



Australian Government
**Cotton Research and
 Development Corporation**

TRAVEL & CONFERENCE REPORT

Part 1 - Summary Details

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

CRDC Project Number: **DAQ1201T**

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Project Title: Overseas Travel & Laboratory extension to DAQ1201

Project Commencement Date: 1/7/2011 **Project Completion Date:** 30/9/2011
Research Program: 2-Farming Systems

Part 2 – Contact Details

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Signature of Research Provider Representative:

**HELEN KAMEL
 PRINCIPAL COORDINATOR
 (EXTERNAL FUNDING)**

Part 3 – Travel Report

(Maximum two pages)

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

The relationship of Cotton leaf roll virus (CLRV) from Thailand to Cotton leafroll dwarf virus (CLRDV) from Brazil or Cotton bunchy top virus (CBTV) from Australia is unclear as no sequence information is currently published for CLRV in Thailand. However, based on the similarities of symptoms and aphid vector transmission, it appears likely that CLRV may also be polerovirus-like virus as is the case for CLRDV and CBTV. The purpose of this travel was to gain a greater understanding of the field symptoms and diagnosis of CLRV in Thailand and also to determine if the diagnostic assay being developed for Brazilian CLRDV as part of the CRDC project (DAQ1201) may also detect Thailand CLRV.

2. What were the:

a) major findings and outcomes

- A. I gained skills in the field diagnosis of Cotton leaf roll disease in Thailand. Infected material was gamma irradiated and imported into Australia under an AQIS import permit to use as positive controls in the development of a possible future diagnostic assay.
- B. I conducted laboratory testing of Cotton leaf roll infected samples with Thai researchers in the Thailand Department of Agriculture laboratories at Kasetsart University, Bangkok, using the general Polerovirus PCR that I had developed and used successfully on CBTV and CLRDV infected material. This PCR assay and another separate degenerate PCR assay both failed to detect Cotton leaf roll from Thailand. These assays were repeated in Australia on imported material with the same result. This may indicate that Cotton leaf roll is an aphid transmitted virus which is not related to CBTV or other Poleroviruses.
- C. I established collaborative links with Thailand Department of Agriculture researchers which may be useful for the development of an effective diagnostic assay for CLR. We discussed potential future collaborative research.
- D. I met with researchers working on breeding resistance to Cotton leaf roll disease, saw the disease in the field and discussed the mode of transmission and biology of the disease.

b) other highlights

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.)

15th, 18th and 19th October 2011

Visited:

Dr Wanphen Srithongchai,
Chief of Plant Pathology Group
Plant Protection Research and Development Office
Department of Agriculture (DOA)
Chatuchak, Bangkok, Thailand

Purpose: On the 15th Oct I presented a talk about CBTV from Australia to about 6 staff from the Plant Protection Research and Development Office and discussed Cotton leafroll disease from Thailand. On 18th and 19th, I worked in DOA laboratory, Kasetsart University, Bangkok, with research assistant Kanjana Warawichanee to test Cotton leaf roll (CLR) samples that I collected from Nakhon Sawan province. Discussed possible future collaborative opportunities for the development of a diagnostic test for CLR.

16th-17th October 2011

Visited:

Dr Siwilai Lapbanjob
Agricultural Research Officer
Department of Agriculture (DOA)
Nakhon Sawan Field Crops Research Centre
Tak Fa
Nakhon Sawan, Thailand

Dr Parinya Sebungruang
Senior Plant Breeder
Department of Agriculture (DOA)
Nakhon Sawan Field Crops Research Centre
Tak Fa
Nakhon Sawan, Thailand

Purpose: I visited trial plots for screening cotton lines for CLR resistance. Observed CLR symptoms in the field and collected samples for testing in Thailand and for return to Australia (under AQIS permit). Observed how they use aphids to transmit CLR onto glass house test plants. Discussed biology of CLR and compared to CBTV from Australia.

**Start of
Project**
(normally
1st July)

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

The negative results of the Thailand Cotton leaf roll samples in the degenerate polerovirus PCR assays may indicate that Cotton leaf roll is not a polerovirus as originally assumed. There are some potential techniques, such as deep genome sequencing, that could be used to try to elucidate the causal agent for Cotton leaf roll. There is currently no laboratory diagnostic assay for the detection of Cotton leaf roll and as such it can not be screened for in any suspect samples in the case of an incursion. The epidemiology of CLR is also poorly understood with little information about possible alternative hosts. It may be worth considering trying to indentify the causal agent of CLR and in doing so enable the development of a diagnostic assay that could be used in Australia for the screening of suspect samples. The same test could also be used in Thailand for epidemiological studies which may provide valuable information about the likelihood of CLR being able to become established in an alternative host in Australia.

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

See point 4a. As there is no diagnostic test for CLR, the causal agent remains unidentified (although is it known to be transmitted by the cotton aphid) and it is a severe disease in cotton, any possible incursion into Australia should be considered to be a threat to the Australian cotton industry.

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

Photos and information about Cotton leaf roll from Thailand could be included in any relevant industry publications about possible biosecurity threats to cotton.

