

# Plant Pathology Seminar Series

23 March 2020, 10:00am – 3:00pm

Ecosciences Precinct, Dutton Park, Brisbane  
Ground Floor Seminar Room, 41 Boggo Road, Dutton Park

- 10:20 am **Arrival and housekeeping**
- 10:30 am **Session 1 keynote speaker:** Prof Elizabeth Aitken  
*Fusarium wilt of banana: an inevitable disease*
- 11:15 am Noel Djitro  
*Characterisation of crown-rot and fruit-rot Pseudomonads isolated from zucchini*
- 11:30 am Dr Fiona Filardo  
*Development of new diagnostics tools for high throughput identification of viruses*
- 11:45 am Dr Samir Alahmad  
*Drought adaptive traits for enhanced yield under crown rot disease pressure*
- 12:00 pm Yu-Ping Liang  
*Avocado industry and disease management in Taiwan*
- 12:15 – 1:00 pm Lunch**
- 1:00 pm **Session 2 keynote speaker:** A/Prof Andrew Geering  
*Pioneering discoveries in plant virology from Australia during the early twentieth century*
- 1:45 pm Mohamed Zakeel Mohamed Cassim  
*Spatio-temporal dynamics of abnormal vertical growth (AVG) of macadamia in Australia informs epidemiology*
- 2:00 pm Dr Peter Whittle  
*Data at the production end of the fresh produce supply chain - capturing, analysing and using it*
- 2:15 pm Aurelie Quade  
*Studying the diversity of maize common rust*
- 2:30 pm Jed Calvert  
*Legacies of an ancient invasion: fungal endophytes and the Sahul-Sunda floristic exchange*
- 2:45 pm Dr Shamsul Bhuiyan  
*New soil-borne fungal pathogens of sugarcane – threats lurking on the horizon*
- 3:00 pm **Conclusion**



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# Plant Pathology Seminar Series

## Our Speakers

**10:30am – 11:15am Keynote Presentation**

### **Fusarium wilt of banana: an inevitable disease**

**Professor Elizabeth Aitken** (Professor of Plant Pathology, School of Agriculture and Food Sciences, The University of Queensland)



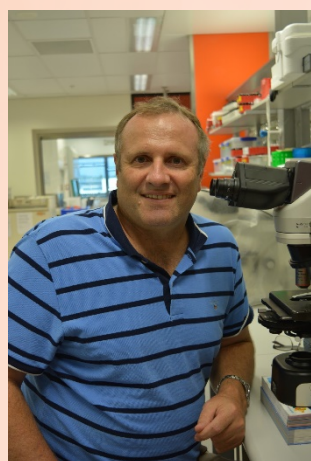
Professor Elizabeth Aitken (Liz) obtained her BSc Hons in Agricultural Science (Crop Science) from Edinburgh University where she specialised in Plant Pathology. She then went on to undertake her PhD studies at Aberdeen University in conjunction with the UK Forestry Commission on a study of dieback on Scots pine trees. This was followed with postdoctoral studies at Birmingham University and the Sainsbury Lab, aiming to identify a rust resistance gene by transposon tagging. Professor Elizabeth Aitken has been an academic at UQ since 1993 lecturing plant pathology and fungal biology at undergraduate and postgraduate level. Over that period much of her research has focused on diseases of tropical crops in particular banana, ginger, cotton and sunflower. Research topics

Have included the genetics of plant-pathogen interactions, molecular aspects of pathogenicity and disease diagnostics. Currently her lab is concentrating on Fusarium wilt, particularly on banana where host resistance, pathogen diversity and etiology are being explored. However, none of this work would have happened without the involvement of the numerous postgraduate and Honours students and postdocs, who have been in the Aitken lab over the years, as well as successful collaborations with colleagues. Liz has also taken on significant committee roles in postgraduate student mentoring, biosafety and research integrity within the UQ community.

**1:00pm – 1:45pm Keynote Presentation**

### **Pioneering discoveries in plant virology from Australia during the early twentieth century**

**Associate Professor Andrew Geering** (Principal Research Fellow, Centre for Horticultural Science, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland)



Associate Professor Andrew Geering is a plant pathologist with more than 30 years of experience in virology and mycology and has engaged in the full spectrum of work from field to molecular work. Andrew was employed by the Queensland Department of Agriculture and Fisheries for the majority of his career but transferred to Queensland Alliance for Agriculture and Food Innovation at its commencement in 2009. Andrew is a keen reader of history, and in



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his spare time has been undertaking a review of the beginnings of plant virology in Australia. For a country that was so remote from the rest of the world, Australia punched well above its weight with regards to scientific impact in the early twentieth century and Rupert Best should have been the first Australian Nobel Prize winner for his fundamental studies on tobacco mosaic virus if not for the problems of communication. In his talk, Andrew will discuss pioneering studies in plant virology from Australia and also reveal some of the rich social history and personalities. Andrew is currently APPS President-elect and will assume the position in full in 2021.

**11:15am – 11:30am**

## Characterisation of crown-rot and fruit-rot *Pseudomonads* isolated from zucchini



**Noel Djitro** (PhD Candidate, Queensland Government Department of Agriculture and Fisheries, La Trobe University)

Noel Djitro is a second year PhD student from La Trobe University doing research for the 'Area Wide Management of Vegetable Diseases' project. His doctoral research investigates bacterial disease caused by *Pseudomonads*. Currently, his research focuses on the characterisation of *Pseudomonas syringae* isolated from crown-rot and fruit-rot of zucchini. He holds a master's degree in biotechnology and bioinformatics from La Trobe University and a bachelor's degree in science from University of Surabaya, Indonesia.

**11:30am – 11:45am**

## Development of new diagnostic tools for high throughput identification of viruses



**Dr Fiona Filardo** (Plant Pathologist, Queensland Government Department of Agriculture and Fisheries)

*'I completed a PhD in 2004 investigating genes involved in hormone signaling in plants. Since then I have been involved in a number of genetic and molecular projects. In the last five years, I have worked in plant pathology, virology, investigating viruses in pulse and canola crops as well as improving and developing diagnostic methods. I enjoy molecular and genetic research, fieldwork and interacting with growers. My work aims to help growers by understanding the viruses that infect pulse and canola crops in Australia and the potential overseas threats, with the aid of management and resistance breeding.'* - Dr Fiona Filardo



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11:45am – 12:00pm

## Drought adaptive traits for enhanced yield under crown rot disease pressure

**Dr Samir Alahmad** (Postdoctoral Research Fellow, Centre for Crop Science, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland)



Dr Samir Alahmad is working on durum wheat pre-breeding and genetics. He was awarded his PhD from the Centre for Crop Science, Queensland Alliance for Agriculture and Food Innovations, The University of Queensland last year. His research was funded by Monsanto Beachell Borlaug International Scholarship Program (MBBISP) and the University of Queensland Research Scholarship (UQRS). He received nine travel awards which enabled him to attend national and international meetings including BGRI, IWC, PAG, Seed to Pasta, CREA, ICARDA. He believes in collaboration with wider

international scientific community and sharing novel research ideas. During his PhD he identified a major genomic region modulating the root growth angle in durum wheat and was able to optimise durum wheat yield under crown rot inoculum pressure in the field. Dr Alahmad is currently working as a postdoctoral research fellow at UQ which is funded by GRDC. His research focus is investigating the value of crop adaptive traits to enhance yield and develop crops with designer roots to target different mega environments and therefore, develop resilient durum cultivars for Australian farmers.

12:00pm – 12:15pm

## The avocado industry and disease management in Taiwan

**Yu-Ping Liang** (Assistant Research Fellow, Chiayi Agricultural Experiment Station, Taiwan Agricultural Research Institute)



Yu-Ping Liang is an Assistant Research Fellow at the Chiayi Agricultural Experiment Station, Taiwan Agricultural Research Institute. She obtained her Bachelor's degree at the National Taiwan University, Department of Plant Pathology and Microbiology, and subsequently completed her Master's degree in Plant Medicine from the same university. *'My work in Chiayi Agricultural Experiment Station is currently focused on investigation and management strategies of Phytophthora root rot, branch canker, and ambrosia beetles in avocado. Other studies include investigation of pineapple fruitlet core rot and efficacy of entomopathogenic fungi on controlling agricultural pests.'* Yu-Ping is currently doing a 6-month collaborative avocado pathology research project with the Dann Lab at the University of Queensland, headed by A/Prof Elizabeth Dann.



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# Plant Pathology Seminar Series

1:45pm – 2:00pm

## Spatio-temporal dynamics of abnormal vertical growth (AVG) of macadamia in Australia informs epidemiology

**Mohamed Zakeel Mohamed Cassim** (PhD Candidate, Centre for Horticultural Science, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland)



Mohamed Zakeel Mohamed Cassim is a PhD student at the Queensland Alliance for Agriculture and Food Innovation institute at the University of Queensland. His doctoral research investigates the biotic cause and interactions of abnormal vertical growth (AVG) in macadamia. He takes a multidisciplinary approach that encompasses the use of epidemiological, molecular diagnostics and ultra-high throughput sequencing tools to unravel the cause of AVG and its interaction with the host. Zakeel hails from Sri Lanka and is a faculty member in the Department of Plant Sciences at Rajarata University of Sri Lanka. He holds a Master of

Philosophy degree in Agricultural Biology from the University of Peradeniya, Sri Lanka. He has many publications in refereed journals, including book chapters. His recent publications include a research article titled 'In silico identification of miRNAs and their target genes in watermelon (*Citrullus lanatus*)', published in *Scientia Horticulturae* and two book chapters published by Springer-Nature publishers in 2019. Zakeel loves painting and gardening.

2:00pm – 2:15pm

## Data at the production end of the fresh produce supply chain - capturing, analysing and using it

**Dr Peter Whittle** (CEO and Co-Founder of AgKonect Pty Ltd)



*'In the 35 years since graduating in Ag Science at the Waite Institute, I have worked for several employers in a range of roles, including applied research on cereal root diseases, field and quarantine pathology in sugarcane, biosecurity policy and operations, risk analysis, surveillance design, phytosanitary trade and horticulture R&D management. This varied career has given me broad experience, that I now apply in my startup company AgKonect. I realised that all agriculture activities occur in the*

*landscape, and therefore location data is fundamental to effective analysis. I further realised that data management is critical but also incredibly time-consuming, expensive and often done poorly so that outcomes are compromised. Computing has developed during my lifetime – the internet was invented in 1983 and I bought my first PC in 1987. The recent advent of cloud computing and integrated smart devices has suddenly democratised spatial data. AgKonect's mission is to help people use spatial data tools effectively – in farming, farm services and R&D – and environment – and anywhere else we are needed!'* - Dr Peter Whittle



# Plant Pathology Seminar Series

2:15pm – 2:30pm

## Studying the diversity of maize common rust

**Aurelie Quade** (PhD Candidate, Centre for Crop Health, Institute for Life Sciences and the Environment, University of Southern Queensland)



*'I am currently doing a 3 year PhD project with funding from USQ and the GRDC. In recent years, outbreaks of common rust (CR), caused by Puccinia sorghi, have increased in incidence and severity in fields of maize and sweet corn. Maize CR can cause yield losses of up to 40 % on susceptible varieties. An assessment of the main maize commercial lines revealed that they carry no resistance to CR and that the main source of resistance, Rp1-D gene, is no longer effective in Eastern Australia. Isolates collected from different maize growing regions in QLD and NSW determined that the population of CR is diverse. The extent of that diversity remains to be investigated. Maize lines carrying known Rp genes were assessed for their resistance/susceptibility. Several candidate Rp genes are available to advance the resistance of maize commercial lines and create a differential set to assess the virulence of CR.'* - Aurelie Quade

2:30pm – 2:45pm

## Legacies of an ancient invasion: fungal endophytes and the Sahul-Sunda

### floristic exchange



**Jed Calvert** (PhD Candidate, Centre for Horticultural Science, Queensland Alliance for Agriculture and Food Innovation, The University of Queensland)

Jed Calvert is a PhD student from Armidale, NSW who is studying fungal diversity within plants in order to understand how plant-microbe interactions have evolved. He is investigating fungal endophyte communities in the Iron Range on Cape York Peninsula, one of the last remaining seasonal lowland tropical rainforests on the continent. The Sahul-Sunda floristic exchange shaped the biogeography of Australian rainforest plant communities. Around 2 MYA, many Southeast Asian plants from the Sunda tectonic region began to be transported by birds and ocean currents to the Australian (Sahul) shelf, which had been isolated since Australia broke from Antarctica c.38 MYA. The mixed-origin plant

communities in Australian rainforests can be broadly divided into Sahul and Sunda origin plants based on this ongoing invasion event. But what about the fungi? Did invasive plant species in the Sahul-Sunda exchange retain characteristic endophytic communities, or have fungi become homogeneous between hosts?



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# Plant Pathology Seminar Series

2:45pm – 3:00pm

**New soil-borne fungal pathogens of sugarcane – threats lurking on the horizon**

**Dr Shamsul Bhuiyan** (Principal Research Scientist, Sugar Research Australia)



Dr Shamsul Bhuiyan is a Principal Research Scientist, who has been working for Sugar Research Australia (SRA) (previous BSES) for more than 12 years. He is based at SRA Woodford Pathology Research Station, and leads SRA's disease screening programs. He established the sugarcane smut and nematode research facility in SRA and pioneered research on the development of resistant varieties for sugarcane for sugarcane smut and nematodes in Australia. He made substantial contributions in research and management of sugarcane diseases, in particular, pineapple sett rot of sugarcane and sugarcane smut in Australia, and won SRDC Team Innovation Award in 2010 for his contribution in the development of sugarcane smut resistant varieties for Australian sugar industry. Prior to SRA Dr Bhuiyan was a Senior Plant Pathologist with the Northern Territory Government, worked on Alternaria leaf spot of cotton, late and early spots of peanut, and post-harvest diseases of mango. His current research interests are: development of fast disease screening methods using molecular and image analysis, soil microbiology and soil health, and in-field diagnosis of plant diseases. He is also an Adjunct Associate Professor with the School of Agriculture and Food Sciences at UQ Gatton.

We'd like to thank our sponsor for the March seminar event:  
**Australasian Plant Pathology Society (APPS)**  
for funding catering

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#### **The APPS Queensland Seminar Committee**

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