

MEET YOUR COTTON RESEARCHER

Duy Le, Cotton Pathologist
NSW Department of Primary Industries

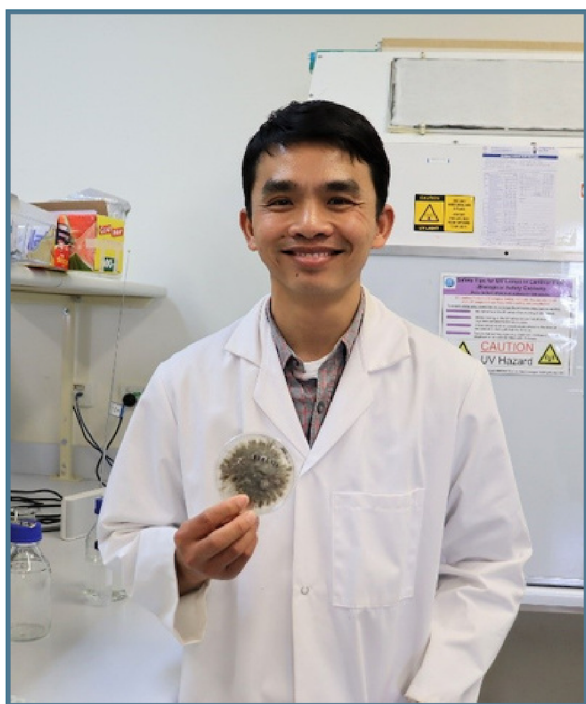
PROFILE

MAY 2024

RESEARCH AREA

Disease

CRDC Research Project
Characterisation and management of Alternaria leaf spot and black root rot pathogens of cotton in NSW



WHAT'S YOUR BACKGROUND?

I am originally from Vietnam. With a farming background (mostly paddy rice), I decided to pursue and completed a degree in Crop Sciences at Can Tho University (in the Mekong Delta) in 2007.

My Australian journey began in 2008 when I first landed in Brisbane to pursue my Masters degree in Plant Protection at the University of Queensland, then following up with a PhD degree in Plant Pathology in 2016.

HOW DID YOU END UP IN COTTON RESEARCH?

After the completion of my PhD, I had a short year of postdoc working on root rot diseases of avocado. Being confined within the academia world for such a long time since I completed high school, I found that I lacked exposure to the real work and connection to industries and stakeholders.

I started to look for more engaging jobs and the Cotton Pathology position within the NSW DPI came available. Narrabri was one of the biggest obstacles for me back then, but I decided to challenge myself and have since overcome it.

With knowledge, research skills and experience with ginger and avocado pathologies, and with a lot of help and support from NSW DPI colleagues, collaborators, CottonInfo and CRDC, I have been able to transfer and establish myself within cotton research since July 2017.



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WHAT EXCITES YOU ABOUT WORKING IN THE COTTON INDUSTRY?

The cotton industry has given me a unique opportunity to learn, to research and to connect directly with growers and consultants. DPI Cotton Pathology team has been undertaking quantitative disease surveillance over 35 years. I have the privilege to continue the work and it gives me the opportunity to travel places that I had never been to. Conducting research experiments is challenging and it is even more challenging in regional research stations.

However, I am grateful for the endless support from CRDC, DPI and others to fill in research gaps and to provide insights into cotton pathology of concern. The most valuable thing for me is the network and connection that I've built through the cotton industry, it is worth a fortune and more.

WHAT DOES YOUR CURRENT PROJECT WORK INVOLVE?

The current project includes three components: surveillance, pathogen characterisation and management. Our annual disease surveillance allows us to keep track of presence, severity and dynamic of seedling diseases and those that occur later in the season on mature cotton.

For example, *Alternaria* leaf spot was long considered a minor disease of cotton; however, the prevalence and severity have caused a significant concern in a number of crops in the past few seasons.

Surveillance also allows us to be in the front line for early detection and prevention of new and exotic disease occurrence. Australia has witnessed a number of biosecurity excursions lately; therefore, our cotton industry should also be highly vigilant.

Our surveillance program is also to monitor pathogen distribution and population dynamic. For example, *Verticillium dahliae* is detected across NSW, which is predominantly associated with non-defoliating pathotype. On the other hand, defoliating pathotype is detected less and mostly in northern NSW valleys. Similarly, boll rot associated with *Sclerotinia* species was common in the 2021/22 season, but not the other seasons between 2019-2021. This reveals that the pathogen population could be highly dynamic season by season. Therefore, it is important for us to monitor not only the diseases, but also the pathogens.

Pathogen identification and characterisation is part of our free diagnostic service, which includes isolation, morphological and molecular identification, and pathogenicity assessments of recovered pathogens. This allows us to keep track with any possible occurrence of either a new or exotic strain/pathogen, and also to enhance our understanding of pathogens' biology, diversity and evolution. A number of new (not exotic) pathogens, including *Colletotrichum*, *Eutypella* and *Stemphylium* were detected and identified in NSW the past few seasons.

We currently focus on management options for *Alternaria* leaf spot and black root rot. Management option for *Alternaria* currently relies on Tebuconazole, which is operated under a permit. We have assessed multiple alternative chemistries, which were highly effective against *Alternaria* and safe to cotton. Therefore, they all hold potentials for registration in cotton. On the other hand, soilborne disease, black root rot is a tougher battle. It requires an ongoing effort to better understand the pathogen, the disease and the management.

For further information:

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