Northern Australia Cotton gross margin 2021 Analysis

The CottonInfo Northern Australia, cotton gross margin (GM) budgets have been designed to give an indication of the operations and costs required to grow a cotton crop in the emerging cotton regions in the North (QLD, NT & WA). There is a raingrown GM, and an irrigated GM. The GMs were based on inputs from farmers, researchers, agronomists and industry specialists across QLD, NT, and WA.

The indicative published GMs show that both irrigated and raingrown cotton can return positive gross margins at $1482 and $504 per ha respectively.

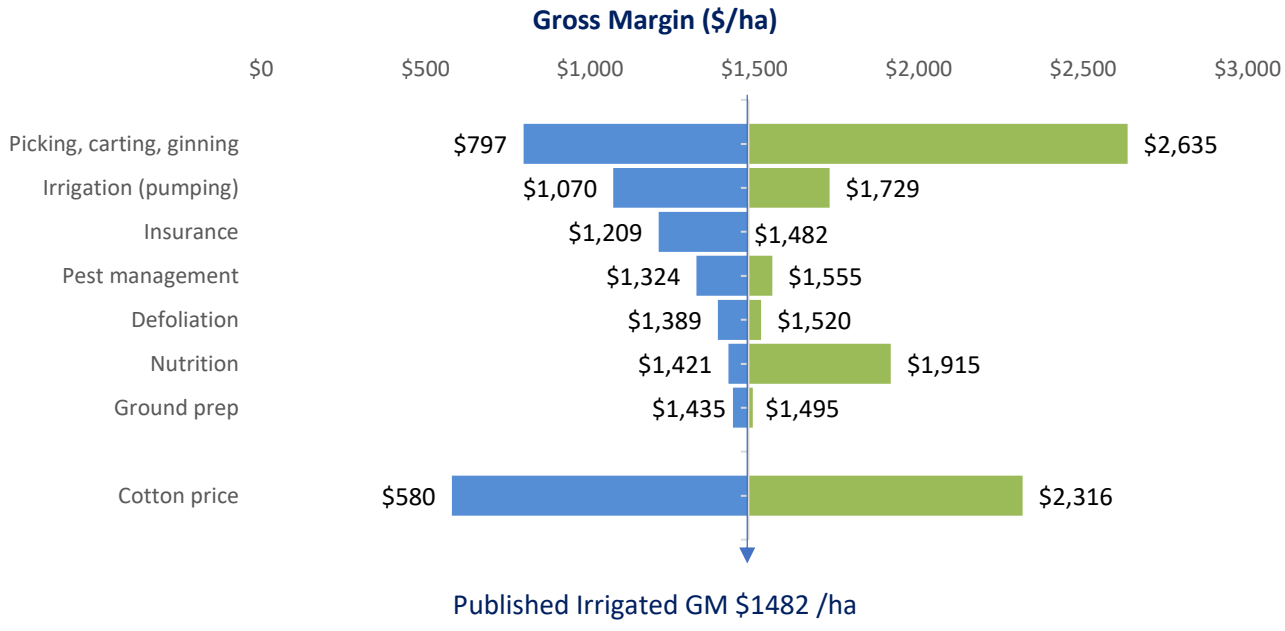
A key management consideration in these regions is the wet season. The timing of the onset of the wet season and the amount of rain it brings can affect planting dates, pest management, defoliation and importantly - the profitability of the crop. The published GM budgets can be used as a guide; however, farm location, individual field management plans, movements in crop and input prices and changes in seasonal conditions will all change the potential yield, required operations and costs of growing cotton. In all instances, operations should be tailored to the requirements of individual fields.

A GM represents the difference between gross income and the variable costs of producing a crop. GM budgets do not take into account risk, overhead costs (including permanent labour) and do not calculate farm profit.

Gross margins can be improved by either reducing variable costs or increasing income. Figure 1 indicates the influence that a change in a key variable may have on the Northern Australia gross margin for irrigated cotton. Figure 2 indicates the range of results for changes in the raingrown GM. The axis (where the blue and green bars meet) indicates the value of the published gross margin. The length of the bar (blue and green together) indicates the size of impact the variable can have on the gross margin. The blue bars reflect downside risk, while the green bars represent upside potential.

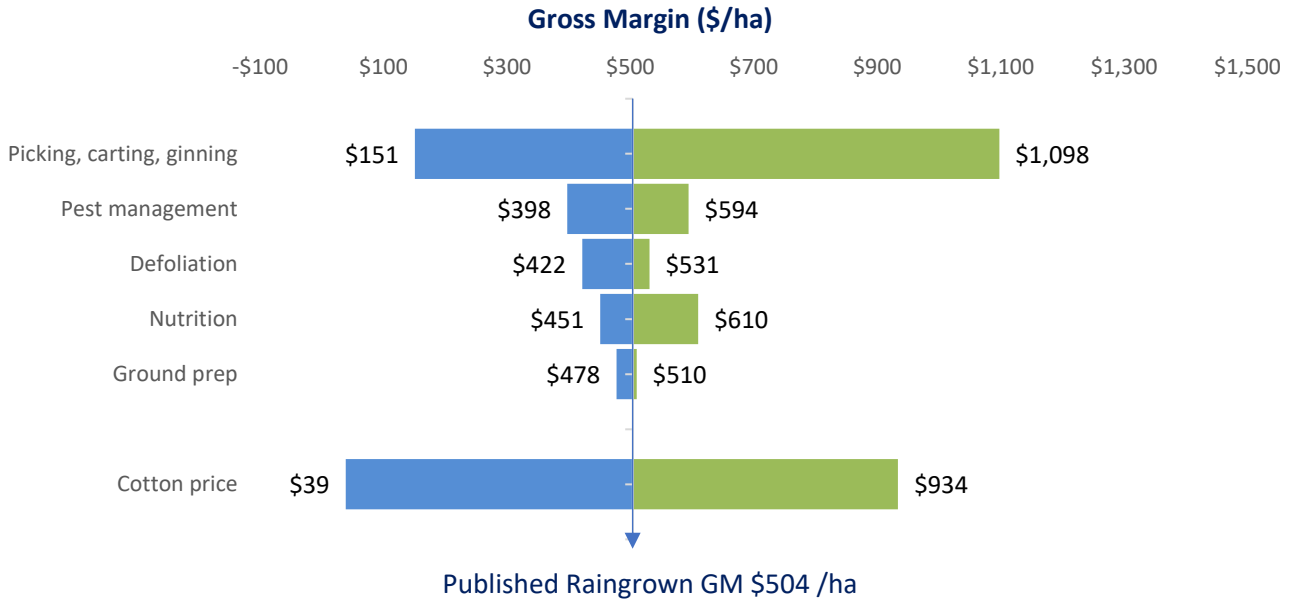
The irrigated cotton analysis (Figure 1) indicates some costs (i.e cartage, nutrition) have more scope for cost reduction which increases the gross margin (green bars) and some variables (cartage, irrigation, cotton price) have the potential to further increase costs or decrease income, therefore reducing the gross margin (blue bars). The change in variables assumes no change in yield at 9.7 bales / ha.

Figure 1: Irrigated Northern Australian cotton. Key gross margin sensitivities (potential change in gross margin)



The raingrown cotton analysis (Figure 2) indicates cartage as the operation with the highest potential to improve the gross margin. Changes in the cotton price also have a big influence on the gross margin, particularly on the downside. The analysis assumes no change in yield at 5 bales / ha. Sensitivity testing of the gross margins indicating yield and price combinations and the resulting change in gross margin can be found on page 1 of each gross margin.

Figure 2: Raingrown Northern Australian cotton. Key gross margin sensitivities (potential change in gross margin)



Picking, carting, ginning

Cartage

This key variable cost is calculated by distance to the gin, which is currently assumed to be 2755 km (based on Katherine to St George), road train transporting 12 round bales per trip, 4.25 lint bales per round. The total cost of $550 /round bale (equivalent to $129 per lint bale in the GMs). This represented 27% of irrigated total costs (25% of raingrown costs). Current costs could be as high as $850 /round bale, but with new gins under development, or ear marked for development in Northern Australia, the cost could be reduced for locations to as low as $45 / round bale.

Picking & Ginning

Picking and ginning made up 26% of total irrigated costs and 33% of the raingrown cotton costs, however these operations are likely to have low variability in costs. The published GM assumes using a picking contractor. The cost of picking may be reduced with picker ownership (where scale allows). There is minimal variability in ginning price.

Irrigated GM variation between $797 /ha - $2635 /ha

Dryland GM variation between $151 /ha - $1098 /ha

Crop inputs

Irrigation

In the irrigated GM, the cost of water (levies & pumping costs) varies depending on location, water source, application method and climate. The published irrigated GM reflects levy pricing for the Ord River, with 4 ML of surface water applied via furrow irrigation based on *CSIRO Water resources assessment* for the Mitchell catchment (N QLD) and Fitzroy catchment (WA) of between 3-5ML/ha for wet season cotton. Storage and conveyance losses of 12% brings total water requirement to 4.5 ML/ha. Irrigation costs represented 4% of total gross margin costs. The cost to extract bore water or apply overhead irrigation would increase the per ML pumping cost. Within the published GMs a reduction in applied water could reduce total irrigation costs. Crop water requirements are affected by seasonal conditions (rainfall and temperature) and are a significant driver of crop yields. Cotton crop irrigation requirements are comprehensively covered in the Irrigation chapter in the Australian Cotton Production Manual.

Irrigated Margin variation between $1070 - $1729

Nutrition

Optimal crop nutrition is a key management practice that needs careful consideration in a tropical climate. All fertiliser strategies should include comprehensive soil testing prior to sowing. Within the published GMs nutrition accounted for 23% and 20% of total expenditure for irrigated and raingrown crops respectively. Where testing results suggest reduced rates of fertiliser can be applied without yield compromise, this is a potential cost reduction to increase the both the irrigated and raingrown GMs. Cotton crop nutrition requirements are comprehensively covered in the Nutrition chapter in the Australian Cotton Production Manual.

Pest management

Control of weed and insect pests will depend largely on the season and location. Use of a particular brand name or active ingredient in the published GM does NOT imply a recommendation. Insecticides and spray timing suggested in this budget are examples only and strategies will vary with individual circumstances. The examples given accounted for 5% and 7% of the total costs for irrigated and raingrown cotton gross margins respectively. Individual fields need careful monitoring to determine pest and beneficial insect populations. Use recommended thresholds for all pests. Avoid using broad spectrum sprays and continuously using chemicals from the same group. Follow the Insecticide Resistance Management Strategy (found in the Cotton Pest Management Guide) to protect the value of insecticide technologies for the future. Conserving and utilising beneficial insects is a key aspect of long-term effective pest management.

Always read chemical labels and follow directions, as it is your legal responsibility to do so.

Aplication method assumes ground spray until the crop closes-over, ability for ground application will depend on rainfall, soil type etc. Increased use of aerial spray will increase costs and reduce GM.

Growth regulator

Requirements (and number of applications) depends on climatic conditions, predominantly rainfall. The published GM example has four applications for the irrigated cotton and three applications for the raingrown, however this could be as many as six. The cost of growth regulant accounted for less than 1% of total costs in both the irrigated and raingrown cotton gross margins.

Defoliation

Good conditions are required to get the best performance from defoliation. The choice of defoliant, rate used and number of applications, depends on the moisture status of the plant, geographic location and seasonal conditions. Self-propelled ground rig is used in this example due to improved canopy penetration, however there can be trade-offs with damage to the crop. The published GM assumes 2 defoliations. Defoliation accounted for 2% and 3% of total expenditure for irrigated and raingrown cotton respectively.

Ground preparation

The cost of ground preparation is influenced by the previous crop (or fallow) and the operations required to create a weed and insect free field for planting. This may involve a combination of farming operations including herbicide and pesticide sprays. Within the published GMs these costs accounted for 1% of total cotton expenditure. Preparation is important for yield maximisation and Figure 1 indicates potential variance in these costs have minimal impact on gross margin.

Crop pricing

Lint price

The published GM includes sensitivity testing of crop income ($/bale inclusive of lint, seed and discounts). The change in gross margin in Figures 1 & 2 is for a per bale income range of $476 - $655 (the 5 year range).

Irrigated GM variation between $580 /ha - $2316 /ha

Dryland GM variation between $39 /ha - $934 /ha

When expenditure and yield remained constant, the cotton gross margins remained positive down to lint prices of $417 / bale (irrigated) and $468 / bale (raingrown) — both well below the 5 year average lint price of approximately $558 / bale. However, with the largest potential downside to the gross margin and large potential changes in year on year prices, sound, independent marketing advice is essential. Cotton prices and marketing options are comprehensively covered in the Business of Growing Cotton chapter in the Australian Cotton Production Manual.

Management

Breakeven price

Irrigated breakeven price was $481 / bale (inclusive of lint, seed and discounts). Raingrown breakeven price was $526 / bale (inclusive of lint, seed and discounts).

Breakeven yield

Irrigated breakeven yield is 5.9 bales /ha
Raingrown breakeven price is 3.7 bales /ha

Given yield potential and expected variability in yield across different seasons for some regions and systems of Northern Australia is not well understood, agronomist advice for your situation is advised.

Insurance The published GMs assumed no crop insurance was taken. If insurance is required for risk reduction, this would be an increased cost and a reduction in GM. Insurance premiums are influenced by a variety of factors such as: policy type, location, and estimated yield. Best practice is to get quotes from a couple of providers and compare like for like policies.

Calendar of operations Timing of cotton in Northern Australia is based around a potential planting window. Planting windows will vary depending on the growing area and timing of the wet season.

Own or contract? Contracted operations in the published GMs include picking, cartage and aerial spraying. Contract rates include variable, overhead and labour costs as well as a profit margin. Rates are also influenced by supply and demand in a season or valley, quality of equipment on offer and the size of the job (to ensure relocation costs are recouped). Contracting bills are a tax deductable cost. The cost of growing a cotton crop with all operations contracted may increase total costs in the range of $800-$1200. However, at a farm level, contracting costs would also offset the overhead requirement of labour and potentially the capital expense of specialist machinery.

Using a contractor may be preferable particularly where labour is short, or cotton is grown as an opportunity crop.

Looking for more information?

General gross margin ***Notes and Assumptions*** can be found on the CottonInfo website.

For a complete guide to cotton management, see the ***Australian Cotton Production Manual*****.**

Key research projects for both irrigated and raingrown cotton in Northern Australia have been conducted by Dr Stephen Yeates.

- Irrigated: Yeates, S. (2008). Northern Australia Cotton Development & Coordination Leader, Final Report. CRDC Project CSP1602. Click here
- Dryland: Yeates, S. Pouton, P. (2019). Preliminary Determination of Dryland Cotton Yield Potential in the NT: Preliminary climate assessment and yield simulation. Report to NTFarmers, Queensland Cotton and the Cotton Research and Development Corporation. CSIRO. Click here

Additional information on Northern Australian cotton production can be found in the below reports:

CRC NA (2021). *Broadacre Cropping in Northern Australia,* Issue 2 March 2021 Click here

CottonInfo Website. *Tropical cotton production, Information for Northern cotton growers*. Click here

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