



APPS Newsletter Vol 30, No. 2

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APPS NEWS is the official newsletter of the Australasian Plant Pathology Society published electronically 3 times per year. Items for inclusion should be sent to:

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Next deadline: 24th November 2017

www.appsnet.org

President's Message

Incursions of exotic pathogens and pests, that may vector pathogens, have kept many of our members busy over the last few months. Hats off to those folk who have been fighting the good fight. This reinforces the notion that a 'good plant pathologist's work is never done'. Pathogen populations are under constant pressure to find ways around the solutions that are developed to keep them out; think of the growing problems with development of fungicide resistance; and overcoming plant disease resistance. The other key element is being vigilant in protecting borders to keep unwanted pests and pathogens out, a difficult task when they can get a free ride in on the wind.

We all need to rally our energy and the enthusiasm required to continue the quest to provide smarter, more durable solutions that hopefully will prove more difficult for parasites to overcome. This is critical in the face of increasing pressures on crop production with limited resources and a growing global population.

Having just completed a semester of interacting with ~100 undergrads, who were keen and excited about their first exposure to plant pathology, I am confident that we will be able to attract new blood into the discipline. Maintaining and sharing the knowledge base of plant pathology experts will also be critical to this fight. The upcoming [Science Protecting Plant Health 2017](#) Conference in Brisbane is the perfect opportunity to recharge our batteries, meeting up with colleagues and making new connections in phytopathology. I am looking forward to some sunshine that Queensland will no doubt provide and feeling the warmth from the interactions in the meeting.

All the best,

Kim.

Dr Kim Plummer
president@appsnet.org.au

New Members

On behalf of the Society, the Management Committee would like to welcome the following new members:

Dr	Ido	Bar	Griffith University
Mr	Sean	Bithell	NSW Dept. Primary Industries
Ms	Linda	Brain	La Trobe University
Ms	Corinne	Celestina	La Trobe University
Miss	Emma	Coleman	The University of Queensland
Miss	Pearl	Dadd-Daigle	The University of Technology Sydney
Mr	Reynaldi	Darma	The University of Melbourne
Ms	Michelle	Demers	The University of Sydney
Mr	Eric	Dinglasan	The University of Queensland
Mrs	Iman	EIMor	University of Southern Queensland
Dr	Fiona	Filardo	Queensland Department of Agriculture and Fisheries
Miss	Katherine	Fuhrmann	Ariculture Victoria
Dr	Rosie	Godwin	Australian Banana Growers' Council
Dr	Dorin	Gupta	The University of Melbourne
Ms	Sana	Hanif	Charles Sturt University
Dr	Lee	Hickey	The University of Queensland
Ms	Nurul	Hidayah	The University of Queensland
Dr	Gavin	Hunter	CSIRO
Mrs	Dilani	Jambu	The University of Queensland
Ms	Mahsa	Khorrandelazad	Griffith University
Mr	David	Lane	Curtin University
Mrs	Ruvini	Lelwala	The University of Melbourne
Dr	Jady	Li	CQU
Miss	Renee	Liddle	The University of Queensland
Dr	Haipei	Liu	The University of Adelaide
Mr	David	Orchard	Charles Sturt University
Ms	Kerryn	Popa	The University of Melbourne
Md	Motiur	Rahaman	University Of Southern Queensland
Mr	Pierluigi	Reveglia	Charles Sturt University
Mr	Adnan	Riaz	Queensland Alliance for Agriculture and Food Innovation
Miss	Hannah	Rostad	University of Southern Queensland
Dr	Steven	Simpfendorfer	NSW Department of Primary Industries
Miss	Margaret	Spiteri	AgEtal Pty Ltd
Mrs	Tracey	Steinrucken	Western Sydney University
Dr	Vu	Tuan Nguyen	Northern Territory Department of Primary Industry
Mr	Leif	Winberg	Seqirus/CSL
Ms	Rusmi	Wiyati	The University of Queensland
Mr	Christopher	Wrona	The University of Queensland
Dr	Wei	Xu	Murdoch University

Dates for your Diary



Registrations Open

Speakers

SciPlant17 will cover a wide selection of topics and themes including entomology, biosecurity, and plant health/pathology.

Field Trips

We have a fantastic line-up of speakers including Prof Barbara Howlett, who will deliver this year's Daniel McAlpine Memorial Lecture

Workshops

Plenary speakers this year include Prof Chris Gilligan, Prof Roger Innes, Prof Linda Kinkel and Dr Mark Hoddle, who are Plenary speakers.

Venue

Keynote speakers include:

Sponsors

Platinum Sponsors



Australian Government
Department of Agriculture
and Water Resources

Silver Sponsor

Ministry for Primary Industries
Manatū Ahu Matua



- Dr Grant Smith, Plant & Food Research
- Dr Jenny Davidson, SARDI
- Prof Gerhard Pietersen, Uni of Pretoria
- Dr Michael Goodin, Uni of Kentucky
- Dr Lee Hickey, QAAFI
- Prof Neena Mitter, QAAFI
- Dr Louise Thatcher, CSIRO Ag & Food
- Prof Peter Waterhouse, QUT
- Mr Trevor Nicholls, CABI
- Dr Dean Paini, CSIRO
- Prof Christos Athanassiou, Uni of Thessaly
- Prof Gavin Ash, USQ
- Dr Mark Schutz, Biosecurity Queensland
- Dr Akif Eskalen, Uni of California

Program

The conference program is now available [online](#).

There will be 6 Plenary presentations which includes the Daniel McAlpine Memorial Lecture, a President's address by Dr Kim Plummer, 30 keynote presentations and 120 other presentations.

The poster sessions will include hundreds of posters.

Workshops before and after the conference are filling up, as are the 2 field trips on offer.

An exciting social program has been designed to allow you time to catch up with friends and colleagues.

We have over 360 delegates registered so far. If you haven't registered yet there is still time to do so and join us for this exciting event in beautiful Brisbane in spring.

<http://www.visitbrisbane.com.au/>

Congratulations to Andrew Geering and the program committee for all their hard work getting the program prepared, with just under 11 weeks to go.

Registration Prices

- Full registration (non-member) \$1295
- APPS member registration \$1050
- Student APPS member registration \$495 / non member \$595 (proof of full-time enrolment at university required prior to being eligible for student registration)

Visit the [SciPlant17 website](#) to complete your registration online.

[Click here to Register](#)

Contact Us:

For further information please contact the Conference Secretariat spph@yrd.com.au or phone +61 7 3368 2422.

APPS on social media

How do you get your plant pathology news? This newsletter is only one of the methods that members of the society can use to find out the latest news in plant pathology. The society is also an active participant of social media.

We run a twitter account with the handle [@Plant Pathogens](#) which we use to publicise new scientific papers and reviews in our official journals Australasian Plant Pathology and Australasian Plant Disease Notes as well global news on plant pathology. We are always looking for good content for the twitter feed and seek also to promote plant pathology to the general public. If you are also on twitter and would like APPS to retweet your latest paper, promote your branch event or share a photo of your field work please follow [@Plant Pathogens](#) or email the information to Helen Hayden (helen.hayden@ecodev.vic.gov.au).

Our twitter account has 2952 followers which can provide good exposure for your latest publication or promotion for upcoming plant pathology events such as our own biennial conference in Brisbane in September with @PBCRC, Science Protecting Plant Health. The conference has its own twitter handle @sciplant17 so if you're a mad tweeter make sure you use #sciplant17 and also tag [@Plant Pathogens](#) when sharing photos or speaker highlights at the conference.

We also run a public group on Facebook called [Australasian Plant Pathology Society](#). The co-ordinator for this page is Daniel Huberli who also produces the International Newsletter of Plant Pathology. Anyone can join the public group and share plant pathology stories online which a moderator will soon make public after you've posted. Our Facebook group has 3101 members from around the globe. It is very popular for people looking for help with diagnosis of disease symptoms so if this is one of your skills please join the community.

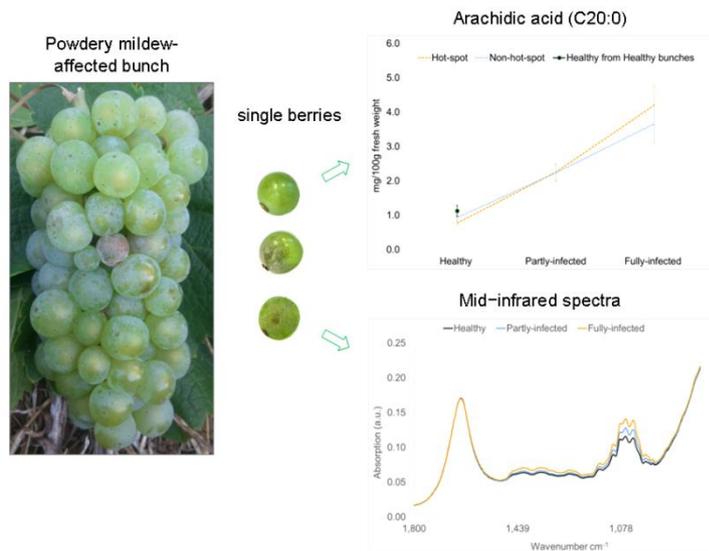


Towards an objective assessment of powdery mildew on grape berries and bunches

Two papers addressing objective measures for powdery mildew on Chardonnay grape berries at harvest (Fig. 1A) and bunches shortly before *véraison* (Fig. 1B) were published last month as outcomes of a Wine Australia-funded project (project UA1202, Scott et al. 2016). Fungal infections of plants can be traced at different stages of plant and/or disease development using objective measures such as fatty acid profiling and mid-infrared spectroscopy. Our research demonstrated that arachidic acid is the most prevalent fatty acid in *Erysiphe necator* collected from the surface of berries, and its concentration increased with increasing powdery mildew severity when healthy, partly infected and fully infected berries were compared (Fig 1A). In contrast, mid-infrared spectroscopy failed to differentiate healthy and partly infected berries. As a result, arachidic acid is proposed as a metabolic biomarker for powdery mildew on grape bunches and needs to be tested for utility in measuring disease severity.

Hyperspectral imaging was tested on bunches shortly before *véraison* (Fig. 1B) through collaborative work with Uwe Knauer (Fraunhofer IFF, Germany) and colleagues. This piece of work was a proof of concept to demonstrate feasibility of the method to distinguish two extreme visual categories (healthy and severely diseased) and a broad category termed 'infected' that encompassed bunches with intermediate severity. The spatial-spectral analysis of images gave classification accuracy of up to 0.87 for the three categories of bunches. These results were comparable with data obtained using quantitative real-time PCR (qPCR) results. A few visually healthy and infected bunches could not be discriminated by hyperspectral imaging but were differentiated by qPCR.

(A)



(B)

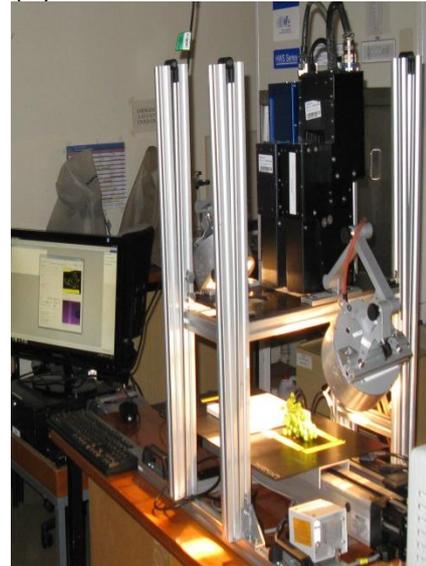


Figure 1: Objective measures for powdery mildew. (A) Fatty acid profiling and mid-infrared spectroscopy (Source: Australian Journal of Grape and Wine Research) and (B) hyperspectral imaging.

Publications

Petrovic T, Perera D, Cozzolino D, Kravchuk O, Zanker T, Bennett J, Scott ES. Feasibility of discriminating powdery mildew-affected grape berries at harvest using mid-infrared attenuated total reflection spectroscopy and fatty acid profiling. *Australian Journal of Grape and Wine Research* (in press). DOI: 10.1111/ajgw.12291

Knauer U, Matros A, Petrovic T, Zanker T, Scott E, Sieffert U. Improved classification accuracy of powdery mildew infection levels of wine grapes by spatial-spectral analysis of hyperspectral images. *BMC Plant Methods* 13: 47. DOI: 10.1186/s13007-017-0198-y

Contribution by *Tijana Petrovic and Eileen Scott*

Fungi Educators' Forum

July 1, 2017 in Arbury Park Outdoor School, Bridgewater, SA)

Experienced and amateur mycologists infected with the appreciation of the Kingdom Fungi got together to share, collate, discuss and experience *macrofungi* from a child/youth and teaching perspective. One plant pathologist (myself) sneaked in and presented a Y9 students' work on *microfungi* that affected field peas, faba beans and broccoli plants. This piece of work endeavoured to raise awareness for plant diseases, facultative fungi and their role in the agricultural ecosystem. I shared experiences of Y9 students from Urrbrae Agricultural High School who showed enthusiasm while collecting samples, isolating fungi, subculturing and observing fungal structures under the microscope. Teacher resource developed by Mr Mark Innes (Urrbrae High School) and myself will be tested and developed further in other high schools.

Contribution by Tijana Petrovic

Other Publications

Rodda, MS, Davidson J, Muhammad J, Sudheesh S, Blake S, Forster JW, Kaur S (2017) Molecular Breeding for Ascochyta Blight Resistance in Lentil: Current Progress and Future Directions, *Frontiers in Plant Science*, <https://doi.org/10.3389/fpls.2017.01136>

Pauline Glocke

Regional news from TAS



Student Completions

Congratulations to **Drs Mark Balendres** and **Andrew Appiah** – who have both recently been awarded their **PhD's**. Dr Balendres' thesis was entitled 'Biology and chemical ecology of *Spongospora subterranea* during resting spore germination'. Dr Appiah's thesis was entitled 'Studies on groundnut rosette disease in Ghana and genomic analysis of a novel Phasey bean virus in Australia'. Both have undertaken studies under supervision of staff from the Tasmanian Institute of Agriculture and graduated at the University of Tasmania.

Biosecurity Awareness

Recent incursions of exotic pests into mainland Australia reminds us of the constant threat of pathogens/pests and the need to be vigilant in relation to preventing the entry and/or the spread of these pests. One recent example of importance to Tasmania is the incursion of Tomato Potato Psyllid into WA. Biosecurity Tasmania and the University of Tasmania, in combination with the potato industry and growers are increasing their efforts in the monitoring for these pests (primarily by trapping and field scouting) so has to identify if an incursion occurs and to develop protocols to demonstrate area freedom.

As with any exotic pest, any reports should be made to the Exotic Pest Hotline: 1800 084 881.

Robert Tegg: For further information – Robert.Tegg@utas.edu.au

Regional news from VIC



First meeting of APPS Victorian branch

The Victorian branch had its first meeting of 2017 at the University of Melbourne on the 26th of April. The meeting theme was “Blowing in the wind” bringing together new members that have just blown in, people working on things that are dispersed by wind, and members working on how we try to stop them. There were six diverse talks from representatives of academia, private industry and government. The meeting started at 14:00pm and ended with pizza and drinks at 17:30 pm and was attended by 30 members as well as several guests with great discussion and networking.

During the general meeting we discussed, a proposed field tour of Grains Innovation Park, Horsham to be held on 19th October 2017. 25 out of 35 people showed interest which is a good number to move ahead with the tour. The half day tour will include visit of two new facilities at the site, Australian Grains Genebank and Plant Phenomics Victoria as well as cereals and pulse field trials as the main focus. As the date of the field tour is decided we will post to all members, including other states. If anyone is interested please email pragya.kant@ecodev.vic.gov.au to book place. We also discussed the upcoming APPS conference in 2019 to be held in Victoria and took nominations to form a local organising committee.



Speakers of the day (L to R) Lachlan Tegert, Reynaldi Darma, Jason Woskett, Piotr Trebecki, Angela Van de Wouw, Adrian Dinsdale

Short summaries of each of the talks presented on the day are as follows:

Adrian Dinsdale, from the Department of Agriculture and Water Resources gave a virtual tour of the newly opened Post-Entry Quarantine (PEQ) facility in Mickleham, Victoria. This facility which opened in 2015 provides quarantine services for plants, cats, dogs, bees and horses. Adrian said once the facility is fully complete it will also include ruminants and avian species. It will strengthen Australia's biosecurity system through early detection and prevention of the exotic diseases and pests that can have significant effects on productivity, profitability and market access of Australian farmers. In May 2016 the former Plant quarantine nursery at Knoxfield ceased operations and the Operational Science team of plant pathologists permanently relocated to Mickleham. His presentation gave an inside view to the workings of the PEQ facility and how it is helping to strengthen Australia's Biosecurity.

Piotr Trebicki, Research Scientist (Plant Vector Borne Diseases), Agriculture Victoria, Horsham, gave an insight into the economically important pest of cereals, the Russian wheat aphid which was recently found in Australia. Piotr talked about the aphids' establishment and spread, importance, biology and control options. As this aphid species can have devastating effects on wheat and barley growth, yield and quality, Piotr talked about the importance of crop monitoring and explained typical symptoms associated with aphid presence as well as key features to identify the aphid itself. Currently utilised control strategies targeting other aphid species are applicable for the Russian wheat aphid but tolerant cultivars and an understanding of aphid biology, population and damage levels under Australian conditions are needed to maximize the control effectiveness and minimise the input costs. Piotr mentioned the swift response by GRDC, farming communities and others to reduce the spread, understand the aphid biology and develop control options.

Jason Woskett (Agronomist), presented a wonderful talk explaining how he has come to be a member of APPS recently. He is a versatile agronomist who worked in and with various industries such as flower growers, turf farms, golf-course, stud farms, vegetables and strawberry farms. Presently he runs his own consultancy uniqueconsulting@bigpond.com. He has experience in management for fertilizers and spray programs relevant to any particular farm. He deals with farmers every day and has developed lots of expertise in disease and pest management in the horticultural industry. It was interesting to learn how he moved from one industry to another and how these are interlinked.

Angela Van de Wouw, presented how a simple tool, a spore liberator can help in many ways to study stubble borne diseases. Angela presented canola as a case study where they used this equipment to find some answers about the difference between the release of *Leptosphaeria maculans* spores from standing vs lying stubble and the effects on the disease development. The equipment is easy to work with, and collects adequate amounts of spores from stubble that can be used in genomics as well as screening studies.

Reynaldi Darma and **Lachlan Tegert**, are both doing masters degrees at the University of Melbourne. Reynaldi talked about how the phytohormone abscisic acid could help *Leptosphaeria maculans* in colonising its host, *Brassica napus* using genomics tools. Lachlan who works with Pollen Biology Group and the Plant Systematics and Evolution Group gave a talk entitled “Monitoring the flora and fungi in Melbourne air” tailed the theme of the day. For the project, he is investigating the biodiversity within the air of Melbourne and its relationship to hay fever and respiratory disease. He worked on University of Melbourne Parkville Campus building collecting spores from the air with help of equipment High Volume Samplers to survey pollen in the air. The collected spores were used for taxonomic and allergenic diversity. Lachlan showed results of spore counts from fungi for the interest of the people in the meeting.

