



SMALL GRANT REPORT

CRDC Project Number: DAQ 10367

Project Title: Travel: Attend and present at the 12th International Congress of Plant Pathology, France.

Project Commencement Date: 1/5/2023

Project Completion Date: 18/9/2023

Recognition of support: The Research Provider Queensland Department of Agriculture and Fisheries acknowledges the financial assistance of the Cotton Research and Development Corporation (and if applicable add other funding partners or grants) in order to undertake this project.

Contact Details

Principal Researcher: Linda Smith

Organisation: Queensland Department of Agriculture and Fisheries

E-mail: linda.smith@daf.qld.gov.au

Project Summary

Purpose: To attend the 12th ICPP to meet experts in the field of plant pathology, scientific exchange, and develop collaborative professional relationships; meet with Dr F. Trouillas from the US who is assisting us to characterise the morphology of *Eutypella* spp. of cotton; and inform the international scientific community of our research on two important wilt diseases of cotton in Australia, Reoccurring and Verticillium.

What was achieved:

Met Prof. Zarco-Tejada, an expert on the detection of Verticillium wilt in olive using remote sensing. Discussed current CRDC funded project and he is open to being contacted for advice and to assist where possible. Met with Dr F. Trouillas and discussed our research on *Eutypella* and gained further incite on research direction. Knowledge was gained to develop a better insight of disease management and disease prediction tools.

Key points:

- Different expression of disease symptoms and/severity possibly due to change in the environmental conditions and development of more virulent strains was a common theme.
- Harnessing remote sensing and imaging spectroscopy for agricultural disease management is possible and effective.
- Resistance and reduced sensitivity of leaf pathogens to some fungicides is concerning highlighting the importance of fungicide resistance monitoring.
- Spore-trapping and qPCR are effective methods for detection and quantification of pathogens associated with trunk cankers which enables study of seasonal abundance of pathogenic fungi which contributes to the application of management strategies. This supports our future research on *Eutypella* sp.

· The knowledge of seed mycobiomes is important to prevent spread of pathogenic fungi. Could metagenomics be used to understand cotton seed pathology and health with aim to improve seed quality.

· Volatile organic compounds of pathogens were detected using sensor technology. Could this be applied to early detection of Fov?

Outcomes & Impact for Industry

Output:

To attend a two-day workshop (Sat & Sun before congress starts) titled “How to combine remote sensing with epidemiological modelling to improve plant disease management?”

To attend the 12th International Congress of Plant Pathology 19 – 25 August 2023, Lyon, France.

Outcomes:

There were several sessions from which scientific exchange was relevant to cotton pathology.

Knowledge gained at the conference will strengthen research capability to characterise and monitor pathogens economically important to cotton and develop disease prediction tools and management strategies for cotton. Please see summary of learnings attached.

Output:

To meet with Diatrypaceae expert Dr Florent Trouillas from UCA, Davis, USA, who is assisting us with the morphological characterization and research of novel *Eutypella* species causing reoccurring wilt in cotton.

Outcome:

Dr Smith had the opportunity to meet face-to-face with Diatrypaceae expert Dr Florent Trouillas, Associate Professor of Cooperative Extension from the University of California who is currently assisting Dr Smith with the morphological characterisation of novel species of *Eutypella* which causes the newly described disease of cotton in Australia. *Eutypella* species have not been associated with cotton disease anywhere else in the world. Dr Trouillas also described the Diatrypaceae fungi that causes dieback in grapevines in Australia. An outcome was the in-depth discussion of our research on *Eutypella* and gaining further incite on research direction.

Output:

Three abstracts were submitted to the ICPP committee and accepted for poster presentation.

These were titled:

1. Reoccurring wilt, a new disease of cotton in Australia caused by novel *Eutypella* species.
2. Reducing disease incidence of *Verticillium* wilt of cotton with cropping sequences that reduce pathogen inoculum and maintain overall soil biological health.
3. Biological suppression of soilborne fungal pathogen *Verticillium dahliae* in cotton soils.

Outcome: Research on two important wilt pathogens of cotton in Australia were showcased to the international scientific community: a new disease called Reoccurring wilt caused by novel species of *Eutypella*, and the economically important pathogen, *Verticillium dahliae*.

Learnings

Planned actions include: Potential to implement research based on new learnings into future research projects, keeping in contact with participants and reaching out to participants I did not get the opportunity to meet personally, and communicating with industry the relevant learnings at the upcoming CCA meeting in Tamworth where I am presenting on learnings from the Beltwide Conference I attended and have the opportunity to include learnings of interest from this conference.