



SCIENTIFIC EXCHANGE Final Report

Part 1 - Summary Details

Cotton Catchment Communities CRC Project Number:

**Project Title: World Cotton Research Conference attendance and
presentation - Stephen Yeates**

Project Commencement Date: 6/1/11

Project Completion Date: 13/1/11

Research Program:

Part 2 – Contact Details

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A handwritten signature in black ink, appearing to read "Stephen Yeates", is written over a light grey rectangular background.

Part 3 - Travel Report

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

1. What were the:

a) Major findings, outcomes and highlights.

1. India's success with Bt cotton.

The amazing success of Bt cotton in India since its introduction in 2006 was a major highlight of the conference. Not only have yields increased by about 240% (from 1 to 2.4 b/ha) the area sown to cotton has increased from 8 to 12 million ha in 2011. India is now the second largest producer of cotton and sows the largest area of cotton in the world. The secondary benefits of this increased production were seen in the Nagpur field tour via new breeding, ginning and spinning infrastructure. This success has come at a price to genetic diversity as India was a major producer of *G. Barbadense* and *G. aboreum*. Due to the adoption of Bt cotton 95% of cotton is now *G. hirsutum*. On the field tour it was pleasing to see progress to incorporate Bt genes into the other cotton species.



Plate: The Australian delegates at the Central Institute for Cotton Research – Nagpur.



Plate: *G. aboreum*

2. Zero till production systems in tropical Brazil.

The plenary paper by Landers and Sa was highly relevant to my current research supported by the Cotton CRC. Brazil like India has had massive increases in yield in recent years, being 2nd to Australia for average yield in 2010 at 1500 kg lint /ha. However unlike India yield improvements in Brazil have come from agronomic management and crop rotation. A key component of this practice change has been the wide spread adoption of zero tillage. The adoption of zero tillage was poor for many years as pioneering farmers and researchers refined the techniques for the local environment while the rest of the farming community looked over the fence until they had the confidence to adopt.

The tropical production areas of Brazil have more in common with the Burdekin than anywhere else in the world including southern Australia. It combines large scale mechanised farming with a monsoon climate. Hence there will be much to learn from the Brazilian experience with cotton. It is likely cotton production in the Burdekin will follow a similar pattern of adoption to Brazil with slow initial uptake prior to the sowing of a significant area. The adoption of minimum or aero tillage is only one technological change required in the Burdekin as growers must also adapt a cane only cropping system to incorporate cotton production; a new crop to the majority.

3. Pigeon pea for the prevention of Mealy Bug infestation.

The tour to the Central Institute for Cotton Research at Nagpur showed cotton with a pigeon pea border crop. The pigeon pea is not attractive to mealy bug and because mealy bugs do not fly it acts as a barrier to their infestation of the cotton field.



Plate: A pigeon pea border of a cotton field to prevent mealy bug infestation.

4. Communication and adoption of complex management systems.

Dr Derek Russell's, (Melbourne University) presentation that reviewed the challenges of transferring IPM technologies to farmers fields. This presentation covered important learning's in transferring complex technologies. Such technologies require intense extension efforts over prolonged periods for significant adoption to occur. Dr Russell concluded that simplification of these management systems brought easier and more rapid adoption. The clear message for my current work in north Queensland was that sustainable cotton faming systems must be relatively simple as will their extension messages.

2. Detail the persons and institutions visited, giving full title, position details, location, duration of visit and purpose of visit to these people/places.

Conference was held at Mumbai, the field tour in the Nagpur region.

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

Yes I have already followed up by email with researchers from Brazil (John Landers, Prof João Sá) regarding tillage systems in the monsoon tropics.

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

Broad acre cotton production in tropical Brazil has similar climatic challenges to north Queensland. Over the last 10 years Brazilian yields have steadily increased due to the development of locally adapted farming systems. The conference gave me a chance to get some knowledge of current R&D in Brazil and make additional contacts for a scientific exchange planed for 2012.

The planting of pigeon pea around a cotton field to act as barrier to mealy bug should be considered in northern Australia and other regions with mealy bug. This will provide an additional use for pigeon pea other than as a refuge.

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

One to one and via meetings and field days in the Burdekin region.

5. Executive summary. Provide a one paragraph summary of the scientific exchange, suitable for posting on the Cotton CRC web site.

Stephen Yeates attended the World Cotton Conference in Mumbai, India, November 7 to 14, 2001. Highlights were: (1) the adoption of Bt cotton which has increased Indian cotton yields by 240% and increased the area sown to cotton by 4m ha; (2) The development and adoption of zero-tillage that has increased yields in Brazil which has a very climate similar to the Burdekin. (3) The use of pigeon pea borders to prevent infestation of cotton fields by mealy bugs; a pest in the Burdekin (4) The lesson for the extension of complex sustainable managements systems (e.g. IPM) was 'keep it simple'. Dr Yeates presented a lead paper 'The adaption of irrigated cotton to the tropical dry season' which covered some of his research with the Cotton Catchment Communities CRC and was the 'climate change' session chair.