

## 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: ANU1603

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

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Project Commencement Date: 30/4/2016 Project Completion Date: 9/5/2016

CRDC Research Program: 4 People

### *Part 2 - Contact Details*

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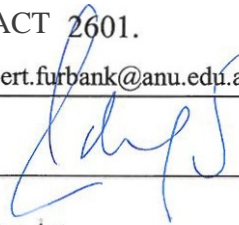
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Signature of Research Provider Representative:

Date Submitted:

  
29/6/16

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

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(Maximum two pages)

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

The purpose of this travel was to present my current cotton research at the World Cotton Research Conference 6 – Goiania Brazil 2016.

2. What were the:

a) major findings and outcomes

b) other highlights

a) This was the first opportunity for me to present my cotton photosynthesis research on an international stage. My talk (see attached) described my current effort into screening cotton genotypes for improvements in CO<sub>2</sub> fixation, water-use-efficiency and thermotolerance. Currently, there is a paucity of information around the impact of future climates on the photosynthetic biochemistry underpinning CO<sub>2</sub> fixation in cotton leaves. The current knowledge I have built on the performance of Cotton Rubisco will provide a solid foundation to determining the next generation of solutions to improve cotton production under hotter and drier climates. At the conclusion of my talk I outlined where new expenditure of cotton research is needed particularly to include the development of chloroplast transformation. The importance of developing this technology was also highlighted in the plenary talk of Dr. Yusuf Zafar, IAEA, Pakistan.

b) The other highlights of this meeting was to meet a number of international researchers and industry figures to forge links with in the future. These included:

-Dr Andrew Paterson, University of Georgia. This plenary talk was a highlight of the meeting as he outlined the genetic origins of modern day cotton and how this knowledge was informing cotton fiber development.

-Dr. Yusuf Zafar, IAEA, Pakistan. This plenary speaker highlighted the important areas for future cotton research. He particularly focussed on improved CO<sub>2</sub> fixation which is now modelled to potentially provide more than 20% increases in crop productivity.

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.)

The meeting took place at the Goiania Convention Centre where I was able to meet delegates attending the meeting. In addition to 2b the following delegates were great to meet:

-Dr Dil Baugh Muhammad, Central Cotton Research Institute Pakistan,

-Dr. Yusuf Zafar, IAEA, Pakistan.

-Dr Adam Kay, Cotton Australia.

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

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

a) Since arriving back in Australia I have already planned and currently conducting new research projects in collaboration with Michael Bange, David Tissue and Warren Conaty to investigate further the impact of heat and CO<sub>2</sub> concentration on the photosynthetic properties of Sicut 71. This study will provide the first analysis of the thermal limitation of Rubisco catalysis, which will in the future provide translational applications to the future modelling of cotton photosynthesis (including yield) under future climates. This will then be applied to other cotton genotypes to select which ones will better suit the climate at specific regions.

b) Development of these techniques will be vital for the cotton industry to generate an important understanding of how future climates will impact cotton growth and resource use efficiency.

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

The knowledge gained from attending this meeting is currently being shared with my research collaborators from CSIRO Narrabri which has led to new experiments. Ultimately, I will share more of this knowledge at the next Cotton Research Conference.



