Last effective flower

When the count of Nodes Above White Flower (NAWF) falls below 4 and is still falling a week later, plan the date of the final irrigation by recording this as the date of last effective flower.

Timing defoliation

Defoliating too early can lead to immature cotton fibres, which has the potential to downgrade fibre quality during classing and may lead to discounts in bale prices. Your consultant can assist with the timing and rates of defoliation through varying methods. It is often better to use a combination of the methods below to determine maturity:

- **4 Nodes Above Cracked Boll (NACB).** Physiologically, the last harvestable boll is mature when the boll four nodes down has begun to open up (cracked).
- **When the crop reaches 60% open.** This is determined through simply counting the number of open bolls compared to the total number of bolls.
- **Cutting bolls and looking for mature seeds.** Bolls should be firm to cut even with a sharp knife; the contents of the seed should be fully formed, and the seed coat turned from translucent to tan or black.

In Northern Australia, it can be common for crops to be top heavy, with a greater proportion of the fruit being within the top half/third of the plant and much less on the earlier fruiting, lower nodes. Timing of defoliation for these crops can be somewhat tricky, in that crops can appear to be more mature than they actually are. These crops require careful assessment using the NACB technique and boll cutting to determine the ideal timing to commence defoliation. If the crop is variable across the field it may be necessary to wait a bit longer until the less mature field sections are ready. Leaf drop is readily straight forward for northern crops, but bolls can be difficult to open particularly if they are not quite ready.

Defoliant application

Speak to your consultant about the best rates and products to use when defoliating. Defoliation utilises products which cause the leaves to drop from the plant and products which encourage unopened bolls to open. It is normal for irrigated crops to have two, or sometimes even more defoliation applications, depending on the season. Depending on the plant's growth, different rates and products may be required for each application. Be cautious about rates and products that are used, in order to ensure that leaves do not 'freeze' onto the plants. Applications should not be off label or include products not registered for use at defoliation. The use of Dropp® UltraMAX has not been necessary for many research crops over the last decade in northern Australia. Do not add diuron to defoliation mixes, not only is this practice off label, but under northern conditions it has been observed to cause serious leaf freezing, resulting in greater trash contamination of picked lint.

Refer to the CSD fact sheet on defoliation preparation for further details: www.csd.net.au/documents/fact-sheets

DOZEN DEEDS FOR NORTHERN AUSTRALIA

Rule 11. Harvest/picking

Do not pick if seed cotton moisture is greater than 12%. This can cause ginning fibre quality issues which could lead to discount penalties.

Pickers vs strippers

It may be necessary to consider using a cotton stripper, rather than a picker when yields are low and bolls are tight. A stripper will take almost everything off the plant, even bolls which are tight and likely to be missed by a picker, however this may also be detrimental in some situations, where those remaining bolls are poor in fibre quality. Stripped cotton is also often quite trashy and harder to gin and you will also be transporting much more crop matter to the gin (e.g. stems). Strippers are not recommended to be used in the Ord Irrigation Area or the Northern Territory, due to the risk of transporting pink bollworm.

Timing picking

Pay attention to the upper fruiting branches and the rate of boll opening. Once ready, pick the crop on time and without delay. Cotton has the ability to weather some adverse climatic conditions but can be prone to downgrades in fibre quality. In recent seasons, some Northern Australia cotton crops - particularly dryland crops, have also been prone to cotton locks falling out of bolls once they are open. This is another reason why timeliness of picking is important.

Cotton should not be picked if there is a heavy dew or moisture from recent rainfall, or at any time when moisture levels are above 12%. Picking wet cotton and baling or building modules under wet conditions can lead to fibre quality issues, especially if there is any length of time before the cotton is processed at the gin. Cotton, if picked too wet, can result in spontaneous combustion while in storage, and fires in machinery. Pay attention to conditions. In some locations it may not be appropriate to commence picking until late morning if there has been heavy overnight dew. Some signs that cotton is too wet to pick are:

- If moisture is evident on your vehicle/machinery
- If you can see or feel moisture at all on the bolls
- Seeds inside the lint do not crack if bitten
- You are experiencing picker head door blockages, or the picker is throwing cotton out the front
- Depending on your location and the time of year at picking, moist air and heavy dews can occur anytime between sundown and sunrise and may take some time to dry out after sunrise

The best outcome for the crop is to have good quality cotton post ginning, which has minimal downgrades and a good turnout (the percentage of lint to seed from the raw product). Well timed and effective defoliation, as well as picking under the right conditions will contribute to this.

Predicting the onset of Northern rainfall

A resource that may be useful in determining risk of picking moisture or interruption of in-field operations in regards to rainfall, is the [BOM tool for predicting the onset of northern rainfall](#). This tool may help in planning, determining sowing dates and assessing risk for the current season. With a La Nina condition becoming more likely by years-end and warm waters around Australia's perimeter, we may see an active monsoon in 2020-21 season not seen since 2011. This tool has been in experimental phase for a number of years and can aid in decision making, particularly on those crops which have been planted later in the planting window.

For more information, contact CottonInfo's Climate Technical Lead, Jon Welsh from AgEcon:

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Workplace health and safety and harvest

It is vital that all contractors and farm staff go through a safety induction prior to cotton harvest. The key to managing farm safety during harvest is to involve all staff in identifying potential hazards and implement a plan to manage these safety risks. This process is equally important for contractors as well as farm staff. Developing a set of procedures of how you would like the harvesting operation to progress will ensure that all involved are aware of correct and safe operation of equipment.

Biosecurity

Biosecurity plays a very important role throughout the cotton industry and is even more critical in emerging cotton regions and those with high biosecurity risks. There are a number of pests, weeds and diseases that affect the cotton industry, some of which are unique to Northern Australia and every effort must be made to avoid their spread. It is essential that 'come clean, go clean' protocols are adhered to at all times.

One pest of particular concern is pink bollworm (*Pectinophora gossypiella*), which is present in the Ord Irrigation Area and Northern Territory. This pest is the reason why cotton picked in these regions cannot be ginned in Central Queensland and must be transported further south. There are a number of measures which are recommended in order to prevent the spread of pink bollworm and other pests, which are outlined in the biosecurity risk management plan linked below.

There is a recommendation in place for the Ord Irrigation Area and the Northern Territory that if unsprayed, non-Bt cotton is grown as a refuge for a Bollgard® 3 crop, this refuge should NOT be picked, as it has a very high risk of hosting pink bollworm. Pink boll worm pupae can be easily incorporated into modules during picking. Bollgard 3 cotton has a very high efficacy on pink bollworm so the presence of pupae is very unlikely compared to non-Bt cotton.

Refer to the [Biosecurity risk management plan for transportation of cotton modules from Western Australia and the Northern Territory to Southern Queensland for ginning 2020](#) for further information.

Picking contractors

It is important to contact your picking contractor as early as possible, so they can time their arrival when your crop is ready to be picked. Communication is essential to ensure that you have a picker available when necessary, as there may be a number of other crops in the region and limited

availability for contractors. Talk to your local grower groups if you require contact details for picking contractors.

DOZEN DEEDS FOR NORTHERN AUSTRALIA

Rule 12. Post crop controls

Ensure your crop is destroyed post picking. Cotton can regrow into ratoon plants post defoliation or picking.

Post crop control

There are a number of post crop requirements for Northern Australia cotton crops, in order to comply with the Bollgard® 3 Resistance Management Plan (RMP):

CROP DESTRUCTION

All Bollgard 3 crops must be slashed or mulched and controlled to prevent regrowth within 4 weeks of harvesting, so that they do not continue to act as hosts for *Helicoverpa* spp.. Growers must make all reasonable efforts to remove volunteer and ratoon plants as soon as possible from all fields - including fallow areas, Bollgard 3 crops, conventional cotton crops and all refuges.

END OF SEASON MANAGEMENT OF REFUGES/TRAP CROPS

A late summer trap crop (pigeon pea) must be planted for all Bollgard 3 cotton grown in Northern Australia. The planting configuration of the trap crop should be the same as that of the Bollgard 3 crop. Irrigated Bollgard 3 must have an irrigated trap crop. Dryland Bollgard 3 growers who do not have any irrigated cotton on their farm should contact Bayer for alternative options.

TRAP CROP DESTRUCTION

The trap crop must be destroyed 2-4 weeks (but not before 2 weeks) after final defoliation of the Bollgard 3 cotton crop, (slash and pupae bust - full soil disturbance to a depth of 10 cm across the entire trap crop area).

In some cases, cultivation will be the best method for removal of cotton, post picking. This pass can be utilised for additional purposes such as remedial action to repair soil constraints like compaction, or to replace hills or beds in fields, in preparation for the next crop. In some cases, particularly in dryland systems where soils are unable to be cultivated in the dry season or where erosion can become a problem, growers should undertake additional tactics, such as root cutting or the application of herbicides, to prevent and control any ratoon and volunteer cotton growth.

Ratoon and volunteer cotton plants will provide a green bridge for difficult to control pests such as mealybugs. Mealybugs have been observed on ratoon and volunteer plants throughout northern Australia (Mareeba to Kununurra) even after just one crop cycle. Ensuring your crop destruction is 100% effective and that any volunteers

Post crop control continued

are subsequently controlled is paramount for the control of this pest, particularly if fields are re-sown with cotton during the following season. The control of volunteer cotton is especially difficult in pulse crop rotations and therefore the growing of grain legumes is not a preferred option as a break crop between back to back cotton production in northern Australia. Better options include millet, sorghum or maize as volunteers are much more easily controlled in these monocot crop types and these species are not a host for mealybugs.

For more information on ratoon and volunteer cotton control, as well as the stewardship requirements for growing cotton in Northern Australia, view the [**Bollgard 3 Resistance Management \(RMP\) for Northern Australia**](#).

Ginning and transport

Current biosecurity restrictions exclude ginning of cotton grown in the Northern Territory and Western Australia at any facilities in Central Queensland. Consider distance to the gin and whether or not the gin will be operating when your cotton arrives (out of season with the southern crop).

Access to cost effective transportation for round cotton modules can be a major impediment for cotton production at distant locations, with backloads limited in some areas. Transportation costs have ranged from \$60-\$190 per ginned bale (not module) for growers in Northern Australia depending on distances involved.

If possible it is recommended that cotton modules should be covered during transport to the gin. Locks of cotton can be dislodged by the wind in transit and can litter the roadside. This cotton in the monsoonal environment will grow unchecked and provides an excellent bridge for insect pests and diseases. This rogue cotton is also a huge biosecurity and social licence risk for the cotton industry.

INDUSTRY PROGRAMS

The Roundup Ready PLUS® Program

The Roundup Ready PLUS® program is designed to reward cotton growers who use herbicides sustainably and help slow or prevent development of glyphosate resistance in key weed species. For the 2020/21 season, cotton growers will be offered rebates for using participating products sprayed on Roundup Ready Flex® cotton fields.

Participating products include Bayer's Roundup Ready® Herbicide with PLANTSHIELD®, Roundup Ready® PL Herbicide with PLANTSHIELD® Technology; Syngenta's Spray.Seed®, Gramoxone®, Dual Gold®, Gesagard®, Valor®.

Visit www.roundupreadyplus.com.au for further details and refer to the 2020/21 Technology User Agreement for full program Terms and Conditions.



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RESOURCES AND TOOLS

Resources

- [NORpak: Cotton Production and Management Guidelines for the Ord River Irrigation Area](#)
- [NORpak: Cotton Production and Management Guidelines for the Burdekin and NQ coastal dry tropics](#)
- [Tropical Cotton Production: Considerations for Northern Growers](#)
- [Growing Cotton in Northern Australia, Grower Guide](#)
- [Acres of Opportunity Irrigated Cotton Guide](#)
- [Acres of Opportunity Dryland Cotton Guide](#)
- [Australian Cotton Production Manual](#)
- [Bollgard 3 Northern Resistance Management Plan \(RMP\)](#)
- [CottonInfo defoliation fact sheet](#)
- [Cotton Australia Biosecurity Resources](#)
- [Biosecurity risk management plan for transportation of cotton modules from Western Australia and the Northern Territory to Southern Queensland for ginning 2020' for further information](#)

Tools

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

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