Cotton
RESEARCH & DEVELOPMENT

Annual, Progress and Final Reports

Part 1 - Summary Details **REPORTS**

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

CRDC Project Number: **213C**

Annual Report: ☐ Due 30-Sep-03

Progress Report: ☐ Due 29-Jan-03

Final Report: ☒ Due 30-Sep-03
(or within 3 months of completion of project)

Project Title: "Travel : Beltwide Cotton conference, Nashville USA"

Project Commencement Date: 4/1/2002 **Project Completion Date:** 13/1/2003

Research Program: Technology Transfer and Extension

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Part 3.3 – Final Reports

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

1. **Outline the background to the project.**

   The intent of the project was to travel to the 2003 Beltwide cotton conference in Nashville, USA. The Beltwide presents a unique opportunity to interact with many of the World's leading cotton researchers at one time. It also allowed me to present some of the novel and informative research that is originating from the northern Australian cotton project.

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

   The objective of the project was to travel to the USA and to attend the Beltwide cotton conference in Nashville which ran from January 6 to 11, 2003. At the conference I presented a poster and a talk on the phosphorus research that is being undertaken by the northern cotton group in Kununurra. Judging by the number of questions that I received relating to the research and the project in general I believe that both were well received.

3. **How has your research addressed the Corporations three outputs: Sustainability, profitability and international competitiveness, and/or people and community?**

   The objectives of this project were to attend the Beltwide conference. It is hoped that the information obtained at the conference would be useful to the northern Australian cotton research team and subsequently the sustainability, profitability and competetiveness of any industry that may develop. That said, much of the information obtained is relevant to the whole Australian cotton industry. Information regarding new technology such as new transgenic insecticidal technologies of VIP and MXB-13, results from Bollgard II trials in the US and herbicide resistance technologies systems Roundup Ready Flex and Liberty have already been disseminated to other cotton researchers both in northern australia and the traditional cotton growing areas of Northern NSW and Queensland.

4. **Detail the methodology and justify the methodology used.**

   I departed Australia and arrived at Nashville on the Jan 5th. As stated in the application for funding a round-the-world ticket was considerably cheaper than a return flight across the Pacific. I stayed at the Fairfield Nashville, a 20 minute walk from the conference venue and considerably cheaper than the conference accomodation lodging options. The conference ran from the afternoon of the 6th until the afternoon of the 10th of January. On the morning of the 11th of January I flew out of Nashville and on the 12th flew back to Australia, finally arriving back in Kununurra on the 15th of January.

5. **Detail results including the statistical analysis of results.**

   A more detailed report on the conference is being circulated to other cotton researchers and the CRDC board members. In short, the report contains details on the various sessions including Trade, globalisation and protectionism; Transgenics; Chemicals; Equipment; Soils; Physiology; and Cotton improvement and quality assurance.

6. **Discuss the results, and include an analysis of research outcomes compared with objectives. What are the "take home messages"?**

Attend the conference provided a lot of useful information about what is happening in the USA industry, to a lesser extent which way the industry is heading, what technology is being developed by USA based companies such as Monsanto, Syngenta, Bayer and John Deere, and what the global outlook for cotton is in the near future. It also enabled me to interact with other cotton researchers from both the USA and from around the world as well as present some of the northern cotton project teams results. This compares favourably with the outlined objectives which were to present results from the northern cotton group's research and interact with other cotton researchers from around the world.

7. **Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. Where possible include a statement of the costs and potential benefits to the Australian cotton industry and future research needs.**

The benefit of attending this conference will be the dissemination of information on cotton research and product development in the United States of America to other researchers in Australia. Beltwide is where most of the cotton research being undertake in the USA is presented and is the best resource for obtaining this information and then passing it on to Australian researchers. It also reminds US researchers that excellent research is being performed in Australia and should therefore promote the exchange of information and ideas between cotton researchers in both countries.

8. **Detail how your research has addressed the Corporations three Outputs: Sustainability, and/or Profitability & International Competitiveness, and/or People & Communities?**

I believe that the research that I presented at the Beltwide cotton conference addresses the first two of the CRDC's outputs, that is Sustainability and Profitability and International Competitiveness. I presented a paper at the conference describing the efforts of CSIRO research in the Ord River Irrigation Area designed to determine how much and what source of phosphorous is required for dry season cotton production if an industry is to develop. This type of research is crucial given the inherintly low levels of phsophorus in the native soils. This is of importance to both the Sustainability and Profitability and International Competetiveness outcomes set out by the CRDC as northern Australia has the potential to contribute a significant of the nations cotton crop and an 'off-season' production systems would add to the stability of Australia's cotton production which should make us a more reliable supplier of cotton to overseas markets.

9. **Describe the project technology (eg. commercially significant developments, patents applied for or granted licenses etc).**

Several technologies were discussed at the meeting including new insecticidal systems from Syngenta and Dow Agrochemicals and herbicide resistance systems from Monsanto and Bayer. Several research papers relating to the implementation of these products were also presented at the conference as were new chemicals (eg growth retardents), alleviating environmental problems such

as the use of chicken manure as a fertiliser, minimum tillage research and equipment aimed at better identifying cotton fibre characteristics.

10. Provide a technical summary of any other information developed as part of the research project. Include discoveries in methodology, equipment design, etc.

It would be impossible to present the methodology from all the information presented at Beltwide. However, I believe that in general the weed management papers and subsequent research has made me reconsider the design of the Roundup ready trials planned for Kununurra this coming season. Glyphosate tolerant weeds and species shift are a considerable problem facing the US cotton industry. Having been alerted to this issue, and given that the same weeds grow in both the wet and dry season, provided that they are in-crop and irrigated, this could become an even greater issue for northern Australia. As a result, the northern cotton project will be undertaking some novel methodologies to assess what weeds are present in the field that will contain the Roundup ready trial and how they are controlled (ie with pre-emergent herbicides, with Roundup post-emergent or a combination of the two).

11. Detail a plan for the activities or other steps that may be taken;

(a) to further develop or to exploit the project technology.

After having heard how one researcher who presented at the Beltwide cnference is investigating yield composition I will be taking further measurements when I begin to process samples that I took for a similar study last season (2002). While the researcher presented varietal differences in yield composition I will be looking more at how it is affected by the environment.

Also, many talks at Beltwide disscussed the use of Roundup Ready and as this is the first year that the product is to be evaluated in northern Australia hearing those talks has made me conside other aspects of how to run these trials, in particular managing herbicide tolerant weeds.

(b) for the future presentation and dissemination of the project outcomes.

A summary on what talks and issues I found interesting has been prepared and disseminated to other Australian cotton researchers and the CRDC board members and is available upon request. Also, an article outlining issues and technology discussed at the conference was written in conjunction with Greg Kauter of CSD and was published in the Feb-March 2003 issue of 'The Australian Cottongrower'.

12. List the publications arising from the research project.

A paper entitled 'Cotton yield response to sources, rates and placement of P fertilizers in tropical Australia' was presented at the conference and will be published in the proceedings of the conference

13. Are changes to the Intellectual Property register required?

No

Part 4 – Final Report Executive Summary

I believe that the talks presented at the Beltwide cotton conference which will have the greatest impact on researchers, and the Australian cotton industry as a whole, will be the new transgenic insecticidal packages of MXB-13 from Dow Agroscience and VIP from Syngenta, along with the herbicide resistance packages of Roundup Ready Flex from Monsanto and LibertyLink from Bayer. While some of these products may never make up significant portions of the Australian cotton crop, others will. Hopefully in the next few years these products can be evaluated and the value of each to the Australian cotton industry be determined.

In terms of non-patentable concepts presented at the conference, the individual internode distance (IID), which was presented by Dr Tom Kirby from Delta & Pine land, may have a use for growers and consultants monitoring cotton crop development in Australia. Dr Kirby proposed a graph which showed the theoretical IID value at each stage of the crop's development. As crops became stressed the fell away from this curve (ie the IID became smaller). This could be a useful tool for Australian growers to identify a stress very shortly after it occurs and allow them to hopefully alleviate it before it is too late and yield adversely affected.

I don't believe that any information presented at the conference would have benefits specifically for the northern Australian cotton research project. Rather, the information is just as relevant to the traditional cotton growing areas in northern NSW and Queensland as it is to northern Australia. In particular, technology such as the insecticidal gene technologies should have a dramatic impact in both areas. I found the talks on cotton yield and yield composition the most relevant to my research and interests. As a result, there are other measurements related to yield composition in cotton, such as seed weight and possibly surface area, as well as the fruiting position that I will now be taking.