



# FINAL REPORT

## *Part 1 - Summary Details*

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Cotton CRC Project Number: 5.10.01

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**Project Title: Cotton Production Course**

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**Project Commencement Date:** 01-07-2005    **Project Completion Date:** 31-06-2008

**Cotton CRC Program:**    **Adoption**

## *Part 2 – Contact Details*

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## **Background and History**

1. The Cotton CRC's Cotton Production Course was specifically designed to provide Australian cotton industry personnel with a university course that covered the crop science and natural resource management specific to modern, sustainable cotton production. The Cotton CRC effectively encourages a partnership between the research and industry expertise of Cotton CRC participants and the educational expertise of The University of New England and The University of Sydney within their agricultural awards.

This relationship has brought benefits to industry, the universities involved and especially the course participants, the students. Students gain: internationally recognised tertiary qualifications; an integrated education framework, a professional yet commercially independent information and curriculum, awareness of the latest reputable research; industry relevance; and a strong networking experience in the Australian cotton industry. Industry gains: better qualified and educated personnel; an excellent avenue to extend research to those most likely to use it; and a platform to encourage industry leaders in production, business and research. The universities gain the street credibility and recent knowledge that industry researchers and experts bring to the unit manuals and the classroom. The positives of this partnership are well recognised by the students in evaluations that praise the residential schools that form the core of the externally delivered units.

The cotton units are delivered through the University of New England. Students complete the Cotton Production units as internal undergraduates or as full-time cotton personnel studying by correspondence (i.e. as external students, studying off-campus). External students usually complete one unit per semester commonly towards a Diploma of Agriculture, Degree in Agriculture/Rural Science, Graduate Certificate of Rural Science, or Masters of Agriculture. There are many other awards that the cotton units can contribute to, even a course work PhD, but virtually all students so far have used them for Certificate, Diploma, Graduate Certificate or Masters awards. The Cotton Production Course, as we know it, is recognised as a 'major' on receipt of the university award at graduation. For example, a student completing the cotton production units at graduate level will receive a "Graduate Certificate in Rural Science (Cotton Production)". Students choose whether to have their major in cotton production acknowledged on the testamur since it tends to brand them as a specialist.

Internally enrolled (on-campus) students are able to enrol in the first unit of the cotton production course (Applied Cotton Production) at The University of New England, The University of Sydney or The University of Queensland as part of their agriculture, science, natural resource management, economics, or ag-business degrees. This allows students of agriculture at three major Australian universities to learn about the Australian cotton industry before they graduate to fill positions in agriculture. Approximately thirty university students complete the Applied Cotton Production unit each year in this way. Reaching soon-to-be graduates with positive messages about primary production is a very important aspect of the Cotton Production Course project under the prevailing climate of extremely low interest in careers in the sciences and particularly agriculture.

The Cotton Production Course began in 1994 and originally consisted of three units; Applied Cotton Production, Cotton Protection and Cotton and the Environment. At that time the Australian cotton industry was expanding rapidly so there was strong demand for a course that provided the principles of how to grow and protect cotton crops. There was also growing recognition that better environmental management practices were necessary to satisfy governing bodies about cotton farming, particularly in regard to pesticides.

A fourth unit was added in 1999 called 'Cotton Farming Systems and Technology Transfer' when Australian Universities were compelled by the Federal Government to standardise the size of university units to help students move between courses at different universities, here and abroad. The agricultural certificate courses in Australia were deemed to require four units (rather than three at UNE) and be of 150 hours work each (rather than the previous 180 hours). We redesigned our cotton units to meet these requirements. This fourth unit (Systems) accepted the overflow of topics, mainly by shifting the communications workshop into the fourth unit. Important ancillary topics that related to cotton production were also added to the cotton production course over the next three years. These included understanding cotton fibre technology, cotton spinning, and how to compare the economic performance of cotton farms. Systems is also a unit that has been used to accommodate personnel development topics like team working and presentation skills. Some topics are very much about cotton production, its products and markets, others are about general attributes that we consider useful for graduates in industry. This year (2008), in response to student evaluations, the residential school for the Systems unit was redesigned to accommodate a full day of on-farm consultancy, rather than the previous 3 hour session. Cotton production, the environment have always been major topics in the consultancy but this year there was a strong emphasis on 'the business of farming' particularly under our current low water and poor economic situation. We also included aspects of current socio-economic impacts in rural Australia and an introduction to leadership.

The cotton production units attract experienced and trainee agronomists, including growers from throughout the cotton growing areas of eastern Australia. Recent drought years and declining terms of trade for cotton have reduced enrolments to approximately 30 to 40% of the hay days. Cotton acreages in Australia are down to approximately 10 to 15% of the hay days and student enrolments have followed this considerable reduction in employment. These days the cotton course mainly services the needs of trainee agronomists and trainee consultants, many completing the course immediately following their agricultural degrees.

Each unit offered externally includes a residential school of three to four days duration. Internally enrolled (on-campus) students take part in a three day excursion to the Narrabri/Moree areas and/or receive a workshop at their University delivering the Applied Cotton Production material.

The cotton course continues to receive very positive reviews from the industry and participants particularly about the residential schools but the size of the market demanding specific cotton production education is declining.

## **Objectives**

2. The objective of the Cotton Production Course is to provide external, tertiary level education in cotton production to Australian cotton industry personnel. The course continues to reach many internal and external students with this objective although the numbers of external graduates has reduced to ten per year rather than the 20 to 25 of the boom years.

A secondary objective but arguably the most important under the current crisis of insufficient interest in agricultural careers, is to reach undergraduate agriculture students with positive messages about cotton production. Providing the course to undergraduates in their final year of their agriculture degrees at three major universities projects a much better image of cotton production to those on paths that could soon lead into Australian agriculture.

The milestones for the Cotton Production Course relate strongly to maintaining and developing the course to best serve the students in their desire to understand and therefore improve the sustainability of the cotton production systems in Australia.

## **Results**

3. **Student evaluations:** Appendix 1 presents the most recent student evaluation. These are run annually and have consistently provided the results described in this most recent survey. The students have consistently given high praise to the operation and content of the course, particularly the presentations from research and industry experts at the residential schools.

**Numbers of graduates:** Given the complications of the awards system (explained in the background section) it is not a simple matter of counting the number of Certificates in Agriculture and Graduate Certificates in Rural Science with a Cotton Production major, to give the number of Cotton Production Course graduates. Table 1 lists the students who have completed the equivalent of the Cotton Production Course over the last three financial years by completing all four of the Cotton CRC/UNE cotton units and would therefore have qualified (if enrolled in a four unit award) for a Certificate of Agriculture or Graduate Certificate of Rural Science and graduated at the next opportunity. There were 30 students who achieved this in the period from June 05 to July 08 (Table 1).

Note that five of these students used the cotton production units towards a course work Masters award. This is one of the Cotton CRC milestones, to develop pathways for Masters awards majoring in cotton production. Furthermore, one student (not listed) added extra agriculture units to his cotton certificate, then added a cotton related research project to achieve a Master of Science in Agriculture.

About thirty undergraduate students complete the Applied Cotton Production unit each year as an elective subject within their agriculture degrees. These students attend university on campus at The University of New England, The University of Sydney or The University of Queensland. This means approximately 90 students over the last three years have been presented with the principles of cotton production shortly before they enter the workforce. In the current climate of poor interest in agricultural careers, this is arguably the most important role of our education program.

**Table 1: Cotton Production Course Graduates: July 2005 to June 2008**

<b>First Name</b>	<b>Surname</b>	<b>Award</b>	<b>Semester of Graduation</b>	<b>Year of Graduation</b>
Willy	Heimoana	MastersAg	2	2005
Scott	Reichelt	GradCertRurSci	2	2005
Melinda	Crocket	GradCertRurSci	1	2006
John	Lehane	CertAg	1	2006
Justin	Luckel	CertAg	1	2006
Lyndon	Mulligan	AdvDipAg	1	2006
Gregory	Rigby	CertAg	1	2006
Ramiro	Martinez	GradCertRurSci	1	2006
Mathew	Ward	GradCertRurSci	1	2006
David	Brown	MastersSciAg	1	2007
Robert	Ward	DipAg	1	2007
Loretta	Hanley	CertAg	1	2007
Rory	Kerlin	CertAg	1	2007
Robert	Annettes	GradCertRurSci	1	2007
Karen	Kirkby	GradCertRurSci	1	2007
Stanley	Paynter	DipAg	2	2007
Elizabeth	Apuli	GradCertRurSci	2	2007
Michelle	Chisholm	CertAg	2	2007
Daniel	Gall	CertAg	2	2007
Jessica	Holland	CertAg	2	2007
Nathan	Eulenstein	GradCertRurSci	2	2007
Amanda	McAlpine	MastersAg	1	2008
Joshua	Connell	MastersAg	1	2008
Bruce	Crosby	MastersAg	1	2008
Zeb	Dawson	GradCertRurSci	1	2008
Lauryn	Hanna	GradCertRurSci	1	2008
Steven	Muller	GradCertRurSci	1	2008
Ryan	Pratten	GradCertRurSci	1	2008
Joanne	Price	GradCertRurSci	1	2008
Matthew	Skerman	GradCertRurSci	1	2008

The University of New England has introduced two new systems this year to improve the delivery and assessment of its courses. The first is the turnitin® system that checks assignments (submitted electronically) for common text. This allows course coordinators to identify plagiarism and/or students who have difficulty preparing essays. The UNE has also upgraded its web delivery system, Blackboard®. The coordinator has redesigned the web site for each unit.

## 4. **Outcomes**

### **Milestones**

The goals of the last three years of offering the Cotton Production Course can be summarized by the following milestones:

i) To maintain a tertiary level course on cotton production at The University of New England for the Cotton CRC. This requires achieving or exceeding the standards of The University of New England and other universities including the Applied Cotton Production Unit in their electives.

ii) To generally upgrade the unit material and course delivery in consultation with Cotton CRC partners and presenters, course participants and university requirements.

iii) In particular, to align the natural resource management topics in the Cotton and the Environment manual to the Cotton Industry's Best Management Practices program.

v) To further develop the Cotton Farming Systems Unit.

iv) To graduate 45 students from the cotton course.

### **Progress against Milestones.**

#### **i) Maintaining the Cotton Production Course**

The Cotton Production Course units remain in the official calendars of the various universities offering them within their awards. The cotton course coordinator has seen to it that all university requirements are met or exceeded. This includes the collation, printing and dispatch of unit materials and the creation of assignments and assessment schedules. Lectures are programmed and reliably delivered. No lectures, tutorials, res-schools, workshops or exam sessions have been delayed or cancelled over the last three years (in fact, over the last seven years). All residential schools have been organised and run, and when presenters were unable to attend, replacements have been organised.

All unit delivery requirements: course outlines, study materials, assignments, online assessments, assignment marking, exam setting, delivery and marking, result setting. All procedures that address unusual or problematic student situations have been addressed, as well as all university policy and administration training done.

Links to industry presenters have been maintained and upgrading of materials requested when and where appropriate.

***ii) and iii) Upgrading notes:***

- ❖ Regular small upgrades in all unit manuals: production statistics and references or links to the latest Cotton CRC publications.
- ❖ Regular upgrades to the online delivery of the course using the UNE Blackboard® system.
- ❖ Regular upgrading of assignments, particularly to reflect the latest agronomy, like the introduction of transgenic cotton varieties.
- ❖ Introduction of a new topic into the Applied Cotton Production unit on 'Precision Agriculture'.
- ❖ Introduction of a new topic to the Cotton and the Environment unit on 'Climate Change'
- ❖ Rewriting and restructuring all topics in the Cotton and the Environment manual to better align with the Best Management Practices program.

***iv) Developing the Cotton Farming Systems Unit:***

The Cotton Farming Systems unit has received a much greater emphasis on the economic and business side of farming. Student evaluations were unanimous in asking for more time for the on-farm consultancy within the Cotton Farming Systems residential school.

- ❖ Reduction in the time devoted to the communications workshop. Two days down to one.
- ❖ Half day session on the basics of business performance by Mr. Mark Morton (Practical Systems). This followed the presentation by David Newnham (Boyce Chartered Accountants of the latest Boyce report (comparative analysis).
- ❖ A full day spent at Auscott (Narrabri) for the on-farm consultancy where students prepare a report to make recommendations on how to improve, production, environmental practices and, now, business decisions and management. Contributors to the discussion were, Mike Logan (CRDC), Harvey Gaynor (Auscott, Moree/Midkin), Henry Taylor (Auscott Narrabri), and Mark Morton (Practical Systems).

This has laid the foundation for further developments that reflect the diversity of farming decisions occurring on farms traditionally devoted to cotton.

***v) Generating 45 Cotton Production Graduates:***

Not fully achieved: Somewhere between an industry that produced 550,000 hectares of cotton in 2000 to the present one of only 55 thousand hectares (2007-08) the attraction to students of cotton careers has declined markedly. This has occurred along with a general demise in enrolments by students in agriculture across Australia and abroad. It is a credit to the Cotton Production Course that the student numbers in the external mode have only declined to

30-40% of their former glory. Student numbers in industry courses have followed employment closely. It is important to consider the 90 on-campus students reached during this 3 year project period with the Applied Cotton Production along with this external graduates target figure.

5. This section is not applicable to the Cotton Production Course project as it is currently structured.

### ***Conclusion***

6. The Cotton Production Course continues to provide a highly regarded university external certificate course and internal elective unit. The combination of industry credibility and the rigorous university educational expertise provides a natural symbiosis for high grade, industry relevant education. The course has met all of its university policy requirements with the teaching and delivery of the four external (off-campus) courses and the three internal (on-campus) modes of delivering the Applied Cotton production course.

The course can claim to have reached a very high proportion of the most relevant cotton personnel with the latest research and education. Over recent years the course can also claim to have enthused and educated undergraduate agriculture students at three Australian Universities on the essentials of cotton production. This is a very positive response to recent difficulties in attracting students into agricultural careers for primary production and/or agricultural research.

Although the Cotton Production Course is struggling to attract the number of students that it did when irrigation enterprises had sufficient water allocations and cotton commodity prices were stronger, this position could reverse quite quickly. It could be argued that maintaining the Cotton Production Course through this rough patch is warranted, at least while the dedicated funding from the federal system for the promotion of cotton research remains.

### ***Extension Opportunities***

By its nature, the activities of the cotton production course provide an extension role. For example: The Cotton and the Environment unit was rewritten last year to increase the emphasis on best management practices (BMP) of the industry. Several activities of the course coordinator take cotton messages to the general public as well as industry personnel. In particular the course coordinator visits a local Armidale school to teach entomology. The coordinator also gives presentations to schools when they visit university for science week and for the Siemens' Science School. These presentations generally take the form of hands-on-science workshops (about 4 -5 sessions per year 2 hours per session). There are regional careers expos and university open days that I attend to encourage students into science/agriculture/cotton awards. I also provide supervision for post graduate students.

## **Publications**

9. The Cotton Production Course publications are stories for newspapers that advertise the activities and success of the students. The development of unit materials might also be seen as publications and has been dealt with under the section on outcomes. Publications are therefore best represented by the marketing activities of the course coordinator over the last three years:

<b>Avenue</b>	<b>Audience &amp; Message</b>
<b>Industry Newsletters</b>	
<i>Cotton Tales Cotton Reel Cotton Chat / Cotton E-news Seed for Thought (CSD) CCA</i>	<i>Cotton Consultants and trainee farm agronomists. 'Enrol now' in the Cotton Production Certificates or Masters courses. Dates and Enrolment details.</i>
<b>Magazine Publications</b>	
<i>Australian Cottongrower Magazine (1/4 page banner)</i>	<i>Prospective students from industry. Enrol Now: Turn your cotton production course a Masters award.</i>
<i>Australian Cottongrower Year Book (1/4 page banner)</i>	<i>Prospective students for next years enrolments. Enrol now for 2009</i>
<b>Cotton CRC website</b>	
<i><a href="http://www.cotton.crc.org.au/content/Industry/Education/Cotton_Production_Course_UNE.aspx">http://www.cotton.crc.org.au/content/Industry/Education/Cotton_Production_Course_UNE.aspx</a></i>	<i>Prospective students: Cotton Production Course Outline at UNE as detailed information.</i>
<b>UNE website</b>	
<i><a href="http://www.une.edu.au/courses/2008/courses/search?courseKeyword=Cotton+Production">http://www.une.edu.au/courses/2008/courses/search?courseKeyword=Cotton+Production</a></i>	<i>Detailed UNE information in awards that include the cotton units for students who need awards details.</i>
<i>Web on Wednesday</i>	<i>All cotton industry</i>
<b>Newspaper Editorial/Media Releases</b>	
<i>Undergraduate Cotton Course excursion (March 2008)</i>	<i>Letting current and prospective students know we have a large contingent of university students in cotton at UNE, USyd and UQ, and that we are in their cotton growing communities.</i> <ul style="list-style-type: none"> <li>• <i>Narrabri Courier</i></li> <li>• <i>Border News</i></li> <li>• <i>Cotton Magazine</i></li> </ul>
<i>Graduation media release (April 2008).</i>	<i>Graduation pictures and editorial of cotton production student results. Sent to particularly the local papers where the students hale from.</i> <ul style="list-style-type: none"> <li>• <i>Border News</i></li> <li>• <i>Moree Champion</i></li> </ul>
<b>Expos &amp; Field days</b>	
<i>UNE open day</i>	<i>Prospective students in Agriculture recognising we have the CRC connections for electives in later years of their degrees</i>
<i>Careers Expo (Tamworth)</i>	<i>Uni Student intake for careers in Agriculture and cotton (On UNE stand)</i>
<i>Careers Expo (Armidale)</i>	<i>Uni Student intake for careers in Agriculture and cotton (on Cotton CRC stand)</i>
<i>Farm Fest QLD. (Dalby-Toowoomba) UNE rep.</i>	<i>Prospective students from across the Agricultural Sector in Qld.</i>
<i>Note UNE also sends representatives to AgQuip NSW in Aug-Sept.</i>	

<b>UNE representation at field days and expos for agriculture degrees including the cotton CRC units</b>	
<i>General info sent with UNE representatives to agricultural promotion days. Includes when on: Cotton Tradeshow (Moree), AgQuip (Gunnedah), NE Wool Expo (Armidale), UNE Promotional tour (Dubbo,</i>	<i>UNE as an Agricultural centre of education. Generally John Stanley, Craig Birchall, Robin Jessop who promote the Cotton and Grains combination for Masters award.</i>
<b>Promotion of post-graduate research via UNE publicity office</b>	<i>eg. Black Root Rot research project.</i>
<b>Email and Phones</b>	
<i>Sending Course Outlines and Flyers to students enquiring directly to the Cotton Course Coordinator</i>	Targeting those who have made contact.

## ***Part 4 – Final Report Executive Summary***

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### **Executive Summary**

The cotton production course project continues to provide a highly regarded, externally offered, tertiary level course specific to cotton production. The Cotton CRC units have been faithfully delivered via The University of New England and fulfil all the requirements of materials, student guidance, on-line delivery and assessment.

Significant development of the course and upgrading of the notes has been achieved over the past three year. Highlights include the rewriting of the Cotton and the Environment manual to better reflect the Best Management Practices (BMP) program of the cotton industry and two completely new topics; 'Precision Agriculture' in the Applied Cotton Production unit and 'Climate Change' in the Cotton and the Environment unit.

Numerous improvements have been made via the new UNE on-line delivery system (Blackboard®) and anti-plagiarism software (turnitin®). Many references and linkages have been introduced that direct students to Cotton CRC publications. There have also been regular upgrades to lectures, notes and assignments.

The Cotton Farming Systems Unit has been modified in response to student evaluations to include a much greater emphasis on economics and business in the on-farm consultancy exercise at the residential school. The residential schools in all the cotton units remain the best part of the course according to student evaluations.

External student numbers are low compared to the hay days of Australian cotton industry but surprisingly healthy relative to current cotton acreage and employment prospects. Currently we are graduating ten students per year with the equivalent of a Cotton Production Course certificate, whereas 20 to 25 were graduating when the industry was almost ten times this size. About 90 on-campus, undergraduate students complete the Applied Cotton Production unit as part of their agriculture degrees over the past three years.

**Appendix 1:** Sample evaluation of Student responses. In this case external student evaluation of the Applied Cotton Production unit. (note: reference to on-campus mode is incorrect)

UNE

**STUDENT FEEDBACK ON UNIT**

2008

Unit Surveyed: **COTT300/500**  
**Applied Cotton Production**

School of Environmental and Rural  
Science

Coordinator:	Dr John Stanley	Ref:	6730
Delivery Mode:	ON On Campus	S1	Semester 1
Location:	Armidale		
All students enrolled :	10	Respondents:	10
		<b>Response Rate:</b>	<b>100.0%</b>

Printed:	4/07/2008	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)	Not Applic	Did not Respond	Median	Mean	Std Dev
1.	It was clear to me what I could expect to learn from this unit.	0 0.0%	0 0.0%	2 20.0%	8 80.0%	0 0.0%	0 0.0%	4	3.80	0.4
2.	I understood what I needed to do to be successful in this unit.	0 0.0%	0 0.0%	2 20.0%	8 80.0%	0 0.0%	0 0.0%	4	3.80	0.4
3.	I believe the unit covered what the unit description said it would.	0 0.0%	0 0.0%	0 0.0%	10 100.0%	0 0.0%	0 0.0%	4	4.00	0.0
4.	The assessment tasks assisted my learning in this unit.	0 0.0%	0 0.0%	1 10.0%	9 90.0%	0 0.0%	0 0.0%	4	3.90	0.3
5.	I found the feedback that I received was helpful.	0 0.0%	0 0.0%	2 20.0%	8 80.0%	0 0.0%	0 0.0%	4	3.80	0.4
6.	The resources associated with this unit contributed to my learning.	0 0.0%	0 0.0%	1 10.0%	9 90.0%	0 0.0%	0 0.0%	4	3.90	0.3
7.	The amount of work I was expected to do in this unit was:		Minimal 0 0.0%	Appropriate 10 100.0%	Excessive 0 0.0%		0 0.0%			
8.	On average, how many hours a week did you work on this unit?		0-5 5 50.0%	6-10 5 50.0%	11-13 0 0.0%	14-19 0 0.0%	20+ 0 0.0%			
9.	All things considered, my overall rating of this unit is:		Poor 0 0.0%	Satisfactory 0 0.0%	Excellent 10 100.0%		0 0.0%			

