



Australian Government

**Cotton Research and
Development Corporation**

CGA FINAL REPORT 2015/16

Part 1 - Summary Details

Please use your TAB key to complete Parts 1 & 2.

CRDC Project Number: CGA1602

Project Title: Gwydir Valley dryland planting date row configuration trial

Project Commencement Date: 1 July 2015 **Project Completion Date:** 31 Dec 2016

Part 2 – Contact Details

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Part 3 – Final Report

(The points below are to be used as a guideline when completing your final report.)

Background

1. Outline the background to the project.

Dryland growers are looking to adjust planting dates to better utilise planting opportunities and available soil moisture and minimise the negative impacts of peak flowering during extreme heat events. Greater understanding of the physiological development of dryland cotton, especially BG3 under different row configurations will enable growers to make better management decisions to maximise returns.

Pupae busting is a major hurdle to the adoption of dryland cotton. It's a major expense, causing significant moisture loss, which minimises further opportunity cropping for dryland growers. The expansion of dryland cotton is significantly influenced by the need to pupae bust. Ratoon cotton can cause major issues in subsequent crop rotations.

Objectives

2. List the project objectives (from the application) and the extent to which these have been achieved.

Increase the understanding of the dynamics between row configuration and planting date in dryland cotton. Focus is on BG3 which will have more flexible planting resistance management guidelines.

Examining different planting dates was unable to be achieved due to a lack of planting opportunities. Differing row configuration dynamics were able to be determined, with a warm, dry finish resulting in similar yields, however the individual plots displayed large differences in maturity, height, boll number, boll size and fibre quality. This will assist growers when selecting a row configuration for dryland cotton.

Determine the most appropriate method of pupae busting and cotton ratoon management in dryland field.

Due to the early maturity and defoliation of the crop pupae busting was not required in this trial, due to time constraints the grower was unable to develop a trial for evaluating pupae busting or ratoon management. The entire plot was planted to chickpeas in May.

It is aimed to identify the appropriate planting dates of BG3 for specific dryland row configurations. This will enable growers to make better informed dryland planting decisions.

Methods

3. Detail the methodology and justify the methodology used. Include any discoveries in methods that may benefit other related projects.

Seasonal conditions meant that the trial had to be moved from the west of the Gwydir Valley to a site in the north.

The trial design was adjusted to reflect the seasonal conditions. All treatments were planted on the 1st December 2015. Lack of early rain meant planting times could not be spread from September to December as originally intended.

Trial included three different row configurations;

- 1.5m row spacing {60 inch (solid)},
- 1.5m single skip row spacing {60 inch skip (two in one out)} and
- 3m row spacing {super single}.

Local on-farm rainfall data was collected and soil moisture status was assessed using a push probe pre planting and C-probes post planting.

Plant monitoring including plant establishment, node development, flowering date and fruit retention. Picking and ginning to determine yield and quality.

The site was defoliated prior to the 31st March – therefore it was not necessary to pupae bust the plots. The grower planted chickpeas in late May into medium moisture.

Outcomes

4. Describe how the project's outputs will contribute to the planned outcomes identified in the project application. Describe the planned outcomes achieved to date.

Increased understanding of the relationship between planting date and row configuration will help expand the dryland cotton area planted. It will enable growers to confidently plant over a longer time frame.

The project will provide growers a better understanding of the process of management of ratoon cotton and satisfying the pupae busting requirements.

- **Outcomes:**

The data has shown that in a season where there was limited early season rainfall for early planting, and limited to no late season rainfall (the last effective rainfall was in January) BG3 could still be grown as a successful dryland crop. The crop was planted on the 1st December 2015 and defoliated by the 31st March 2016.

There was very little difference in the yield achieved under three different planting configurations planted on the 1st of December.

There were some observed differences in fibre quality, resulting in a \$38/bale discount from the 1.5m row configuration. This means that in a more typical seasonal finish that growers would expect to see an up-side from the narrower 1.5m row spacing, but when there is a dry finish they should expect to see some quality discounts.

This increased understanding of the potential of BG3 as a dryland crop will help growers understand how to fit dryland cotton into the dryland crop rotation system which will lead to increasing areas being planted.

An important outcome was the trials ability to demonstrate the fit of BG3 planted dryland as a part of a double cropping rotation. The cotton was grown over a 122 day period and a winter planting of chickpeas was still possible. This is very short for a dryland cotton crop and demonstrates the ability to grow a profitable crop in enough time to also have the opportunity for a double crop option (in this case chickpeas). One perceived drawback of growing dryland cotton has been the perception that the potential to double crop is very low. The fact that pupae busting was not required was of significant benefit in this case.

- **Economic Benefits:**

- Increased adoption of dryland cotton.
- Increased cropping options for dryland growers.

An increased understanding of the fit of BG3 into dryland cropping systems will help to increase the incorporation of dryland cotton into cropping rotations in the region.

Where growers are able to maximise farm output by selection of the most appropriate row configurations and planting dates they will be able to contribute more to the economy of the region. Increases to the sustainability of cotton growing regions, will increase employment opportunities and improve the future of the industry.

- **Environmental Benefits:**

The trial demonstrated that the resistance management plan for BG3 could fit easily into a typical broad acre cropping rotation. The fact that pupae busting was not required meant that soil moisture was stored and that the soil was not subject to mechanical degradation by pupae busting and ratoon management. There were only six weeks where there was not crop in the grounds which is beneficial for the soil microbial populations.

- **Social Benefits:**

Employment opportunities based on more sustainable farming units and flexibility in cropping options will have significant impact on the local community.

5. Please report on any:-

- a) Feedback forms used and what the results were
- b) The highlights for participants or key learnings achieved
- c) The number of people participating and any comments on level of participation

Data collected from the trial is being collated to be presented as a poster and as a brochure at the 2016 Australian Cotton conference on the GVIA stand.

A field day is scheduled prior to planting the 2016 – 2017 dryland crop to demonstrate the suitability of BG3 as a dryland summer crop option in the region. The target market will be the 100 dryland cotton growers on the Gwydir Valley CGA dryland mailing list and a range of broad acre producers who have not previously grown dryland cotton.

Budget

6. Describe how the project's budget was spent in comparison with the application budget. Outline any changes and provide justification.

Significantly more time was allocated to crop monitoring, assessment and co-ordination than initially planned. The majority of the fund initially allocated to the hire of C-probes has been utilised in the crop measurement and collection of comparative data.

There are still expenses to be allocated to the preparation of the technical report, the development of a brochure and poster, and the hosting of a field day.

