

APPS

AUSTRALASIAN PLANT PATHOLOGY SOCIETY



NEWS

Volume 17, No. 2

June 2004

Quarterly Comments

from the APPS President



June (already!!), and a recent meeting remind me of our place in the scheme of things.

As I write this, June is almost here. 2004 is almost half over, and the countdown towards spring field trials begins. The schedules for my field research are mostly governed by the temperate Southern Hemisphere potato growing season. My major work activities therefore follow the cycle of spring planting, summer monitoring, autumn harvest and disease assessment, winter analyses and planning for the next spring. Many plant pathologists that have any association with practical plant disease control, or study of diseases in crops, will be very familiar with this type of work cycle. The practical importance of our discipline is emphasised by these work patterns; plant diseases cause real

problems for crop production and plant culture. This was also brought home very forcefully in the recent meeting of the National Vegetable Pathology Working Group, held in April 2004, in Adelaide. This Group usually meets every 2 years, to review current vegetable disease projects in Australia and New Zealand, and to highlight the current plant health issues facing vegetable production in our countries. Both the commonalities and the diversity of the problems caused by the diseases we work on is emphasised in these meetings. It is always very satisfying to see the excellent progress that is made towards usable, practical solutions that result from the application of the science we practice.

15th Biennial Australasian Plant Pathology Society Conference

Deakin University Waterfront Campus, Geelong, Victoria

26 – 29 September 2005

Watch this space.....

Australasian Plant Pathology (APP) to be included in The Essential Electronic Agricultural Library (TEEAL).

At the urging of Dr Ric Cother (*APP* Editor in Chief), the APPS Management Committee has agreed to include *APP* in TEEAL, following the example of several other CSIRO journals. TEEAL is a comprehensive collection of current agricultural and related journals, assembled into a CD-ROM library supported by a complex bibliographic search engine. The library is available only to developing countries, and contains over 140 journals selected as those most essential to research

and education. The library is administered by the Mann Library, Cornell University, Ithaca, New York, USA. Information on TEEAL can be viewed at . Ric and the APPS Management Committee agree that inclusion of *APP* in this library will further the Objects of our Society by enhancing access by plant pathologists, agricultural scientists and other relevant people in developing countries to research output from our part of the world, and from our members.

Richard Falloon



Treasurer's Report

Capitation Grants

In 2003 grants were paid to Victoria, Queensland, ACT, PNG, and South Island New Zealand. NSW, South Australia, and Tasmania had provided for 2002 a brief written report plus the amount of funds in their account. They were not paid as they failed to inform the Business Manager(BM) or the Treasurer of the title of their APPS account and the account number. West Australia, Northern Territory, and North Island NZ had **not** sent in a report or details of their account and so were not paid. If regions want or need a grant then members must insist their regional councilor provides the requirements outlined in the By-Laws.

Grants for 2003 will be paid as soon as the BM receives a brief written report on their activities in 2003 + details of the bank account into which the grant is to be paid. Note: it is hoped that eventually APPS will be able to direct credit the grant to each region in Australia.

Note: APPS Inc. now has an official post office Box Number:
P.O. Box 4674, Toowoomba East, Queensland 4350.
All APPS invoices should be sent to the BM at this new box number.

REGIONAL NEWS

SOUTH AUSTRALIA

In celebration of 10 years of collaboration between plant pathologists at China Agricultural University and CSIRO/SARDI in the area of biocontrol, a symposium was held on the 28th May 2004 hosted by the SA branch of APPS and CSIRO. The symposium was entitled 'R & D on new microbial inoculants for improved crop productivity in China and Australia' and involved all collaborators. The leaders of the collaborative effort, Dr Maarten Ryder (CSIRO) and Prof Tang Wenhua (CAU) kick-started proceedings by speaking about the progress in the biocontrol of soil-borne diseases under the China-Australia AusIndustry project. The symposium then covered aspects such as implications for biocontrol of having diverse pathogen populations present in the soil and their role in contributing to disease suppression in soil, the screening of antagonists of *Verticillium dahliae* (agent responsible for cotton wilt), the biocontrol of rice and vegetable diseases, the use of *Penicillium* as a biocontrol agent for crops and pastures with a particular focus on the mode of action of *Penicillium radicum*, the use of organic amendments for disease control and the biocontrol of take-all of cereals using formulations of *Trichoderma* with contributions from Paul Harvey (CSIRO), Ma Ping (Hebei Academy of Agricultural and Forest Sciences), Steve Barnett (SARDI), Dr Zhang Sui (Shanghai Academy of Agricultural Sciences), Dr Steve Wakelin (CSIRO), Prof Li Honglian (Henan Agricultural University), Simon Anstis (SARDI) and Rosemary Warren (CSIRO). This team of researchers is to be congratulated for not only the spirit of collaboration they have shown but the impact they have had on research into biocontrol (quite worthy given our constant battle against pathogens and the need to ensure the environment is kept 'clean and green').

Amanda Able

QUEENSLAND

News from Southern Queensland

New co-councillor for APPS Southern Queensland. I am pleased to announce that as of 30 June 2004, Lisa Gulino will be taking over the role of APPS co-councillor for Southern Queensland. In fact Lisa has already started, by writing the seminar summaries below. Welcome Lisa!

I would like to take this opportunity to thank all those APPS members who have encouraged and supported me in my role as councillor for Queensland. Special mentions to Peter Trevorrow (my co-councillor), Denis Persley, Helen Ogle, Emma Colson, the DPI&F Plant Pathology Seminar and Professional Development Committees, Indooroopilly Plant Pathology Social Club, Corinna Lange, Nerida Donovan, Mark Braithwaite and of course to Peter Williamson, APPS Management Committee(s) and my fellow regional councillors. I would encourage all APPS members to give Lisa all the support and encouragement you gave me when I became councillor.

No, you aren't seeing things – DPI in Queensland is now DPI&F! Just in case you were confused I thought it worth a mention that as of the last Queensland state election the Queensland Department of Primary Industries, is now the Department of Primary Industries and Fisheries.

APPS Queensland is happy to announce that the 2004 APPS (Queensland) Postgraduate Seminar Awards Day will be held in the mid-semester break (late September). Due to the change in councillors, Lisa has decided to post-pone the competition until late September. Details will be announced soon. Please note that all correspondence for the competition should be forwarded to Lisa (see the ad in this edition of APPS News).

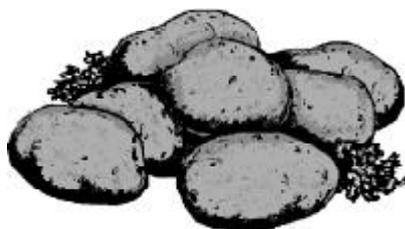
Christine Horlock

News from North Queensland

In late April, Christine Horlock, Dean Beasley and Dr Cheah, all gave a seminar at the Centre for Tropical Agriculture, Mareeba. Dr Cheah, from Crop and Food Research, Palmerston North, New Zealand spoke about Asparagus diseases in New Zealand including aspects of biological control of *Phytophthora* species, and management options for *Stemphylium* species. Christine, from DPI&F Applethorpe Research Station, spoke about her trials and tribulations in the glasshouse with the asparagus diseases rust, Phomopsis stem blight and anthracnose. Although it is early days it looks like an integrated management strategy will be the best solution for asparagus diseases in Queensland. Dean, also with DPI&F Applethorpe Research Station, gave an interesting overview of the much anticipated plant disease database KEEMu (Knowledge Engineering Electronic Museum). When released this database will make our host-pathogen searches much easier and reliable.

We thank Christine, Dean and Dr Cheah for taking time out from their hectic schedules to inform us of their work. We also would like to thank Christine Horlock for the many hours of extra time that was devoted to the Queensland Branch councillor position and welcome on board Lisa Gulino who has taken on the role.

Peter Trevorrow



**APPS/DPI&F Seminar Day, 3 March
2004 – Leslie Research Centre,
Toowoomba.** *Christine Horlock*

**Nikki Seymour (Senior Soil
Microbiologist, DPI&F, Toowoomba)
“Soil biology: constraints and benefits
for the northern grains region of
Australia”**

Nikki began her presentation with a description of the climate and production conditions typical for the Northern Grains production region (ie: from Dubbo north). Nikki then listed a range of pests and diseases already being investigated in Australian cereals, including nematodes, Fusarium wilt, yellow spot of wheat, aschochyta blight of chickpeas, phytophthora root rot, stalk rot of sorghum and long fallow disorder. Nikki’s work is now focused on “what are the other constraints to production” in this region; including general soil microbiology, soil health and the soil ‘food web’.

Nikki described the range of methods used by her group to assess soil health, including microbial diversity and functionality; chemical analysis; glasshouse bioassays (most of N’s work); and field crop performance. Nikki then specifically discussed the soil bioassays involving soil pasteurisation that she has used to determine the effects of a variety of treatments (including tillage, stubble retention, crop rotation, pasture leys and organic amendments) on soil health. Her research is now concentrating on trying to identify which specific components of the soil food web under the various treatments are potentially constraining productivity.

**Rebecca Zwart (Plant Pathologist,
DPI&F, Toowoomba)
“Genetic analysis of multiple disease
resistance in synthetic hexaploid wheat”**

The aim of Rebecca’s recent work has been to develop molecular markers for disease resistances to root-lesion nematodes *Pratylenchus thornei* and *P. neglectus* and yellow spot of wheat. Unfortunately, no

commercially available wheat variety carries resistance to all three diseases. However, recently very effective sources of resistance to *P. thornei*, *P. neglectus* and yellow spot have been identified in synthetic hexaploid wheat lines. Rebecca developed a double haploid population from a cross between a synthetic hexaploid wheat and a bread wheat, using wheat x maize hybridisation and embryo rescue. The population was phenotyped in the glasshouse for both nematodes and yellow spot. Genotyping, where 174 markers were mapped (1 marker per 15 centimorgans), was used to figure out which markers had associations with each of the traits. Two regions were found associated with *P. thornei* resistance, and three regions were found associated with *P. neglectus* resistance. Three chromosome regions were associated with yellow spot resistance. However, because these are polygenic systems, it is likely that not all of the possible markers have been detected, but Rebecca is on the right track to develop tightly linked markers for use in marker-assisted breeding.

Linda Swan (Plant Pathologist, DPI&F, Toowoomba)

“Crop rotation experiments and Fusarium wilt of cotton”

Fusarium wilt of cotton caused by *Fusarium oxysporum* fsp *vasinfectum* (*Fov*), has been responsible for severe crop losses in Australian crops for the last several years, with Queensland strains believed to have evolved locally, due to local producers growing susceptible varieties. Linda focused her seminar on her rotation crop work, which is currently in the third year of experiments. Linda hopes to determine which crops are most efficient at reducing *Fov* levels in infected soils, and hence reducing infection in subsequent cotton crops. Linda uses soil bioassays, consisting of soil samples taken three times during the growing period, to assess *Fov* load. Initial experiments experienced problems with *Rhizoctonia* infections, especially where legumes had previously been grown, this

problem has been eliminated by treating cotton seed with PCNB before sowing. Significant differences were observed in bioassays after eight months, with field trends mirroring glasshouse trends. At this stage, fallow, maize and cotton are better than sorghum, soybean and mungbean; with the fallow treatment standing out as the best rotation at this stage. Glasshouse rotation experiments involved small pots containing infected soil collected from field sites. *Fov* has been isolated from a small number of plants other than cotton, including mungbean, fieldpea, pigeonpea, vetch chickpea, lucerne, sunflower, maize and sorghum (from root and or stem material).

Residue incorporation tests using a variety of materials were also attempted, with not a lot of difference between high and low rates of material incorporated, and once again legumes do not seem to be very effective. The group is also using PCR diagnostic tests to determine any changes in *Fov* population. During the question session, it was revealed that the *Fov* group suspect that *Fov* is such an effective endophyte on such a broad range of crops, that the fungus can survive on pretty much any of the crops trialled so far; hence the success of the fallow treatment.

Ruth Dill-Macky (Associate Professor, Department of Plant Pathology, The University of Minnesota)

“Fusarium Head Blight research at The University of Minnesota”

Ruth Dill-Macky is currently on sabbatical in Australia working with CSIRO.

Ruth began her talk by extolling the delights of life in Minnesota, including the fact that Minnesota has snow on the ground for six months of the year... brrr... no wonder she was so pleased to be in Queensland over the northern winter. But onto the serious stuff. Ruth has been based at Minnesota University for just over a decade, and spent most of her time working on Fusarium head blight (FHB), which affects wheat and barley. FHB is caused mainly by *Fusarium graminearum* in

Minnesota, but there are up to 17 other *Fusarium* species which have been involved at various times. FHB causes severe yield losses in wheat, and affects barley by causing excessive foaming in malted beers after opening, as the fungi follows the barley through the whole brewing process. FHB also produced *Fusarium* toxins, and causes problems when affected grain is included in animal feed – generally vomiting and feeding refusal in non-ruminants. Severe epidemics first occurred in Minnesota and North Dakota in 1993

Ruth's work with FHB has focused on epidemiology, disease management and chemical controls. The management of FHB has been made much more difficult by the Minnesota climate, with residue decomposition rates being extremely slow, due to the ground being frozen for six months of every year. In some places residue can be up to four years old. Another significant problem lies in the fact that reducing the numbers of *F. graminearum* specifically has little effect, as other *Fusarium* species fill the gap, so that the total number of *Fusarium* species, and the level of disease, remains the same. Ruth's group have trialled a number of methods of managing trash, with the most effective being burning the trash after planting. Although expensive, heading applications of chemicals have also been effective, causing 50-60% reductions in severity.



Seminar Day 20th April 2004, Indooroopilly. *Lisa Gulino*

APPS Southern Queensland co-hosted the second APPS/DPI&F seminar day for 2004 at Indooroopilly Sciences Centre on Tuesday April 20th. The day was well attended by over 40 plant pathologists from southern Queensland, and included presentations from four speakers (details below).

Ms. Linda Smith (Plant Pathologist, DPI&F)

'Improving *Fusarium* wilt resistance of tissue-cultured banana'.

Linda is currently a member of the BRASH (Banana Root and Soil Health) team. This team is investigating 'soil health' and indicators that can determine whether a soil is 'healthy'. Linda's work specifically focuses on disease management and soil health associated with the *Fusarium* wilt/Banana pathosystem. Linda spoke about the importance of improving the resistance of tissue-cultured bananas to *Fusarium* wilt (*Fusarium oxysporum* f.sp. *cubense*; *Foc*); as they are more susceptible than traditional planting material (suckers and bits). Work includes the use of silicon supplements in tissue culture media and silicon soil amendments to glasshouse grown tissue culture plants. Silicon soil amendments have been shown in other pathosystems to increase resistance by acting as a physical barrier, preventing pathogen penetration, and activating systemic acquired resistance pathways in the plant. Future work will look at gene activation in response to treatment with silicon and subsequent infection with *Foc*.

Linda's work on the biological control of *Fusarium* wilt in bananas, involves the use of organisms isolated from suppressive soils that reduce the pathogenic capacity of *Foc*. The organisms currently being investigated are antagonistic bacteria, arbuscular mycorrhiza and non-pathogenic *Fusarium oxysporum* species. The silicon work is showing promising results at reducing infection.

Similarly, the addition of beneficial mycorrhiza prior to planting has shown improved growth and vigour of the plant, which may enable the plant to reduce disease severity.

**Dr. Peter Reville (Virologist, Queensland University of Technology),
'Virus surveys of Taro in the South Pacific'.**

Peter was the guest APPS speaker for the day, and gave us a very entertaining view of the arduous task of performing virus surveys in the South Pacific. Peter's work was part of a virus-indexing project with QUT that involves the screening of germplasm to ensure it is free from viruses. Specifically, his work involved the screening of Taro germplasm.

Taro is an important crop in the South Pacific and is often called the 'rice of the Pacific'. International breeding programs had previously focussed on blight resistance, however, until recently, no test was available for virus screening. Several viruses can infect Taro and a variety of tests have now been developed to screen for these. Below is a list of the major viruses and the detection system used.

Rhabdovirus: *Colocasia bobone disease virus (CBDV)* - PCR, *Tarovein chlorosis virus (TaVCV)* - PCR

Potyvirus: *Dasheen mosaic virus (DsMV)* - PCR or ELISA

Reovirus: *Taro reo virus (TaRV)* - PCR

Vectors of the virus can include: aphids, leafhoppers and mealybugs. Control measures include biological control of vectors, establishment of new plots (eg less vectors) and removal of virus reservoirs.

During Peter's time on this project he 'surveyed' the following places: Fiji, Tonga, New Caledonia, Vanuata, Samoa, American Samoa, Solomon Islands and PNG. Many thanks to Peter for his presentation and great

photos of 'surveys'. It must be noted that Peter will be leaving plant pathology behind to work on human viruses.

**Mr. Murray Sharman (Virologist, DPI&F/CRC for Tropical Plant Protection),
'Tospoviruses in crops in Australia'.**

The type species for tospoviruses is *Tomato spotted wilt virus (TSWV)*, which has a wide host range of over 600 plant species and is one of the 10 most destructive plant viruses in the world. All tospoviruses are transmitted by thrips, with specific thrips species only being able to transmit specific tospoviruses. Eleven tospovirus species are now recognized worldwide with three being identified in Australia: TSWV, *Capsicum chlorosis virus (CaCV)* and *Iris yellow spot virus*. Significant losses regularly occur in Australia due to TSWV and CaCV in crops such as capsicum, tomato, lettuce and peanut. Damage caused by TSWV appears to have increased in recent years with the arrival of Western Flower Thrips (an efficient vector for a number of tospoviruses). A resistance breaking strain of TSWV has been identified in South Australia, which overcomes the Tsw resistance gene in capsicums and has caused significant losses over the last two seasons in that state.

CaCV was first identified from Bundaberg and Ayr in Qld in 1999 and is now widespread, occurring in all the major capsicum production areas of Queensland, often at a higher incidence than TSWV. CaCV has similarities to other tospovirus serogroup IV members but is a new virus that has not been described from any other country. A source of resistance has been identified in germplasm and is now being incorporated into a breeding program to produce capsicums with resistance to CaCV. Other control measures include improving crop hygiene, reducing virus sources, and monitoring and controlling vectors (thrips). Long-term control is aimed at generating CaCV resistant cultivars.

Mr. Skye Thomas-Hall (Molecular Biologist, CRC for Tropical Plant Protection)
'Phylogenetic analysis of *Mycosphaerella* leaf spot diseases of bananas'.

Skye discussed the complex of *Mycosphaerella* leaf spot diseases of banana, in which several organisms of the genus *Mycosphaerella* are responsible for leaf spot diseases of bananas. The following are a list of diseases and organisms responsible.

Disease name:	Organism responsible
Black sigatoka:	<i>Mycosphaerella fijiensis</i>
Yellow sigatoka:	<i>M. musicola</i>
Emusae leaf spot:	<i>M. emusae</i>
Speckle:	<i>M. musae</i>

Black sigatoka devastates crops worldwide and may require up to 40 fungicide applications a year to control. It was found in Tully, QLD in 2001. How did it get there and

how did it spread? Sequence data was used to determine the genetic diversity of black sigatoka. This sequence data was then used to develop a PCR based diagnostic test for detection of black sigatoka. Other work Skye performed, involved sequence analysis of the ITS region of over 200 *Mycosphaerella* species. This study enabled Skye to identify 7 genotypes within the *Mycosphaerella* complex.

New contact details for APPS Southern Queensland:

Ms Lisa Gulino
Plant Pathologist, Plant Science
Department of Primary Industries and Fisheries
Indooroopilly Sciences Centre
80 Meiers Road
Indooroopilly QLD 4068
Phone: 07 3896 9337 Fax: 07 3896 9533
Email: Lisa-Maree.Gulino@dpi.qld.gov.au

APPS Post Graduate Seminar Prize Day

Queensland branch, September, 2004

Postgraduate plant pathology students from throughout Queensland, or their supervisors, are encouraged to submit expressions of interest to participate in the APPS (Queensland) Annual Postgraduate Seminar Awards' Day.

For further information, or to register your interest in participating, please contact **Lisa Gulino**

Plant Pathologist, DPI&F, Indooroopilly Sciences Centre,
80 Meiers Rd, Indooroopilly QLD 4068.

Phone (07) 3896 9337 Fax (07) 3896 9533

Email Lisa-Maree.Gulino@dpi.qld.gov.au

BOOK REVIEW

'Biological Pollution: an Emerging Global Menace,' edited by Kerry O. Britton. APS 2004. ISBN 0-89054-313-5

The dramatic increase in overseas trade and tourism is fuelling a growing problem with invasive exotic pests. The objective of the editorial team was to create a book that raises awareness of the problem among environmentalists and the general public. They succeeded in this aim. The book was primarily written by speakers at an APS symposium.

The book includes chapters on weeds, diseases and other pests including nicely cited case studies with good black and white photography. Phytopathological case studies include chestnut blight, white pine blister rust, pitch canker and ink disease. Introductory chapters supply the reader with data supporting the argument that biological pollution is a challenging and increasing problem. Other chapters deal with measures

that are currently in place to limit biological pollution including a brief account of the role of the United States Department of Agriculture Animal and Plant Health Inspection Service and some political issues. The book is very readable, well referenced and has interesting historical anecdotes. One example relates to the now famous Japanese flowering cherries in Washington, DC. The original shipment of 2000 trees sent in 1909 had to be destroyed and replaced with healthy trees because they were heavily infested with scales, wood boring insect larvae and root-knot nematodes.

I think the book would make excellent reading for students in plant pathology or environmental science. The book provides an introduction to many of the issues on biological pollution and is not intended to be a text book on regulatory plant pathology or to provide a detailed account of the operations of phytosanitary organizations such as APHIS.

Roger D. Magarey, CPHST/ APHIS and NCSU, Raleigh, North Carolina



International *Fusarium* Laboratory Workshop

27 September to 1 October 2004

Forestry and Agricultural Biotechnology Institute (FABI)
University of Pretoria, Pretoria, South Africa

This is a "hands on" workshop covering:
Laboratory Strain Identification, VCG Analysis, Mating Types and Crosses,
Species Concepts, Molecular Identification

For more information or to register on line, visit the web site
<http://fabinet.up.ac.za/fusarium>

or contact: Dr Teresa Coutinho, FABI, University of Pretoria
Pretoria, 0002, South Africa

Tel: +27 - 12 - 420 3934, Fax: +27 - 12 - 420 3960

15th Biennial Australasian Plant Pathology Society Conference

Deakin University Waterfront Campus, Geelong Victoria

26 – 29 September 2005

Workshops

The organising committee of the 15th Biennial Australasian Plant Pathology Society Conference invites groups to host workshops/tours in conjunction with the conference.

For more information please contact the workshop coordinator, Grant Hollaway (grant.hollaway@dpi.vic.gov.au).

The list of workshops/tours currently planned are:

- ? **Nematology:** Liala Nambia and Australasian Association of Nematologists
- ? **Bunt and Smuts of Gramineum:** Jim Kollmorgen
- ? **Biological Control of Plant Pathogens:** Dean Metcalf
- ? **White Blister of Brassicas:** Joanna Petkowski & team – Knoxfield.
- ? **Pythium/Pythium diseases/Albugo (white blister):** Elaine Davidson
- ? **Forestry Pathology workshop and tour:** Angus Carnigie and Dave Cahill
- ? **Plant Biosecurity Research and Policy Priorities:** Ryan Wilson
- ? **Field Crop Pathology Tour:** Field Crop Pathology Team at Horsham

6th Australasian Plant Virology Workshop

30 August – 2 September 2004
Seaworld Nara Resort, Gold Coast,
Queensland

Registration deadlines:

Earlybird: 8 May 2004

Final date: 30 July 2004

Abstract submission: by 2 July 2004

Detailed information, including a registration form, is available on the APPS website:

<http://www.AustralasianPlantPathologySociety.org.au>

Enquiries: Denis Persley
DPI & F, Queensland
E-mail: denis.persley@dpi.qld.gov.au
Phone: 07-38969375
Fax: 07-38969533



New Members

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

VIC: Dr Rebecca Ford
Mr Mark McLean

WA: Ms Nari Anderson

SA: Mr Robin Harding
Dr Kathy Ophel Keller
Dr Eun-Lee Jeong

New Zealand:
Mr Sean Bithell

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!



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: 20th August 2004.** 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/>)