

APPS

AUSTRALASIAN PLANT PATHOLOGY SOCIETY



NEWS

Volume 16, No. 3

Sept 2003

Quarterly Comments



from the APPS President

Practical challenges for plant pathology

I have recently attended two meetings that have stressed the practical importance of plant pathology for the vegetable industries of Australasia, emphasising how our discipline is essential for the production of high yielding, high quality crops. These meetings both related to potatoes, well recognised as very important vegetable crops in Australia, New Zealand and throughout the world. The 3rd Seed Potato Industry Workshop in Portland, Victoria, and the Potato Industry Advisory Committee Workshop in Melbourne, in late August, both focused particularly on plant disease problems. In Portland, nine of the 17 invited speakers addressed important potato disease problems caused by viruses, bacteria, fungi and protozoa. The Melbourne meeting aimed to develop long term potato industry research strategies to solve problems for growers and processors, and these particularly involve soil health, soilborne diseases and diseases caused by viruses.

Plant pathology is a science that can provide deep insights in biology, as we continue to elucidate the intricacies of

interactions between plants, their pathogens and the environments in which they co-exist. However, the prime reasons for our science remain the need for practical solutions to the problems caused by plant pathogens. The potato industries continue to provide important products for human consumption, as the demands from consumers of fresh and processed potatoes continue to expand. However, potato growers are faced with intractable problems caused by several soilborne pathogens, diseases caused by viruses, and, in some areas, the late blight pathogen. These problems are not new, as any student of plant pathology knows, but the increasing demands for low pesticide methods of disease control, combined with increasing intensity of crop production, require disease management strategies that are more holistic and more "sustainable" than the very effective strategies based on synthetic pesticide chemicals. Indeed, these holistic, integrated approaches are likely to be the only way for reduction of intractable disease problems in the future.

These two meetings have focused on the

needs of a particular section of horticulture, but they have very adequately emphasised urgent requirements for practical solutions that continue to be demanded from our science. As plant-based industries intensify production methods, and as consumers increasingly demand low or nil pesticide production systems for food and fibre crops, practical, sustainable solutions are increasingly required for disease problems that continue to constrain agrarian activity. Plant pathology continues to be an integral part of the research requirement for agriculture, horticulture and forestry, providing essential knowledge from which disease management solutions can be developed for plant-based industries.

Australasian Plant Pathology

The APPS Management Committee has just completed very amicable and productive negotiations with CSIRO Publishing to

continue the contract for publishing of our Society's journal. Adding *APP* to the CSIRO journal stable has raised the profile and overall presentation of our journal, very suitably complementing the excellent editorial standards that have, and continue, in the presentation of plant pathology research findings and knowledge by our Society. Our journal should be the first publication option for all APPS members. International recognition of *APP* is burgeoning, due both to the excellent publication and editorial standards of the journal, and the science content. Publication of *APP* is one of the key functions of the APPS. We are fortunate to have very able and dedicated editorial input from Ric Cother and his Editorial Board, and efficient and high standard publication, distribution and marketing support from CSIRO Publishing.

Richard Falloon



REGIONAL NEWS QUEENSLAND

I would like to welcome Mr Peter Trevorrow into the fold of APPS regional councillors, as the new co-councillor for northern Queensland. Peter will now be the first point of contact for north Queensland members, and for anyone wanting information on APPS activities in the north. However this is a fairly loose arrangement, and of course all Queensland members are welcome to contact either Peter or myself for any matters concerning APPS in Queensland regardless of area.

The transfer of the Queensland Branch's finances away from the Commonwealth Bank of Australia (CBA) has been completed. This move was undertaken, as APPS no longer meets the CBA's definition of a non-profit organisation, resulting in considerable bank fees and charges being applied to our account. The Queensland branch finances have been transferred to the Heritage Building Society, which is pleased to have our business; does consider us to be a non-profit organisation of considerable benefit to the community and won't be charging us any account keeping fees.

ICPP 2003 CONFERENCE REPORTS – 26 MARCH

I sincerely apologise to the speakers from the morning session of the ICPP 2003 conference report seminar day, and to Graham Stirling who spoke in the afternoon, as I omitted their seminar summaries from my last report. Prior to the awards ceremony for Graham and Helen, were conference highlights given by the four QDPI staff officially allowed to attend ICPP. These seminars provided an excellent opportunity for those who were unable to attend the congress to catch up on some of the major topics covered.

The seminars were chaired by Andrew Geering.



Viruses and other small things

Denis Persley (Senior Plant Pathologist, AFFS Horticulture, QDPI)

Denis began his presentation by discussing some of the difficulties encountered in getting permission from the Minister for Primary Industries for any staff from QDPI to attend the congress, even though people had industry funding available to them. Unfortunately for QDPI staff, and staff from various similar organisations throughout Australia the issue of overseas travel remains a difficult one.

1. Genetically modified crops – *Papaya ringspot virus* (PRSV) resistant papaya
2. Tospoviruses – causing major losses worldwide in a range of crops
3. Biosecurity issues – two diseases regarded as the most important for Australia
4. Other pathogens of interest – phytoplasmas and other fastidious prokaryotes and phytomonads

Applications of gene technology for pathogen resistance

Ralf Dietzgen (Principal Biotechnologist, QABC, QDPI)

Ralf presented information from one of the congresses night sessions on technologies that are still at the laboratory development stage, giving details of five new approaches to providing pathogen resistance.

1. Virus-mediated resistance
2. Inactivation of virulence factors, by Syngenta Biotechnology
3. Expression of antimicrobial peptides
4. Expression of broad spectrum fungicides, by Syngenta Biotechnology
5. Modulation of programmed cell death

ICPP2003 - Emma's perspective

Emma Colson (Plant Pathologist, AFFS Farming Systems, QDPI)

Emma briefly described the "feel" of the congress, including a brief synopsis of the APPS Presidential Address "Biosecurity, Trade and Plant Pathology" and the welcome Haka. Emma spent most of her time discussing a workshop she attended prior to the congress

“The Roy E Grant Memorial Workshop on Crop Loss” which addressed the topics of disease assessment terms, sampling issues, precision and accuracy of visual disease assessments. Of particular value was the chance to practise with the computer program “Severity Pro” which allows the user to practise making disease assessments, and then to find out the answers. Emma found the exercise very valuable, with her success rate improving significantly after doing the exercises.

Native & Plantation Forestry - Diseases, Biosecurity & Quarantine

Michael Ramsden (Forest Health Surveillance Officer, AFFS Forestry, QDPI)

Michael started his talk by saying how much he enjoyed the congress, and gave the three main benefits from his attendance, as being the chance to

1. Forge links with interstate and international researchers
2. Explore and expand collaboration on projects of common interests
3. Seek out innovative technologies.

Michael then went into details of the follow on developments from the conference, and to explain the current situation for plant pathology with the Queensland Forestry Research Institute.

The role of soil health in plant growth and disease suppression

Graham Stirling (Biological Crop Protection, Fellow APPS)

Graham’s talk focused on the importance of soil health to both plant growth and disease suppression. The first important step is how to measure plant health, and discussed in detail the method used by his group, which uses the nematode community (in particular non-parasitic nematodes) as an indicator of the soil food web. Unfortunately, Graham has found the status of most soils used for vegetable production in Queensland to be very poor, with these soils having bacteria dominated systems. No-till systems were much better

than fumigated / plastic mulch / tilled soils, however these systems still have a way to go. Graham feels that the future improvement of Queensland soils will rely upon a minimum till system incorporating a range of organic amendments depending upon individual soil needs. Graham then gave a detailed example of some work his group has been doing with some sugarcane growers, and how the health of these soils was greatly improved by the use of a no-till planting system and crop rotation.

PLANT PATHOGENIC ASCOMYCETE WORKSHOP

Dunwich Research Station, Stradbroke Island, Queensland – April 9-11 2003.

- Workshop run by Roger Shivas and staff (Dean Beasley, Jan Dean, Sophie O’Neill and Desley Tree) from the QDPI Plant Pathology Herbarium (BRIP)
- Blackout before dinner at the Point Lookout Hotel
- Early morning trip to sight see at Point Lookout
- New ascomycete discovered by Ceri Pearce
- No fish too tough, no sea too rough!
- Beautiful weather, lovely views, good catering, excellent facilities
- Maybe a bit too much microscopy for those of us not used to looking down a microscope for 8 hours a day?

Led by Roger Shivas (Curator – QDPI Plant Pathology Herbarium; BRIP), the BRIP team (Dean Beasley, Jan Dean, Tom Marney, Sophie O’Neill and Desley Tree) put on an interesting workshop, which provided an excellent introduction to the major orders of plant pathogenic ascomycetes through a series of presentations by noted Australian mycologists (John Alcorn, James Cunnington, Ian Pascoe, Ceri Pearce, Michael Priest, Mal Ryley, Brett Summerall).

As well as the strong intellectual program, this workshop was held in a teaching laboratory with what is arguably the best view

from any research station in Australia, or even the southern hemisphere. Dunwich research station also the catchiest motto “No fish too tough, no sea too rough!” Stradbroke Island turned on some fabulous weather, which was best appreciated by an early morning walk around the Point Look Out headland. This workshop was pleasantly informal, with lots of useful information, lots of practical sessions, good access to infected plant material and cultures and excellent presenters. The only downside was the eye strain... Especially for those of us not used to more than six hours of microscopy in one day!

Well done Roger and team!

REDLANDS TECHNOLOGY PARK SEMINAR / FIELD DAY 10 JUNE 2003

Redlands Technology Park (Research Station) was the location for the second APPS/DPI Seminar day for the year. I would like to extend thank you's to Kaylene Bransgrove (*Scientist, AFFS Horticulture, QDPI*) for organising the day, and to Kaylene and Cherie Gambley (*Plant Pathologist, AFFS Horticulture, QDPI*) for packing up after I left early due to the flu.

Lucky door prize won by Shirley Jones (*QDPI, Toowoomba*).

Research at Redlands a History and Overview

David Lack (Research Station Manager, AFFS Horticulture, QDPI)

Established in 1948 with the purchase of nine hectares of land (and three draft horses), Redlands Research Station has grown to 66 hectares and has replaced the draft horses with (three) tractors – how times change! Over the last 54 years, research and development work at Redlands has covered most horticultural commodities grown in Queensland, but is now focused on amenity (lifestyle) horticulture, including turf, cut flower, landscape and nursery industries.

In response to the Public Service Management Commission review, Redlands spent of the 1980's under serious threat of

sale. This state of affairs has recently turned around, with lifestyle horticulture, and Redlands, now regarded as an important component of AFFS Horticulture priorities. This new stage of development is exemplified by the change in name from Redlands Research Station to Redlands Technology Park, and the recent upgrade of office and glasshouse facilities through major capital works.

Introduction to GrowSearch

Christine Lane (Extension Officer, AFFS Horticulture, QDPI)

GrowSearch Australia is an information service with a difference. Designed for producers of ornamental, horticultural and nursery crops, GrowSearch provides access to a database of over 20 000 articles from grower/ industry focused journals and newsletters. GrowSearch offers desktop document delivery, pest and disease images and the latest information on new technologies. GrowSearch also offers a subscriber service, which is mainly used by lecturers from TAFE's and Universities, industry groups and organizations such as QDPI. For further information check out the website www.growsearch.net or email direct to growsearch@dpi.qld.gov.au

Plant Diagnostics (GrowHelp Australia) - An overview

Jean Howell (Experimentalist, AFFS Horticulture, QDPI)

GrowHelp is a fee-for-service plant diagnostic service, which provides 'accurate disease diagnosis and practical plant health solutions'. GrowHelp services a range of clients from the nursery, cut flower, fruit and vegetable, landscape and turf industries, as well as emerging industries like olives. Samples are checked for pests (insects) and diseases, with verbal and written diagnoses provided at specified times.



**Plant Diagnostics (GrowHelp Australia) –
Some memorable diseases of nursery and
flower crops**

*Leif Forsberg (District Experimentalist, AFFS
Horticulture, QDPI)*

Leif's presentation took us back to pure plant pathology with a brief discussion of common ornamental pathogens, including *Chalara elegans* (Black root rot), *Phytophthora*, *Cylindrocladium*, *Rhizoctonia*, *Verticillium* and *Pythium* species.

Turf Research Activities at Redlands

*Don Loch (Senior Scientist, AFFS
Horticulture, QDPI)*

The turf industry, both in Australia and worldwide is currently enormous, and only expected to get bigger. As a prime example the last turf field day held at Redlands attracted over 220 people! Don gave us a brief overview of the turf groups work, which covers many areas including physiology, genetic improvement (mainly plant adaptation), management (weed control, nutrition, mowing), industry services (plant breeders rights, certification, variety multiplication, water conservation and acting a general source of information. Currently one of the main thrusts for the group is sports turf, helping to provide management strategies for highly stressed turf, such as that used in football stadiums, golf courses and racetracks.

Afternoon Field Walk

David Lack directed the afternoon field walk, providing an excellent commentary on the broad range of fieldwork carried out at Redlands. The highlight of the afternoon was a tour of the turf plots, over 100 in all. The tour also included the Heritage Garden, frangipani, pineapple, strawberry and pawpaw trial, and despite the brief shower of rain just as the group headed off, was enjoyed by all.

**THIRD APPS/QDPI SEMINAR DAY 5
AUGUST 2003**

The third seminar day in the APPS/QDPI seminar series for 2003, was held at the Indooroopilly Sciences Centre on Tuesday, 5 August 2003. The day was very well attended, with over 55 QDPI staff and APPS members, from throughout southeast Queensland. A hot pizza lunch organised by the QDPI seminar committee and Plant Pathology social club was also very well received.

**Screening new products for citrus disease
control**

*Andrew Miles (Plant Pathologist, AFFS
Horticulture, QDPI)*

Andrew began his talk by briefly describing the major diseases affecting citrus crops in Queensland, including Alternaria brown spot (*Alternaria sp.*) and citrus black spot (*Guignardia citricarpa*). Unfortunately at this time there are only three chemicals available to target these diseases, mancozeb, copper and benomyl all of which have undesirable side effects, such as mancozeb being a major marine pollutant and, like benomyl, decimating the predatory mite population. Andrew and the Fruit Pathology group based at Indooroopilly have been doing some work to test a range of other chemical alternatives, along with the aim of reducing the volume of chemical sprayed and finding other more effective chemicals with less environmental impact. So far Andrew has had some promising results with the strobilurin group and systemic resistance activators such as Bion.

**Stilbocarpa mosaic: a badnavirus from the
sub-Antarctic**

*Anne Mackenzie (Research School of Biological
Sciences, Australian National University)*

Thirteenth International Symposium on the Biology of Actinomycetes
Melbourne Dec 2003. <http://www.conferencestrategy.com.au/isba/index.html>

Stilbocarpa polaris (Macquarie Island cabbage) is one of the dominant plant species found on sub-Antarctic Macquarie Island 1400 km south east of Tasmania. A slow growing megaherb, it was favoured as a food source for many early explorers and sealers on the island. Recently, Anne Mackenzie and co-workers have detected *Stilbocarpa mosaic bacilliform virus*, a badnavirus, from many plants on Macquarie Island. Disease symptoms vary from mild to striking, with leaves showing very bright yellowing, sometimes as a zigzag pattern around the edge of the leaf. Other leaf symptoms include more traditional mosaics or ring patterns; with some plants showing such extreme chlorosis that the leaves are almost completely white. Affected plants can also be stunted. At this stage very little else is known about the disease, with transmission vectors unknown and the potential for alternative hosts uncertain. Interestingly, sequence information indicates that *Pineapple bacilliform virus* (PBV) is currently the most closely related virus, although the relationship between the two viruses is not really a close one. Anne spent two weeks working with the Virology group, who work with several pineapple viruses including PBV, at QDPI Indooroopilly in August.

WSMV - doomsday for industry or just another pathogen?

Andrew Geering (Plant Pathologist, AFFS Horticulture, QDPI)

Andrew began his talk by reminding us of some of the more alarmist articles written by the press at the beginning of the *Wheat streak mosaic virus* (WSMV) outbreak earlier this year. Coming hot on the heels of the SARS epidemic, it certainly seems as though the term virus is a very emotive one for most Australians at the moment. WSMV is a member of the potyvirus family, the largest family of plant viruses, and possesses filamentous particles, 15 nm wide by 700 nm in length. Found in Europe, the Middle East, North America and Australia, WSMV is

transmitted by *Aceria tosichella* (wheat curl mite) and requires 15 min of feeding to uptake the virus, which is retained for at least 9 days, and a further 15 min of feeding to transmit WSMV. The mites can be blown up to several kilometres in the wind, allowing the disease to move substantial distances. WSMV has a wide host range including wheat, barley, oats, rye and certain lines of maize sorghum and millet, as well as a broad range of wild grasses. Australian isolates of WSMV are most similar to those in the USA, Canada and Turkey. Andrew thinks that WSMV has the potential to be a serious problem for Queensland grain growers, with our higher summer rainfall favouring the establishment of a 'green bridge' between wheat crops. Summer cereal production is also very significant in this region, and WSMV poses a threat to these crops.

WSMV-it's discovery in QLD, quarantine & surveillance

Emma Colson (Plant Pathologist, AFFS Farming Systems, QDPI)

As every field pathologist knows, there is more to a disease outbreak than just the spread of symptoms and disease diagnosis. Emma gave us a brief glimpse into the more personal aspects of the WSMV crisis for the Leslie Research Centre (LRC) staff called in to handle the outbreak. Starting with a timeline of events, from the first diagnosis in Canberra, to the first diagnosis of WSMV in LRC plants (on the Friday before a long weekend – isn't it always the way?) to the final lifting of quarantine restrictions at LRC (the day before her presentation). WSMV also affected a range of other projects, as staff were diverted at short notice to perform surveys, the problems associated with quarantine restrictions including the postponing of winter trial sowing. However, in the end a marvellous effort was made by all, with every Grainco silo in Queensland surveyed in the first round, and the second round of surveys about to begin.

New Genetics, Food and Agriculture: Scientific Discoveries-Social Dilemmas

Dr Gabrielle Persley (Chair, The Doyle Foundation), introduced by Dr Chris Haywood.

There are now 60 million hectares of Genetically Modified (GM) crops grown in 16 countries around the world in 2003. Dr Gabrielle Persley is an international consultant in biotechnology and has recently completed a report commissioned by the International Council for Science, entitled "New Genetics, Food and Agriculture: Scientific Discoveries-Social Dilemmas". In this report more than 50 individual reviews of Genetically Modified Organisms and Living Modified Organisms were reviewed, and the key issues relating to the development and use of genetically modified foods-an area of interest and relevance to all biologists were identified.

The five key questions on genetically modified foods and living modified organisms

1. Who needs GM foods? In one form or another we all need them, ie: poorer countries need more food, while richer countries want higher quality food, from less land, with less water and causing less environmental damage.

2. Are GM foods safe to eat? The currently available foods are fine to eat, based on the millions of meals eaten with no documented ill effects. However, there are gaps in the knowledge, such as the long-term effects of such foods, and there is always the possibility of unintended effects.

3. Will GM foods affect the environment? Yes – of course they will, all agriculture affects the environment, some in more detrimental ways than others. Some of these effects have been very positive though, eg: Bt cotton, which has markedly reduced (by up to 50%) insecticide sprays.

4. Is there adequate regulation of GM foods? No for efficiency, transparency and international agreement – with most countries taking a different approach to regulation. However, most GM foods are far more stringently regulated than other products in

agriculture.

5. Will GM foods affect trade? Yes. However, lots of currently available technologies would benefit agriculture more, particularly in poorer nations. GM foods will not solve problems on their own. The need for labelled foods will become increasingly important, as consumers demand the right to choose what they eat.

So where to from here? The answer is for scientists to engage more with the community, participate more in the current dialogue about GM foods, find the gaps in scientific knowledge and fill them.

More information on Gabrielle's report can be found at the following websites:

www.icsu.org and www.doylefoundation.org

Christine Horlock

~~~~~  
**PAPUA NEW GUINEA**



**Potato Late Blight in the Highlands**

In early March 2003, an unknown disease swept through the English potato gardens in the Highlands, causing total fear and confusion amongst the illiterate potato growers. The seriousness of the problem prompted the National Government to call for Plant Pathologists to visit the food gardens in the Highlands to determine the cause of the diseases. In a preliminary visit by Mr. Pere Kokoa (Plant Pathologist with the National Agriculture Research Institute based at Kerevat) the causal agent was identified as *Phytophthora infestans*. In early June, two Plant Pathologists from PNG Cocoa and

Coconut Research Institute, Mrs. Josephine Saul and Dr. J. Konam, joined Dr. Trevor Wicks (Senior Plant Pathologist at the South Australian Research and Development Institute) and Tony Pitt (Victoria Potato Industry) on an investigative mission into the Potato Blight affected areas of the Highlands.

The pathogen was confirmed as *Phytophthora infestans* and it was suspected that the more destructive mating type A2 was causing the problem. We notice the whole plant, leaves, petioles and stem succumbing to the diseases. Some plants survived to about the 6<sup>th</sup> week and if no prophylactic fungicide treatments were applied, the plants were totally destroyed. The situation reports were prepared and sent to the National Department of Agriculture and livestock for quick action. The National Agriculture Research Institute has already contacted the International Potato Centre to bring in more varieties to trial in the Highlands. We noted that *Phytophthora infestans* has not been reported in PNG before. It was suspected that the pathogen might have crossed into PNG from Indonesia. The rate of spread of the pathogen is notably very fast. Found in Tambubil in March, it had spread to Enga province and devastated gardens there within the same month. By May it had spread into the Western Highlands, Simbu and Eastern Highlands. The Potato Industry in PNG, though small, is a valuable food and cash crop for the high altitude people. A warning to our Plant Pathologists in far North Queensland: this strain of *P. infestans* may be on its way down.

#### **PNG Plant Pathology Training Workshop for South Pacific Scientists**

Three scientists from the South Pacific, Mr Sarlaesh Kumar (Senior Technical Assistant, Plant Protection, Fiji), Ms Merriam Seth (Assistant Plant Protection Officer, Quarantine, Vanuatu), and Ms Sela Tupouniua (Senior Plant Pathologist, Tonga) attended a one month Basic Plant Pathology Techniques Training Workshop held at the University of Vudal from 29 June to 25 July 2003. The

training was sponsored by the Plant Protection Division of the Community of the South Pacific (SPC). The course, which was mainly practically orientated was organised and run by Professor Terry Price (Head of the Department of Agriculture, University of Vudal) and included the basics of plant disease diagnosis; field observation, collection and despatch of plant disease specimens for identification by national or international herbaria or other Institutes; identification of the major pathogen groups (fungi, bacteria, nematodes, viruses and phytoplasmas), basic phytopathological microscopy techniques and cultural techniques. The participants also spent one week with Dr Konam and the plant pathology section at the Cocoa and Coconut Institute learning about Cocoa diseases and management, and one week at the plant pathology laboratory at NARI Keravat with Mr Pere Kokoa seeing the research work on diseases of taro and other food crops including tissue culture. This course was a follow up of a similar course run for scientists within Papua New Guinea in December 2002, also sponsored by the SPC.



*Merriam, Sela and Sarlesh examining a specimen of diseased rice growing at OISCA.*

## VICTORIA

The Victorian branch of APPS held a mid year meeting and get together on the 4<sup>th</sup> of July 2003 at the Institute for Horticultural Development at Knoxfield. An early career researcher Dr James Cunnington and an experienced researcher Dr Peter Merriman entertained the members. James described the research he has been doing since the completion of his PhD research which is a marriage between classic taxonomy and molecular biology. He gave a brief history of the fungal collection (VPRI) at IHD and encouraged people to submit specimens of plant pathogenic fungi, no matter how common the fungus to the collection. He explained how he got DNA out of old specimens (up to 100 years), to identify *Taphrina* species on pear and *Prunus* necrotic ringspot virus on cherry and the delicate nature of the work. He has been using beta-tubulin sequences to identify *Neofabraea* species on apple in Australia. James gave the group a demonstration of the Victorian plant pest and disease database that is only available to DPI staff. The database lists plant pathogens and pests in the DPI collections, along with distribution maps in Victoria and diagnostic information for specific diseases.

James also described molecular biological techniques he has used to differentiate similar species of smuts, cercosporoid fungi, wood rotting Hymenochaetales and downy mildews.

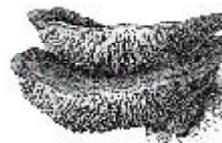
Dr Ian Porter (IHD Knoxfield) gave a 5 minute introduction about Peter Merriman with much heckling from Peter. Peter spoke about his career since arriving in Australia in the late 1960's and briefly described his job interview in a UK pub with a bunch of Aussies and a lot of lager. Peter has worked on a number of soil borne pathogens during his career and described some of the good results and not so good results over the years. Peter was involved with an ACIAR project on coffee rust in PNG along with many other Victorian plant pathologists at the time and reminisced about some scary stories in the hills of PNG.

More recently, Peter has been heavily involved in biosecurity at Knoxfield and Plant Heath Australia. And finally, Peter gave the group his thoughts on the future of plant pathology in Australia.

Peter will retire from DPI Knoxfield on the 12<sup>th</sup> of September this year and we all wish him well in his future endeavors.

The next meeting of the Victorian Branch will be held in early December.

*Tonya Wiechel*



## SOUTH AUSTRALIA

Carol Walker's excellence in undergraduate plant pathology was recently acknowledged by award of the D.B. Adam Memorial Prize for 2002. The Vice Chancellor, Prof. James McWha, presented the prize that recognises the best plant pathology student in the B.Ag.Sc. at the University of Adelaide. On completing her degree, Carol is building on her success and has begun research in plant pathology under the supervision of Eileen Scott and others. GWRDC and Australia Postgraduate Award provide support for her work on the effects of novel control measures for powdery mildew on microflora of grapevines.

*Ian Riley*



*Prof. McWha congratulates Carol Walker on receiving the D.B. Adam Memorial Prize.*

### **E. C. STAKMAN AWARD TO BOB MCINTOSH**

Professor Bob McIntosh was awarded the 2002 E. C Stakman award in a ceremony at the University of Minnesota earlier this year. This is a prestigious internationally recognized award for excellence in plant pathology that has been presented at by the Department of Plant Pathology at the University of Minnesota annually since 1956.

The committee that made the award offered the following comments concerning Bob's achievements:

“Professor McIntosh received the award for being one of the best classical plant geneticists of the 20<sup>th</sup> century, as well as being a critical thinker, a dedicated scientist, and an enthusiastic teacher. He has been a tireless worker in the field of genetics and resistance breeding for more than 40 years. His life has been dedicated to understanding and utilizing plant genetics to control of cereal rust diseases. The impact of his discoveries and work has extended far beyond the confines of the University of Sydney’s Plant Breeding Institute and his native Australia. Major achievements include the collection of aneuploid stocks of Chinese Spring wheat, chromosome location and genetic linkage studies, and identification of twenty-four rust resistance genes in wheat (seven for leaf rust, fourteen for stem rust, and three for stripe rust). Several of these genes were transferred into agronomically superior wheat cultivars and greatly reduced losses to rust diseases worldwide. Professor McIntosh pioneered the concept of pre-emptive or anticipatory breeding after the “boom and bust” cycles of plant breeding proved a failure. He was a major force in developing wheat with durable stem rust resistance. For more than 30 years,

Dr. McIntosh coordinated and published the international catalogue of wheat genetic nomenclature. It became the primary reference for wheat breeders and wheat pathologists around the world. In it are the identities of wheat genes with effects on morphological and physiological as well as disease resistance. Internationally, he has been a consultant on projects in Mexico, India, and China, and was recently elected a Fellow of the American Phytopathological Society.”

Bob joins three Australians who have received this award (Dr W. L. Waterhouse, 1956; Dr I. A. Watson, 1966; Dr A. Kerr, 1991).

*Robert Park*  
University of Sydney  
Plant Breeding Institute, Cobbitty



*Prof Bob McIntosh is presented with the 2002 E. C Stakman Award by Prof Francis Pflieger, Head of the Department of Plant Pathology University of Minnesota at Saint Paul, Minnesota.*



### **3rd Australasian Soilborne Diseases Symposium**

8-11 February 2004, The Barossa Novotel, Rowland Flat, South Australia  
[www.plevin.com.au/ASDS2004](http://www.plevin.com.au/ASDS2004)

**PERUVIAN SCIENTIST LUIS SALAZAR  
WINS 2003 DEREK TRIBE AWARD**

The Honorable Tim Fischer, Chairman of the *ATSE* Crawford Fund, announced that the recipient of the 2003 *ATSE*-Crawford Fund Derek Tribe Award is Dr Luis Salazar, Head of the Plant Protection Department, International Potato Center (CIP), Lima, Peru.

This prestigious Award was inaugurated in 2001 to mark the outstanding contributions of Emeritus Professor Derek Tribe, Foundation Director of the Crawford Fund, to international agricultural research. The award is made biennially to a citizen of a developing country in recognition of their distinguished contributions to the application of research in agriculture or natural resource management in a developing country or countries.

Luis Salazar, a Peruvian, is a world-recognized leader in research on potato and sweet potato pathogens, in particular, viruses. His contributions include the development of highly sensitive detection methodologies, as well as important studies of pathogen populations and the development of pathogen 'clean-up' methods that have had considerable impact in developing countries.

"I am thrilled and honored to receive this recognition," says Salazar. "The achievements it recognizes, nonetheless, would not have been possible without the close collaboration of my colleagues in institutions throughout China. This is a true example of the value of teamwork in getting technology out there, and making its impact felt in the areas of the world where it is most needed."

Throughout his career Dr Salazar has placed emphasis on training and information exchange to facilitate the sharing of his knowledge with scientists in developed and developing countries throughout the world. Dr. Salazar's greatest achievement, in terms of resulting impact, has been the development and implementation of virus clean-up technology for sweet potato - the staple food and feed crop in Shandong and other provinces

in China. These measures were introduced in collaboration with colleagues at the Asian Vegetable Research and Development Center, the Chinese Academy of Agricultural Science, Sichuan and Shandong Academies of Agricultural Science and the Xuzhou Sweetpotato Research Center (Jiangsu Province).

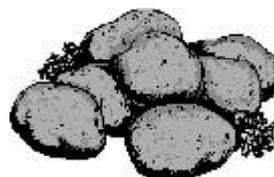
The rapid adoption of this technology for sweet potato production in Shandong Province contributed to 25-50 percent yield increases during 1995-2000 in a total area of about 533,000 ha. The same technology has been applied to Sichuan and Anhui Provinces and the potato production areas in Inner Mongolia and Helonjiang. Since 1997 the resultant economic benefit at farm and village levels is estimated at US\$550 million, the greatest single source of impact in the history of the International Potato Center.

This recognition takes place only a few months after the passing of Prof Tribe, in April of 2003. Among many other accomplishments in his career dedicated to advancing and promoting the importance of agricultural research, he, along with several other influential colleagues, encouraged and supported Sir John Crawford in his efforts to establish the Australian Centre for International Agricultural Research (ACIAR), a landmark in Australia's contribution to international agricultural research.

"Derek Tribe had a gentle and generous approach about him which masked an inner strength and ability to get things done," says Fisher. "He was a natural leader in so many fields and his guidance to so many over the years will be sorely missed."

Dr Salazar's will visit Australia in the last quarter of 2003 to receive the Award, and to speak at various national institutions about his work.

*submitted by  
Greg Johnston  
ACIAR*



## BOOK REVIEWS

### **Fusarium Head Blight of Wheat and Barley**

Eds K.J. Leonard and W.R. Bushnell  
APS Press: St Paul ISBN 0-89054-302-X  
512 pp. Price US\$89.00

Head blight has emerged as a disease of serious concern in wheat and barley production around the world over recent years. While it is less important in terms of yield loss than other diseases of cereals caused by *Fusarium* species, the potential for mycotoxin contamination of grain has consequences beyond the immediate loss in production. Head blight is a sporadic disease for which there are no really effective control measures. There is now a very large world-wide research effort on the disease, and this book provides a timely summary and assessment of current knowledge and future prospects.

The book has a strong emphasis on the situation in North America and on the dominant species there, *F. graminearum*. However, this is also the dominant species associated with recent outbreaks of head blight in Australia and in the North Island of New Zealand. Other species in the head blight complex, especially *F. culmorum* and *F. avenaceum*, do get a considerable number of mentions in the text.

The book opens with a historical perspective on head blight by Robert Stack. This includes both a history of epidemics and a summary of the early research work. One of the great values of this chapter is as an entry into the older literature (there are almost 200 references) that is not accessible through electronic databases.

The main part of the book is divided into five parts: The Pathogen and Disease Development; Mycotoxins; Resistance; Control; and Impact; each with two to five chapters, mostly contributed by active workers in the relevant field. The coverage of the disease is therefore very broad and it is difficult to think of anything that has been

missed.

The first section includes chapters on systematics of head-blight fusaria, population biology, the infection process, and epidemiology. The epidemiology chapter explicitly focuses on North America, but it provides a valuable update of the 1982 paper by Sutton that most authors use as a general reference. For me, the outstanding chapter of the book is on histology and physiology of head blight by Bushnell, Hazen and Pritsch. This provides a context for much of the material in other chapters on epidemiology, role of toxins, mechanisms of resistance and so on.

The two chapters on mycotoxins focus on trichothecenes and cover their chemistry and detection, biosynthetic pathways, and role in pathogenicity. There are no cook-book methods for analysis, but rather a survey of methods that have been used. A recommendation for standard protocols that reduce the variability between laboratories would have been useful. On the other hand, the introductory chapter to the section on resistance, by Dill-Macky, does contain detailed protocols for inoculum production, inoculation and assessment of different types of resistance. This is followed by chapters on resistance breeding in Europe and China, which give a more global perspective, and in barley. The concluding chapter to this section, by Muehlbauer and Bushnell, covers the potential for transgenic approaches to resistance. There is a discussion of genes or mechanisms that could be used, as well as methods for introducing them into cereals and practical issues concerned with their deployment.

The section on control has chapters on chemical and biological control. Neither method is particularly effective yet, but there is a summary here of what has been tried and what is worth exploring in the future. The final part on impact of the disease covers issues of which mainstream plant pathologists are often only dimly aware. There are chapters on the effect of head blight on malting and

brewing quality of barley, on safety and quality assurance for grain, and on economic and social effects of head blight.

I have very few criticisms of the book. There are some errors – the statement in one chapter that ascomycete stages are known for all *Fusarium* species except *F. oxysporum* is clearly not yet true for *F. culmorum* – but they are hard to find. Some of the material on variation within *F. graminearum* is being overtaken by current research. The identification of apparently phylogenetically distinct lineages within this species by O'Donnell and co-workers is referred to in several chapters, but nowhere have the consequences of this been properly worked out.

This is obviously a book that everyone working with *Fusarium* diseases in cereals should own or have access to. However, its appeal should be much wider than that. Because it takes such a comprehensive look at all aspects of the disease, there will be much in here to stimulate researchers, teachers and students with interests in other aspects of plant pathology.

David Backhouse  
University of New England  
Armidale



~~~~~

Compendium of Pepper Diseases

Eds K. Pernezny, P.D. Roberts, J.F. Murphy and N.P. Goldberg
APS Press: St Paul, 2003
ISBN 0-89054-300-3, 63pp

This new addition to the APS Compendium series is the thirty-eighth volume. It follows a standard format, commencing with a brief introduction on economically important members of the genus, *Capsicum*. Sections then follow on diseases caused by infectious agents, arthropod damage, abiotic and physiological disorders, herbicide injury, and finally

nutritional disorders. There are one hundred and twenty two colour plates of plant symptoms in the centre of the book. The information in each section is well referenced and the volume finishes with an index.

As with other members of the Solanaceae family, capsicums are affected by a wide range of diseases. For instance, there is a table listing no less than seventy viruses known to infect *Capsicum* species. Descriptions of seventeen virus diseases are described in more detail. Again each description follows an established format with an introduction stating the importance and geographic distribution of each disease. This is followed by a description of symptoms, the casual agent, disease cycle, epidemiology and control. Included is a contribution by Denis Persley on Capsicum chlorosis virus, a new Tospovirus first detected in 1999 from Queensland. Unfortunately no images of this disease were included with the colour plates. Bacterial and fungal diseases are treated adequately. I noticed a heading that distinguishes Oomycetes from fungi which is strictly correct, and fine in this volume where only *Phytophthora* and *Pythium* feature. It may be harder to think of a Downy Mildew as anything other than a fungal disease in future volumes.

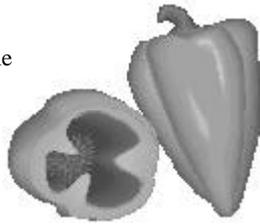
The only short-comings I can find with this book is that the control sections are brief and tend to ignore recent developments in the use of microbial biocontrols for both pests and pathogens. In addition, the colour plates of plant symptoms in the centre of the book are of variable quality. Most of the disease photographs are clear but some of the images depicting disorders and herbicide injury are poor quality reproductions in the reviewed copy. Looking through the colour plates in this compendium it is easy to see where an inexperienced person could mistake or confuse disease symptoms. This is particularly true for many of the systemic mottles and mosaics associated with viral diseases (many of which are not yet recorded in Australasia).

In contrast I thumbed through a 1991 edition of a field guide (Pepper Diseases)

published through the Asian Vegetable Research and Development centre in Taipei (Black, LL, Green, SK, Hartman, GL and Poulos, JM). The images in that book are much clearer because they have used both field and studio photographs and are less confusing for an inexperienced reader.

This is worthy addition to the set of APS disease compendia. As a diagnostic pathologist I will use it as an additional tool; a compilation of useful information, despite the fact that some of it has been published elsewhere. For instance, several of the bacterial and fungal diseases are common to tomatoes and have been previously described in an edition of the Compendium of Tomato Diseases.

Len Tesoriero
EMAI, Menagle



Verticillium wilts

By G.F. Pegg and B.L. Brady
CABI Publishing

Wilt diseases caused by species of *Verticillium* are important diseases of an enormous variety of plants and as such it is no surprise that a volume of this size on this disease has been produced. In this book the authors have reviewed the literature pertaining to *Verticillium* with chapter topics such as Taxonomy, Morphology, Cytology through to Pathogenesis, Resistance and Control. It is certainly a comprehensive review of the literature and covers all aspects of the disease. The most comprehensively covered areas of the book relate to the epidemiology, ecology and control of the diseases. The sections on taxonomy and morphology are brief and only give an overview of these topics and there are gaps in the literature relating to these areas that are surprising. The book would have

benefited considerably from the inclusion of some photographs, particularly of the pathogen, the different species of *Verticillium* and some disease symptoms; presumably these were not considered in an effort to keep the cost of the volume down. The lack of illustrations tends to make this volume less inviting than the recent volume edited by Tjamos *et al.* (2000) and as such would be less useful for those looking to an introduction to these diseases. Also as would probably be expected in such a comprehensive review, reading the book can be a little dry at times and it is certainly not the type of book in which large sections could be read at a sitting.

One of the most useful features of the book is the extremely comprehensive list of the literature in the bibliography and for any researchers actively studying the disease this would almost be reason enough to purchase it. A good proportion of the literature cited is from "hard to source" proceedings and reports and so it is useful to have a precise of them. The literature cited has a tendency to be dominated by older references but this probably reflects the level of activity of researchers on this disease in the last decade or so. The authors also make the point that a significant component of recent publications repeat research that had been completed 20-30 years ago – it is likely that similar claims could be made for other pathogens!

This book is essential reading for those actively researching diseases caused by *Verticillium* spp. It is likely to be a useful addition for those with an interest in other soilborne diseases as many of the techniques and methodology used on this fungus would be applicable to other organisms.

References

Tjamos, E.C., Rowe, R.C., Heale, J.B. and Fravel, D.R. (2000) *Advances in Verticillium: Research and Disease Management*. APS Press, St. Paul, Minnesota.

Brett Summerell
Royal Botanic Gardens, Sydney

New Members

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

QLD: Ms L Lee McMichael
NT: Ms Claire C Streten
ACT: Mr Steve S Refshauge (Student)



Don't forget to have your say!

This is your newsletter so be sure to let us know what is going on about:

- * Open days and field days
- * Scholarships and employment opportunities
- * Regional news
- * Special interest groups
- * Requests for information etc.
- * Upcoming events
- * Awards to members
- * Issues of concern
- * Humorous events

and any other interesting information!

WANTED: VISITING SCIENTIST INFORMATION

The visiting scientist site on the APPS web page needs your input!

Could anyone who has a scientist visiting them please input the information via the member services web page.

APPS NEWS is the official newsletter of the Australasian Plant Pathology Society, published quarterly. Items for inclusion should be sent to Mrs B. Hall, Plant Research Centre, SARDI, GPO Box 397, Adelaide, SA. 5001. Ph. 08 8303 9562, Fax 08 8303 9393, Email: hall.barbara@saugov.sa.gov.au. **Next deadline: 7th November.** Editor-in-Chief APP: Dr Eric Cother, NSW Agriculture, Orange Agricultural Institute, Forest Road, Orange, 2800. Ph. 02 6391 3886, Fax 02 6391 3899, E-mail: ric.cother@agric.nsw.gov.au

Web Site: (<http://www.australasianplantpathologysociety.org.au/>)