



# TRAVEL, CONFERENCE or SCIENTIFIC EXCHANGE REPORT 2016

## ***Part 1 - Summary Details***

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

**CRDC Project Number:** CSP1606

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**Project Title:** The World Cotton Conference 6 – Goiania Brazil 2016

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**Project Commencement Date:** 21-04-16      **Project Completion Date:** 15-05-16

**CRDC Research Program:** 4 People

## ***Part 2 – Contact Details***

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**Signature of Research Provider Representative:** \_\_\_\_\_

**Date Submitted:** \_\_\_\_\_

**21-06-16** \_\_\_\_\_

## ***Part 3 – Travel, Conference or Scientific Exchange Report***

*(Maximum two pages)*

### **1. A brief description of the purpose of the travel.**

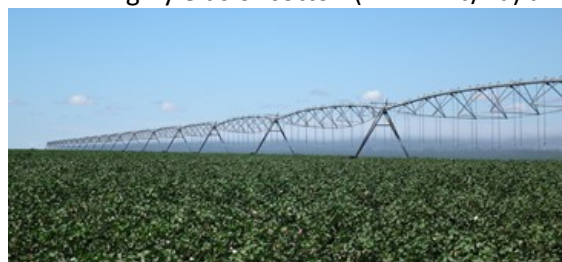
Attendance at WCRC-6 in Brazil and study tour was a cost effective opportunity to complement my CRDC project CSP1602 and its collaboration with other Northern projects. Brazil has the closest climate combined with similar rotation crops (e.g. maize, tropical legumes, sugar) and scale of mechanised farming to what is needed if cotton production is to succeed in tropical Australia. The purpose of the travel to examine components of the Brazilian system most relevant to tropical Australia: 1) reduced tillage systems; 2) managing weathered soils with the use of rotation / cover crops to maintain and cycle soil C and nutrients; 3) double cropping (e.g. 2-3 crops back to back) to exploit the long growing season thereby increasing return to capital; 4) integration of the cropping system with beef production.

CRDC supported travel to and attendance/presentation at WCRC-6. Two weeks further travel to visit commercial farms and research in Brazil and northern Argentina was supported by CSIRO, TMG (Bahia and Mato Grosso, Brazil), UNOESTE (Sao Paulo, Mato Grosso do Sul, Brazil), INTA (Reconquista, Argentina).

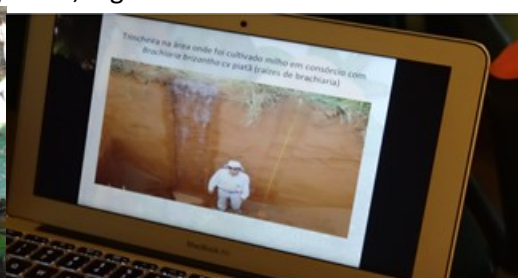
### **2. What were the:**

#### **a) major findings and outcomes**

- WCRC-6 provided a mixture of big picture and specific issues relevant to northern Australia e.g. progress in breeding for nematode resistance in cause textured soils, pest management challenges for Bt cotton in multiple cropping systems in Brazil, India and China. The best presentation was the review of the Indian Bt situation where a long growing season combined with poor management of secondary pests has created significant pest management problems and was very relevant given the eminent release of BG3 in Australia and expanded planting windows.
- Double cropping irrigated cotton / grain legumes zero tilled in to mulch cover. The system at 'Fazenda Santana' western Bahia, Brazil was the most similar (climate and soils) to a potential system for northern Australia for hard-setting cause textured soils. It demonstrated a high yielding system that overcomes soil crusting and nutrient cycling challenges while producing high yields of cotton (11 – 12 b/ha) and soybean (4 – 5 t/ha) in the same calendar year.



Left –early February sown cotton on 8 May 2016; Right – automated control of centre pivots

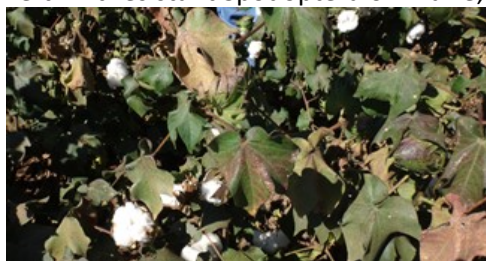


Left – cotton sown into soybean mulch cover; Right – deep roots extract water from wet season and recycle nutrients

iii) Pest and weed management and pesticide resistance issues in double cropped Bt systems



Left – Bt resistant Spodoptera on maize; Right – glyphosate resistant fleabane and digitaria



Late season white fly induced by excessive early season use of broad spectrum insecticides.

### **b) other highlights**

Integration of crops with beef and grass pastures in Brazil. Brachiaria is undersown with corn or soybean to re-establish the pasture following a cycle of cropping. Developing a similar system for northern Australia would provide excellent synergies and improve farm returns.



Left – Brachiaria undersown with maize; Right - next season the established pasture after 1<sup>st</sup> grazing.

Recent modification of the cotton production system to mitigate climate challenges and boll weevil in northern Argentina was achieved by significantly reducing the growing season length and production costs then integrating cotton into a multiple cropping system.

### **3. Detail the persons and institutions visited, giving full title, position details, location, duration of visit and purpose of visit to these people/places. (NB:- Please provide full names of institutions, not just acronyms.)**

In addition to attendance and presentation at WCRC-6: Dr Marcelo Paytas and team, INTA Reconquista Argentina; Dr Fabio Echer and team UNOESTE, SP Brazil; consultants Ruban Staudt (Chapadão do Sul) and Kasua (Fazenda Santana), Dr Edwardo Kawakami, Paulo Agualar FMT, Mato Grosso, Brazil, Inacio Modesto( Bom Futuro) and the many farmers I visited.

### **4. a) Are there any potential areas worth following up as a result of the travel?**

- Confirmation of the need for mulch farming on crusting and hard setting soils in northern regions. The contacts and photos from farms implementing this technology on a very large scale will be invaluable giving new growers to confidence to test and develop local systems.
- More information on the breeding and selection of varieties with tolerance to boll rots and greater recovery from low radiation during flowering.

### **b) Any relevance or possible impact on the Australian Cotton Industry?**

Lessons from India, China, Brazil for the management of longer planting window BG3 systems in Australia. Where the longer planting window is adopted secondary pests pose a significant risk if not managed correctly from the onset. Australia's RMP for BG3 varieties is designed to prevent resistance

of Helicoverpa to Bt proteins only. Such resistance has not developed in the above countries but secondary pests have become significant due to poor management

**5. How do you intend to share the knowledge you have gained with other people in the cotton industry?**

I intend writing a more detailed brief covering the key management issues identified during this visit relevant to northern Australian cotton investors. The brief will be given to and discussed with all investors. I will also use this information to establish locally tailored research and demonstrations with my current collaborators.

**6. Please list expenditure incurred. (*Double click inside the table to enter the data*)**

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**Please email your report by 21 June 2016 to: [research@crdc.com.au](mailto:research@crdc.com.au)**