2021–22 Australian cotton industry gross margin
Notes & assumptions

For a complete guide to cotton management, see the ***Australian Cotton Production Manual 2021*.**

A gross margin represents the difference between gross income and the variable costs of producing a crop. Gross margin budgets do not take into account risk, overhead costs (including permanent labour) and do not calculate farm profit. An industry gross margin budget should be used only as a guide. They are designed to give an indication of operations and costs required to grow a cotton crop. A grower should create their own budgets to take into account individual field management plans, movements in crop and input prices and changes in seasonal conditions. In all instances, operations should be tailored to the requirements of individual fields. Following is an explanation of some terms and an outline of the assumptions used in the creation of the 2021–22 cotton industry gross margin budgets.

BALE: The industry term 'per bale', means a ginned 'lint' bale of 227kg. The budget assumes 4.25 lint bales per round module.

Bt: A licence fee is paid to Bayer for cotton seed that uses Bollgard® technology (Bt). The technology licence fee for Bollgard3® stacked with Roundup Ready Flex® for 2021-22 is $390 per green hectare (GST exclusive). The fully irrigated budgets use Bayer Cotton Choices® Option 1, which provides a discount on the technology licence fees for up-front payment. The semi-irrigated budget uses option 2, which includes the option of 'Late Crop Removal', $420 per green hectare. For crops expected to yield less than 4 bales/ha the End Point Royalty is the most cost effective option. The dryland budget uses Bayer Cotton Choices® Option 3, an end point royalty (EPR) of $52.50/bale ex GST. In the northern GMs the EPR is $32.50/bale ex GST which incorporates a development allowance to reflect the challenges of establishing a new cotton industry in the North. See http://cottonchoices.com.au to find the option that best suits your cropping situation.

CARTAGE: Cartage can vary significantly for different cotton growing regions. For the "southern" gross margins, a cartage distance of 50km is assumed, with a road train carting 12 round modules per trip. For the northern gross margins, the cartage distance is 2680 km (based on Katherine to St George).

CHEMICALS: Always read chemical labels and follow directions, as it is your legal responsibility to do so. Use of a particular brand name or active ingredient does NOT imply a recommendation.

CROP DESTRUCTION / PUPAE DESTRUCTION: To further mitigate resistance follow the specific guidelines in your licence agreement.

DEFOLIANT: Good conditions are required to get the best performance. The choice of defoliant and rate used 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.

FERTILISER REQUIREMENTS: All fertiliser strategies should include comprehensive soil testing prior to sowing. Cotton crop nutrition requirements are comprehensively covered in the Nutrition chapter in the Australian Cotton Production Manual.

HERBICIDES: The cornerstone of weed management and managing herbicide resistance risks is controlling survivors and preventing new weed seeds from entering the seed bank. To reduce the likelihood of herbicide resistance, rotate herbicide groups and weed management techniques. Chipping or spot spray can be used to control any surviving weeds as part of a robust Integrated Weed Management (IWM) plan. Aim to plant into clean fields. See the Herbicide Resistance Management Strategy (found in the Cotton Pest Management Guide) and Bayer's Roundup Ready Flex Cotton Weed Management Guide.

INSURANCE: 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 to compare.

INTEGRATED PEST MANAGEMENT: Insecticides and spray timing suggested in this budget are examples only and strategies will vary with individual circumstances. 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.

IRRIGATION: Individual farm and field water budgets will vary depending on irrigation system efficiency, and regional and seasonal variations in plant evapotranspiration and effective rainfall. The budget includes the required water pumped from source (surface or groundwater).

Furrow Irrigated (southern): CRDC grower surveys show a 2-year average Irrigation Water Use Index (IWUI) of 1.4 bales/ML of field applied irrigation water. For a 12 bale crop this equates to 8.3 ML applied irrigation water. Storage and conveyance losses of 10% (NSW DPI 2019 water use benchmark) brings total water requirement to 9.4 ML/ha.

Overhead irrigation: Research has shown that overhead irrigation systems can decrease water use by up to 30% compared to surface irrigation (see ACPM). A more conservative 15% has been applied to 9.4 ML/ha furrow irrigation water use, generating an 8 ML/ha overhead irrigation requirement.

Semi irrigated: Applied irrigation water of 3.5ML is based on the target yield of 7 bales ha and 200mm plant available water content (PAWC) at planting. With storage and conveyance losses of 10% the farm level water requirement is 3.9 ML/ha.

Northern furrow irrigated: Irrigation water use of 4.5 ML/ha was based on CSIRO Water resources assessment for the Mitchell catchment indicating applied water of 3-5ML/ha for wet season cotton, and storage and conveyance losses of 10%.

LABOUR: With the exception of the contractor GM, labour is assumed to be an overhead cost and is not included in this budget.

LEVIES: The Research Levy ($2.25/bale) is a compulsory levy that is invoiced by the ginning organisation following ginning. The Cotton Research Development Corporation (CRDC) uses funds collected through this levy to finance vital industry research. The Cotton Australia Levy ($1.50/bale) is a voluntary levy, which funds the peak industry body Cotton Australia that provides a valuable policy/advocacy role, farmer support and promotes the Australian cotton industry.

MACHINERY: The cost of each farming pass reflects variable costs only (fuel, repairs and maintenance). Labour and depreciation are considered overhead costs, so are not included in this budget.

Northern Australia: Northern Australia gross margin budgets have been developed in 2021-22 to give and 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.

PLANTING RATE: Rates will vary from 10 to 18 kg/ha depending on location and seasonal conditions. Typically there are higher planting rates in the South and lower planting rates in the North.

PRICES:

Input Prices

Chemical & fertiliser pricing information was collected across all cotton growing regions and averaged to give an indication of product pricing. Chemical prices in the northern gross margins are 5% higher on average than those in southern growing regions. Fertilizer prices include transport which is estimated to be $45 per tonne in the southern growing regions, and $200 per tonne in Northern Australian growing regions.

Cotton seed price per kg will vary with the time of ordering and seed treatments chosen. Price quoted in the budgets is for a preseason order. Seed prices included in each budget are a weighted average varieties recommended in CSD's variety guide for irrigated, semi-irrigated, and dryland cotton production.

Output Prices

Lint The gross margin uses a 12 month multi-merchant average daily cash price.

Seed The cotton seed price is given indicatively as a per bale value. $70/bale for seed (prior to ginning costs being subtracted) is the equivalent of $280/t, assuming an average of 250kg of cotton seed per bale of lint.

ROTATION: While cotton can be grown in various rotations, this budget assumes a two-year rotation of cotton—wheat—long fallow in the southern gross margins. The northern gross margins assumes a previous crop of sorghum, with 2 t/ha mulch cover retained.

ROW CONFIGURATION: In the southern GMs, fully irrigated furrow and overhead are configured as solid plant on 1m beds. Semi-irrigated assumes double skip and dry land considers varied planting configurations. Northern gross margins are based on solid configuration 1m beds. See the image to the right to understand these options.

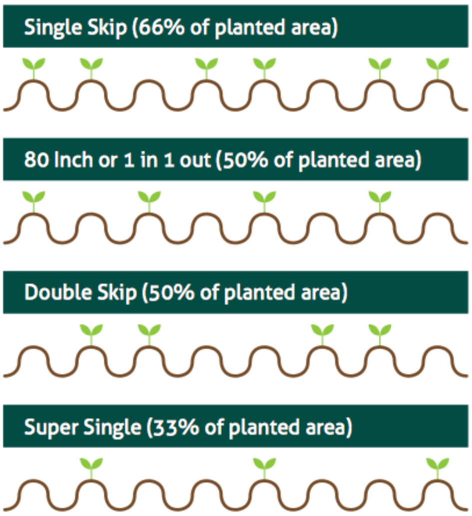

Figure 1: Image source 'Getting the most out of skip row irrigated cotton', CSD 2009

YIELD: Actual yields are a complex result of agronomic and environmental factors and as a result will vary between fields, farms and regions. 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.

Fully Irrigated (southern): A yield of 12 bales/ha is achievable considering the long fallow, 'best practice' operations and the five-year average yield for the variety 746B3F in Cotton Seed Distributors (CSD) commercial trial results.

Semi irrigated: The yield of 7 bales per ha assumes 200mm plant available water content (PAWC) at planting and applied irrigation water of 3.5ML

Dryland: The yield differentials between the various row configurations are entirely weather and region dependant. The gross margin yields are based on the yield matrix (based on Ozcott modelling of the Darling Downs Region) from page 18 of the Australian Cotton Production Manual 2021.

Northern furrow irrigated: A yield of 9.7 bales/ha is based on *Yeates, S., (2018), Northern Australia Cotton Development & Coordination Leader, Final Report to CRDC*.

Northern raingrown: A yield of 5 bales/ha is based on Douglas Daly/Tipperary raingrown crops of 3–6 bales/ha reported in *CRCNA, 2021, Broadacre Cropping in northern Australia Newsletter #2, January 2021*.

REFUGE: Each grower is required to grow a refuge crop as part of preventative insect-resistance management. Refuge requirements have been reduced with the introduction of Bollgard3® cotton, but they remain a critical part of protecting the longevity of the technology. With this in mind, refuge crop costs have been included as part of the gross margin budget. For the purposes of the irrigated budget examples, we have used irrigated pigeon peas at 2.5% of the Bt cotton area. Unsprayed conventional cotton at 5% of the Bt area is used for the dryland budget. Ensure crop destruction and refuge removal is in line with *Resistance Management Plan* (RMP) requirements. Refer to the relevant RMP for more information on refuge crops and minimum requirements.

Disclaimer