

## Dr Cassy Percy

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## RESEARCH AREA

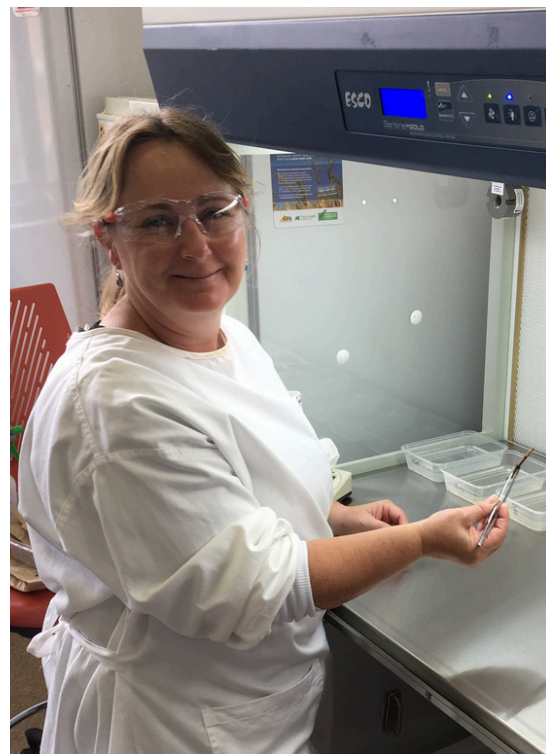
### Understanding Pathogen Behaviour

#### Tell us a bit about yourself?

As a Senior Research Fellow within the UniSQ Centre for Crop Health (CCH) I have a strong research background specialising in soilborne fungal diseases of agricultural crops. I enjoy learning about the genetic control of disease resistance and tolerance as well as constantly being challenged to improve our knowledge and understanding of infection pathways and host responses to disease. I have a strong interest in plant pathogen interactions and a love of pathogen diversity and disease diagnostics, particularly involving emerging technologies.

#### What research have you previously been involved with?

Following my PhD I joined the Soilborne diseases team at the Qld DPI where I worked for five years across several projects mostly associated with developing better resistance and tolerance in wheat to different soilborne diseases. I joined UniSQ just over 10 years ago where I continued to work with soilborne diseases in winter cereals, including projects on disease detection and quantification of disease, understanding pathogen interactions, determining the impact of infection on yield in field and testing formulations for control of diseases. I am relatively new to the cotton industry but have a good background on working with soilborne pathogens.



#### What excites you about working in the Australian cotton industry?

After spending nearly 20 years working in the grains industry it is exciting for me to work with new crops and pathogens, but mostly I am excited that our research can assist in developing effective disease management strategies which contribute to improving grower success in cropping. The interactions I have had with other researchers, the CottonInfo team, CRDC and the cotton growers have been really positive and enthusiastic and I am grateful to be part of an industry that values sustainable production.

#### What do you like to do when you're not researching?

I grew up on the coast of Northern NSW and I really like to swim when the weather is warm enough. I enjoy travelling and spending time with my family but am mostly a bit of a homebody. I like to get out in the garden and tend to my many pots of cacti and succulents. Throughout my life I have tried many different crafts and have recently taken up macramé.

## PROJECT OVERVIEW

**B1.1: Establishment of the Australian cotton pathogen collection**

**B2.1: Host range and cotton differential set identification for key cotton pathogens**

### Explain your current research project

Australia does not have a nationalised cotton pathogen collection to understand the foundation knowledge on cotton pathogens and disease. I am leading this project and work closely with the plant pathologists from the states and territory who undertake the disease diagnostics for growers as well as the CottonInfo team who also assist in collecting disease samples. Selected samples from all cotton growing regions in Australia will come to UniSQ in Toowoomba where we will purify and characterise the isolates.

### What does your current project aim to do?

Specimens from this collection will be used by researchers in the ACDC projects as well as provide a resource for the Cotton Industry for future research. The project also aims to identify reference isolates for each of the Tier 1 and Tier 2 pathogens to be used in future cotton research across Australia.

The second project will identify and address the gaps here to allow growers to make informed decisions with their paddock managements. Cotton germplasm resources and differential sets will improve capacity to develop resistant cultivars and phenotype key pathogens.

### Why is it important?

B1.1 The Australian Cotton Pathogen Collection is essential for understanding the evolution and spread of existing and new pathogenic strains and will play a prominent role in improving future cotton farming in Australia.

In B2.1, cotton differential sets are not available for all key pathogens and information on the host range of cotton pathogens is incomplete. Identifying differences and changes in virulence of pathogens is crucial.

### How will this work benefit Australian cotton growers and industry?

Industry will benefit from improved collaboration between cotton pathology and breeding sectors, enabling early identification and characterisation of new pathogen incursions and shifts in pathogen populations and/or virulence.

Enhanced understanding of pathogen evolution, origin, distribution, and regional risk will support improved disease management across the Australian cotton industry. Growers and breeders will gain access to improved pathogenicity phenotyping, updated information on pathogen diversity, dominant strains, host range, and varietal resistance, enabling informed crop rotation decisions and the selection of varieties that minimise disease risk.

### PhD student involvement

I am also the principal supervisor of two PhD candidates:

**Muhammad Zahaib Ilyas** is located at the UniSQ Toowoomba campus working on the “Characterisation of *Eutypella* spp. causing Reoccurring Wilt in cotton”.

**Muhammad Aamir Khan** is located in Narrabri and is addressing the “Impact of crop rotation on the incidence of black root rot and *Verticillium* wilt in cotton”.



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