



Final Report

Off Farm Series | Cotton Research & Development Corporation

Part 1 - Summary Details

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

CRDC ID: CFOC1302

Project Title: Developing workshops and grower groups for the CFOC

Project Commencement Date: 1 July 2012 **Project Completion Date:** 30 June 2013

Research Program: Human Capacity

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:Part 2 – Final Report Executive Summary

“Cotton growers working together for a sustainable landscape project” funded by the Australian Government’s Caring for our Country initiative consisted of three core components which included working directly with landholders to manage natural vegetation and improve biodiversity, an Envirostories competition involving schools, and an Aboriginal Cotton Traineeship program focussed on agriculture and environmental rehabilitation.

In the Central Queensland region, milestones contributing to the Project objectives were:

- Organise and hold field day and workshop with 20 cotton growers from the Dawson Valley Cotton Grower Association and Comet Sustainable Farming Association
- 20 farmers participating in the Cotton industry’s myBMP program
- Assist the Dawson Valley Cotton Grower Association and Comet Sustainable Farming Association to complete on-ground environmental activities
- Activities completed to assist at least 20 farmers to adopt activities that contribute to the ongoing conservation and protection of biodiversity on at least 2000ha

22 landholders attended a total of three workshops at Theodore (one) and Orion (two). At the workshops, growers completed the IPM and Natural Assets of the Cotton myBMP workshop. They also received technical presentations from Dr Nancy Schellhorn (Team Leader, Spatial Ecology, Entomology Division, CSIRO) on how to manage on-farm remnant to improve productivity in their agricultural operations and from Duncan Swan (Principal Land Protection Officer, Biosecurity DAFF CQ) and Gordon Twiner (Rural Services Coordinator, Banana Shire Council) on identifying environmental weeds, impacts, their life cycle and suitable control methods.

Cotton growers identified that catchment-wide coordinated control of environmental weed infestations was a priority to conserve and protect local biodiversity assets, following the 2010/11 floods.

10 businesses covering a total property area of 57,857 ha have completed 40% of planned on-ground control for Weeds of National Significance in the Dawson and Comet riparian areas. These include:

- 106.1km of parkinsonia
- 5702 ha of parthenium
- And 1663.8ha of hymenachne, lueacaena and rubber vine.

Most on-ground work is expected to be completed by end December, weather permitting.

CHRRUP, the local catchment group in the Central Highlands is providing ongoing technical support to the Comet Sustainable Farming Systems Association members and working with DERM to identify, source funding and undertake complementary environmental weed control work targeting the source of infestations upstream.

The project in the Central Queensland region provided cotton growers with an increased appreciation of the role biodiversity can have in productive cotton systems. Growers benefited from enhanced knowledge of ecosystem services and have a better understanding of biodiversity management. This knowledge will enable more cotton growers to utilise ecosystem services as an integral component of their production systems.

Part 3 – Final Report Guide

Background

1. Outline the background to the project.

Blue Dog Agribusiness was contracted in September 2012 to undertake Central Queensland activities for the “Cotton growers working together for a sustainable landscape project” funded by the Australian Government’s Caring for our Country initiative.

The project consisted of three core components which included working directly with landholders to manage natural vegetation and improve biodiversity, an Envirostories competition involving schools, and an Aboriginal Cotton Traineeship program focussed on agriculture and environmental rehabilitation.

Work in the Central Queensland region provided cotton growers with an increased appreciation of the role biodiversity can have in productive cotton systems. Growers benefited from enhanced knowledge of ecosystem services and have a better understanding of biodiversity management. This knowledge will enable more cotton growers to utilise ecosystem services as an integral component of their production systems.

Objectives

2. List the project objectives and the extent to which these have been achieved.

Original Project goals required the implementation of on ground works that contribute to the conservation and protection of biodiversity on at least 1280 hectares of land, increasing by 17 the number of farmers undertaking tasks that enhance natural resource management on their country, and improving NRM knowledge and skills amongst 160 cotton producers.

In the Central Queensland region, the particular milestones contributing to the Project objectives were:

- Organise and hold field day and workshop with 20 cotton growers from the Dawson Valley Cotton Grower Association and Comet Sustainable Farming Association
- 20 farmers participating in the Cotton industry’s myBMP program
- Assist the Dawson Valley Cotton Grower Association and Comet Sustainable Farming Association to complete on-ground environmental activities
- Activities complete to assist at least 20 farmers to adopt activities that contribute to the ongoing conservation and protection of biodiversity on at least 2000ha
- Preparation of at least 1 best practice case study and 1 media release

Methods

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

Workshops were held in both the Comet and Dawson River catchments on the 10th and 11th December 2012. At the workshops the following presenters provided technical information to support the implementation of on ground works protecting biodiversity on-farm:

- Dr Nancy Schellhorn (Team Leader, Spatial Ecology, Entomology Division, CSIRO) – Orion and Theodore
- Duncan Swan (Principal Land Protection Officer, Biosecurity DAFF CQ – Orion)
- Gordon Twiner, Rural Services Coordinator, Banana Shire Council – Theodore

Also invited and attending workshops were sub-regional NRM staff (DCCA & CHRRUP), accredited BMP advisers, and Cotton Australia regional managers. DPI&F staff were an apology.

A bank of 20 laptops with wireless internet access, were loaned for each workshop from the Queensland Department of Agriculture, Food & Fisheries (QDAFF) Grains BMP program. During the workshops growers completed the IPM module and reviewed the Natural Assets module of the Cotton myBMP program.

Actions to control environmental weeds in riparian areas were identified using the *myBMP* program, to be supported with incentive funding by the CRDC and the Australian Government CFoC. Environmental weeds were considered a priority issue following increased infestations from the 2010/11 record flooding across Central Queensland.

Lots on plan of those attending were displayed on satellite imagery. During the workshops landholders identified critical environmental weeds and coordinated control plans with their neighbours. Planned control activities were then mapped by the Fitzroy Basin Association.

The Department of Environment and Resource Management also supported the workshops by providing detailed case studies which detailed the environmental values for two indicative properties participating for each region.

Cotton growers in the Comet catchment chose to employ contractors to undertake the environmental weed control in their region and quotes secured. Cotton growers in the Dawson catchment chose to undertake the works themselves.

CRDC provided contracts for the devolved funds to the Comet Sustainable Farming Association and the Dawson Valley Cotton Growers Association in early September 2013. A follow up workshop was held at Orion on Friday 18th October, and individual follow up undertaken with Dawson cotton growers in the same month. Landholders agreed on the following monitoring protocols:

- Photo points set up at key control points
- GPS coordinates
- Dates and nature of controls

Results

4. Detail and discuss the results for each objective including the statistical analysis of results.

- 1 workshop was held in the Dawson Valley
- 2 workshops were held in the Comet River

All growers bar one Comet grains irrigator received individual property visits.

Cotton growers are conserving and protecting biodiversity through undertaking practices identified in the *myBMP* IPM & Natural Assets module on their farms:

Catchment	No of growers	Total property (ha)	High Value Regrowth (ha)	Remnant Vegetation (ha)
Dawson Valley	14	24,140	1070.1	314.7
Comet River	8	26,088	215.9	3099.6
Total	22	50,228	1286	3414.3

Cotton growers are undertaking on-ground works to control weeds on national significance in riparian areas:

Catchment	No of businesses	Total property (ha)	Parkinsonia	Parthenium	Other WoNS	Complete (%)
Dawson Valley	5	13,943	-	1702 ha	Hymenachne 14.1ha Leucaena 499.7ha	0
Comet River	5	43,914*	106.1km 5300 ha**	80km 4000ha**	Rubber Vine 2.3km 1150ha*	50%
Total	10	57,857	5300	5702	1663.8	40%

*Figure includes one substantial grains irrigator who is participating in on-ground works program

**Control measures provided in km, ha figure provided assumes a minimum 500m riparian area for each km of control. Actual area may be greater.

In the Comet River catchment, four growers are using external contractors and one business is undertaking works with their own staff. Works commenced on all properties in the last week of October and are expected to be concluded by the end of December.

No works have taken place in the Dawson Valley due to three key factors:

- Prolonged dry weather throughout 2013 has significantly diminished weed pressure
- The contracting taking place immediately before the cotton planting window
- 2 properties are now advertised for auction.

The 3 remaining properties are still keen to undertake the planned works and intend to purchase the required herbicides and diesel to ensure the project is at least in progress by end November 2013.

Given Central Queensland is entering its sub-tropical 'wet season' in December, there is a risk that rain may cause delays to predicted completion dates of on-ground works.

Outcomes

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

Digitised mapping of environmental activities has been completed for both river catchments and will be verified against photo points and GPS coordinates following the completion of all works. CHRRUP the Central Highlands NRM organisation is working with DERM to identify, source funding and undertake environmental weed control work which complement the works undertaken in this project by targeting the source of infestations upstream.

At each workshop all participants undertook qualitative evaluation using TurningPoint® Audience Response system (Keypad Interactive, Sydney). This collected demographic information, levels of knowledge, competence and farm practices, attitudes, and evaluated the workshop experience. Key learnings were:

- Following the workshops, 20% of Dawson growers thought that on-farm remnant provided very high potential benefits to improve productivity in their agricultural operations; 13% high level; 20% medium change. (Not measured for Comet.)
- Dawson: 33% of growers believe they can easily achieve level 2 practices in the IPM module; 67% said that “some are easy some are difficult”. Particular practices that they identified as a challenge were identifying key weeds and assessing weed burdens (50%) and managing weeds and crop residues to avoid providing over winter and summer hosts for pests (50%)
- Comet: 44% of growers believe they can easily achieve level 2 practices in the IPM module; 56% said that “some are easy, some are difficult”. Particular practices that they identified as a challenge were managing weeds and crop residues to avoid providing over winter and summer hosts for pests (41%), practicing good farm hygiene to minimise the spread of diseases onto and off farm (20%), following the IRMS (20%) and using industry standards to assess the need to spray (18%).
- *myBMP* is not yet embedded in normal business practice and considered a one off event: Despite 88% of Comet growers stating that they can confidently use the site, only 22% had completed a farm assessment and/or modules in the last 6 months/following the previous FBA funded workshop.
- The use of *myBMP* advisers in a paid capacity is also limited with 14% stating they had paid for more than an hour’s advice to assist with *myBMP*
- 75% of Dawson growers would like to attend more *myBMP* workshops
- 100% of Comet growers would like to attend more *myBMP* workshops

1 best practice case study and 1 media release are yet to be completed and are expected to be ready for circulation following completion of works, end January 2014.

6. Please describe any:-
- a) technical advances achieved (eg commercially significant developments, patents applied for or granted licenses, etc.);
 - b) other information developed from research (eg discoveries in methodology, equipment design, etc.); and
 - c) required changes to the Intellectual Property register.

N/A

Conclusion

7. Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. What are the take home messages?

Key take home message are as follows:

A partnership approach: Many individuals and many organisations have helped with the extension program. Workshops were delivered by a partnership of CRDC, CSIRO, DAFF Qld, DERM, local Council Officers, Cotton Australia, agronomists and catchment group staff. Integration and coordination of all extension and industry activities reduces the impost on grower time, and provided greater depth and interest to *myBMP* practices.

Engagement with the community: The Dawson Valley CGA and Comet Sustainable Farming Association are existing local groups, small in scale with common interests and issues. Workshops

were held on properties or at the pub, all family members and staff were encouraged to attend and each workshop was followed by a social event. A level of familiarity and trust encouraged networking, open discussion and cooperation on area-wide issues. Non-cotton growing neighbours were encouraged to attend and participate as biodiversity related issues are not constrained or defined by property or commodity boundaries. Then workshops and on-ground works were targeted to support the local group goals and priorities, while also delivering project milestones.

Using myBMP and evaluation as a tool to provide measurable gains over time: The IPM module of the myBMP program was used as a building block to underpin the extension activities at each workshop. Evaluation tools such as Turnpoint can allow growers to direct their training experience by selecting topics, dates, times and guest technical speakers for their next training event, as well as identifying areas where additional information would be helpful.

Seasonal production activities come first: While all growers participating view the preservation and conservation of biodiversity on their farm as a valued part of their long-term profitability, not surprisingly short-term farming requirements take priority. The unavoidable clash between the issuing of contracts and the critical farming activities of pre-plant and the cotton planting window has significantly delayed outcomes.

Part of the high level of participation in the project was that it built on previous natural resource management work and extension funded by the Fitzroy Basin Association and the Australian Government Reef Rescue program.

Growers from both regions identified the overall usefulness of the workshop as excellent or good. Numerous growers have sought further information to better manage on-farm remnant for productivity gains. Environmental weed control once completed is extensive in scale and scope and will be supported by follow-up work by the local Catchment group.

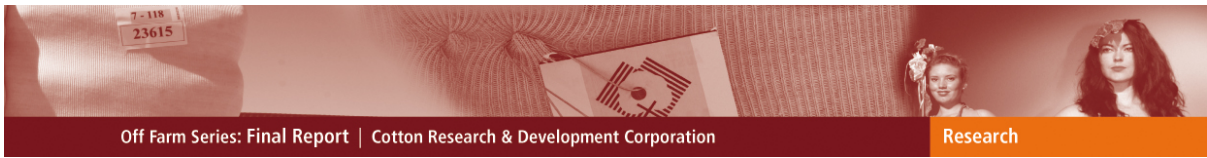
Extension Opportunities

8. Detail a plan for the activities or other steps that may be taken:
 - (a) to further develop or to exploit the project technology.
 - (b) for the future presentation and dissemination of the project outcomes.
 - (c) for future research.

Using turnpoint results with group discussion is a valuable method of targeting the exact issues on any myBMP module that require specific regional approaches. Using the myBMP reporting also allows researchers and extensionists to view whether practice change is taking place in these areas of concern over time. From the evaluation results, a follow up workshop to providing strategies and information to support IPM specific issues would be of value for both groups.

To support ongoing high levels of myBMP adoption, further workshops will provide an incentive to growers to consider embedding the myBMP program as a daily or weekly activity, rather than a once or twice a year event. Further BMP workshops would also support growers with seasonal issues; for example up to 36,500 ML of treated CSG water (beneficial water) will be added to the Dawson supplemented system from 2014. Extensive double cropping will occur which is a significant change to current practices. In the Comet region, landholders may need to deal specifically with first phase mine development in 2014 and the impacts of weeds, disease, farm hygiene and spraying practices.

9. A. List the publications arising from the research project and/or a publication plan.
(NB: Where possible, please provide a copy of any publication/s)
- B. Have you developed any online resources and what is the website address?



Co-authored with Mike and Debbie Austin; “All for one and one for all: the story of “Harcourt” and the Dawson Valley cotton growers” presented to the International APEN Conference, Christchurch and paper to be published this month in the Extension Farming Systems Journal.