



**GRASSROOTS Final Report
 FOR
 CRDC INVESTMENT 2013/14**

There are length restrictions in most fields however applications are to be a maximum of 3 pages, size 11 font.

Project Title: (maximum 85char)	<u>Understanding soils and plant nutrition for Cotton Growers</u>				
Start Date: 14/11/2013 Cease Date: 30/06/2014					
Please refer to CRDC's Strategic Plan (2013-2018) for the following.					
CRDC Program:	1. Farmers				
CRDC Theme:	1.2 Productive Resource Efficiencies				
CRDC Strategy:	1.2.4 Improving farmers' capacity, knowledge & adoption of techniques to optimise resource uses.				
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Project Objectives: For example: what does the project seek to achieve; what issues or problems will it overcome; what innovation will it address; how will the					



cotton industry benefit?

The Back Paddock Company has become one of the leading soil nutrition consultants in the cotton industry. The objective of the project is to better educate CGA member growers about soil nutrition by completing two Back Paddock nutrition courses.

The CGA has highlighted that soil nutrition is a key area where growers can improve their business. Soil and crop nutrition was also an issue highlighted by growers at a R&D Thank Tank facilitated by Ingrid Roth. As a result of these discussions a grower focus group has been established in the Macintyre Valley with the objective of increasing yields and increasing Fertiliser Use Efficiencies. The group is being facilitated by our local CottonInfo team Regional Development Officer, Sally Dickinson. The group recently met with the CRDC as part of its soil research review. It was highlighted that growers are making decisions from previous year's crop and not on soil test data. It was also highlighted that growers rely on consultants to decide what fertiliser rates they are going to use on their farm. Increasing yields has also resulted in growers applying increased fertiliser rates. There are a number of questions involving critical levels, namely where to apply fertiliser? What fertiliser type to use? How to apply the fertiliser? And the timing of fertiliser application?

Growers that undertake the workshop will learn to make better management decisions when applying fertilisers. It will enable growers to understand and interpret soil tests and allow them to communicate and design a fertiliser program best suited to their business.

The cotton industry will benefit from this project as it will increase fertiliser use efficiency on farms through increased capacity of the growers who have participated in the course and the focus group. Growers will increase productivity on their farms by improving fertiliser use efficiency.

This project will also consider key industry research in the Macintyre Valley, including the CottonInfo team's Nitrogen Use Efficiency trial.

Use

Basic Description of Project:



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The four hour training course provided an overview of the soil, water and climatic factors influencing growth and production of high yielding cotton, with a focus on the impact of soil properties and plant nutrition, and best practice principles in order to manage these for sustainable cotton production. Growers learnt to be able to better interpret soil tests, what nutrients are available in the soil and learnt what nutrients the plant requires when growing.

The first workshop was held at the GTT on Thursday 14 November 2013. It was attended by 14 MVCGA members. The course was conducted by Chris Dowling and Tom Cowlrick from the Back Paddock Company. The discussions before the workshop started highlighted the fact that some growers were using field history to determine fertiliser inputs of relying on their agronomist to make fertiliser a recommendation.

The course highlighted the local growing conditions including Day degree accumulation for the current local season and Chris explained that this would have a big influence on fertiliser demand, particularly nitrogen. Chris explained to the group that we had to look at the day degree values when determining a fertiliser program as in some areas the plant does not get the day degrees required to achieve high yields therefore does not need the fertiliser to meet these demands. Chris gave a good example of the day degrees difference between Emerald in the North and Griffith in the south.

The course highlighted the main areas of concern around nitrogen loss in the field including Volatilisation, Leaching and Denitrification. Chris highlighted to growers that they could be losing up to 40% of applied nitrogen if applied the wrong way.

The course looked at the four R's for nitrogen management in Cotton. Right Rate, Right Time, Right Place and Right Source.

Right Rate - The course outlined the amount of nitrogen required to target a certain lint yield. To grow a 15 bale per ha yield the plant would require 300 units of nitrogen, 50 units of Phosphorus and 150 units of Potassium.

Right Time - Chris spent some time discussing the right time for fertiliser application including nitrogen and phosphorus application, with nitrogen it showed the disadvantages of applying nitrogen all upfront in winter before planting. It also showed the disadvantage of applying the nitrogen to late during the growing season, after 1000 day degrees.

Right Place - The workshop showed growers the importance of applying nitrogen and phosphorus in the right place, firstly not to burn the plant and secondly making it more available to the plant. In the particular applying phosphorus in a band or incorporating it in the soil.

Right Source - Growers have many options when it comes to applying fertiliser sources. The workshop showed the benefits and negatives of applying different fertiliser sources including manure and composts.

The decision was made after the cost of the first workshop to combine the second workshop with the end of season review. Chris Dowling presented at the end of season which was held on the Thursday 22 May 2014. Chris presented local data on the climate of the previous season along with local trial data that was co-ordinated through the cotton info team.

A Nitrogen trial was conducted at "Yambocully" which was a collaboration between Nigel Corish and his Nuffield Scholarship and the CottonInfo team and supported by Jim O'Connor and Chris Dowling. These results were presented and discussed at the End of Season review and have formed part of the CottonInfo teams Nitrogen trial results for the 2013/2014 season.



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Vdvsdvss

Project Outputs and Outcomes:

Growers that undertake the workshop will learn to make better management decisions when applying fertilisers. It will enable growers to understand and interpret soil tests and allow them to communicate and design a fertiliser program for their business.

Growers that complete the workshops will better understand the critical levels that their farm needs for maximum yields.

The project will allow growers a better understanding of the calculations that are required to determine a fertiliser rate.

Growers will also understand better what tests are involved to establish critical levels, for example the Coldwell P tests and the BSES test.

The participation of growers in the focus group will increase the capacity of soil and crop nutrition. This workshop and the focus group will be a trial in engaging growers in soil and crop nutrition and nitrogen use efficiency. Key learning's and outcomes from these processes will be shared with the CottonInfo team through our local Regional Development Officer and the appropriateness of this approach in other valleys will be discussed.

A Cotton Nutrition workshop was held 14/11/13 with 14 growers attending.

Two Nitrogen workshops were conducted with Chris Dowling, Back Paddock, on the 3rd and 4th December 2013 which were attended by over 30 growers and consultants. All participants of the Nutrition workshop attended a Nitrogen workshop. Participant information regarding nitrogen practice and areas of interest were fed into the CottonInfo teams project.

An end of season review meeting was held where local Nitrogen trial data and other data relevant to cotton nutrition and nitrogen management was presented and discussed.

Growers who undertook the workshop and went to the end of season have expressed that they are wanting more workshops and information regarding soil nutrition and that the workshops had changed their thinking and fertiliser decisions. The MVCGA will continue to work the CottonInfo rRegional Development Office to continue to build capacity in the region and build on the work that has already been done through this project.

Proposed Adoption / Communication Actions:



The aim of the project is to get CGA grower members to undertake the training courses. It is an excellent way for the CGA to better educate and build the knowledge base of its members. It is also a great way for the CGA to give back to its members for being involved and part of the association.

The project will also be able to be extended to other CGA's and build its members knowledge of soil nutrition. This will be able to be done through the CottonInfo team and other key industry stakeholders.

Growers will also be able to communicate better with researchers as they will have a better knowledge of soil nutrition and it will hopefully build a relationship with researchers where growers provide researchers with information.

This project will also help to build a regional story of soil and crop nutrition in the Macintyre Valley that can be relayed back to the industry and relevant researchers and extensions staff.

The end season review meeting which the CGA held for the first time last season was very well received by growers . We had Robert Mensah, Duncan Weir, Dave Kelley, Brendon Griffiths, John Hungerford and Phil Sloan present. We covered all areas of the end of the current crop. This project would fit into the end of season review presentations by providing feedback and outcomes to growers.

The CottonInfo Regional Development Officer has discussed this project and its outcomes with the CottonInfo team and the industry more broadly to look to ways to engage more growers and consultants to work towards industry best practice.

The nutrition workshop delivered by Back Paddock captured by way of written survey some evaluation. One of the questions asked was: **"What aspects of your current nutrient management would you consider changing as a result of what you learned at the workshop?"**
– replies summarised below.

Time of application & type of application
better irrigation techniques

Timing, application methods.
reduction in Zn app.
maybe reduction in K

APPLICATION METHODS

PETIOLE TESTS

Petiole testing?

- be more efficient with watering.
- spread not band starter.



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FINE TUNING "N" APPLICATION IN CROP



Preliminary Budget (exclusive of GST)

NOTE: this is NOT an interactive spreadsheet. Please enter all values, including totals.

EXPENDITURE <i>(examples listed – please modify or add to as required)</i>				Sub-Totals
1 st workshop	Back Paddock training course for 12			\$3000
+ GST				\$300
travel				\$250
2 nd workshop	Back Paddock consultant			\$3000
+ GST				\$300
End of Season review	Meeting and BBQ			\$600
TOTAL EXPENDITURE				
INCOME <i>(examples listed – please modify or add to as required)</i>	CRDC	Applicant CGA	Others	Sub-Totals
IN-KIND (non-cash) CONTRIBUTIONS:				



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CASH CONTRIBUTIONS from other sources		\$1200		1200
CASH Requested from CRDC	\$6250			6250
TOTAL INCOME <i>(ensure the Total Income equals the Total Expenditure amount)</i>	\$6600	1200		\$7450
	Applicant's Signature:			
	Applicant Name:			
	Date:			
Thank you for your submission.				



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Some of the attentive crowd at the Nutrition workshop held in November 2013





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