VOL. 43, NO. 4 http://res.agr.ca/lond/pmrc/cps/cpshome.html DECEMBER 1999

President's Message

Zamir K. Punja

The year 2000 and Beyond - A Time for Reflection

In what may end up being the shortest Presidential message in recorded history, I would like to convey my best wishes to each CPS member for the upcoming year. The CPS committees continue to work toward addressing the various issues facing our Society and I shall update you on their progress in the March, 2000 issue of *CPS-SCP News*.

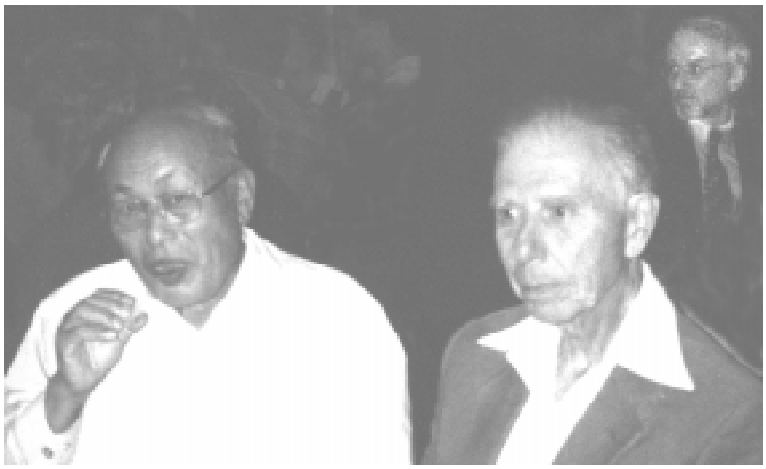
As we approach the new Millennium, this is an appropriate time to reflect back to where we have been and where we are heading - as individuals, as professionals and as a Society. We have much to be thankful for in our professional lives, and I hope you will take the time to reflect upon your personal achievements, contributions, goals and ideals. I wish you and your families a great holiday season and New Year and look forward to working with you in the year 2000.

Inside this issue:

Incoming Board (left to right): Roger Rimmer, Vikram Bisht, George Lazarovits, Lone Buchwaldt, Zamir Punja, Tim Paulitz, Peter Sholberg, Greg Boland, and Tony Sturz

Les Présidents de SCP/CPS (left to right): Robin Morrall (1994), Zamir Punja (2000), Verna Higgins (1990), George Lazarovits (1999), Blair MacNeil (1968), Ron Howard (1998), Don Harder (1997)

Meilleurs des Présidents de SCP/CPS (left to right): Chuji Hiruki (1991), Wally Sackston (1961), Andy Tekauz (1995)



Une autre des Présidents de SCP/CPS (right): Michèle Heath (1996). She is the 1999 recipient of the ***Award for Outstanding Research****. Also pictured: David Kaminski (newsletter editor) and Miriam & George Lazarovits*

CALL FOR NOMINATIONS: 2000 CPS AWARDS

The CPS Awards represent an important means of acknowledging the contributions of our members to our society, to the science of plant pathology and to the community in which we live. Please take time to consider and discuss with your CPS colleagues worthy candidates for the awards listed below. A list of previous recipients of these awards is displayed on page iv of the Membership Directory.

Awards Committee members: Luc Couture (Chair), Sue Boyetchko, Verna Higgins, Ron Knox and Khalid Rashid.

1. Honorary Member

The nominee can be any person who has rendered eminent service to plant pathology and shall normally not be a member of the Society.

2. Fellow

Nominees shall be regular members of the Society who have rendered outstanding service to the Society and to the profession of plant pathology.

3. Award for Outstanding Research

This award is intended to recognize outstanding research in plant pathology in Canada. As the Society's most prestigious award, consideration is given to research involving new concepts, the discovery of new phenomena, or principles in plant pathology or novel application of existing principles.

4. Gordon J. Green Outstanding Young Scientist Award

The award is intended to recognize the contribution of a junior scientist, judged to have had a major impact on plant pathology in Canada. Nominees for this award must be under 45 years of age throughout the calendar year in which the award is both announced and made. Nominees need not be members of the Society, nor need they be domiciled in Canada. Recipients shall be judged to have made an outstanding contribution to plant pathology in Canada on the basis, not only of demonstrated competence, but also of one or more of the following special criteria:

1) superior research accomplishment, either as a single contribution or as a series of associated endeavours, in plant pathology or in a related field,

2) meritorious contribution to plant pathology scholarship or literature, whether or not this is based upon the recipient's own original research, and whether or not it be based upon predominantly Canadian material,

3) unusually valuable practical application of scientific or technological expertise, and

4) significant leadership in plant pathology.

5. Graduate Student Travel Award

This is a new award initiated by the current board in 1999. The purpose of this award is to provide reimbursement to selected graduate students to attend the Annual Meeting of the CPS.

Instructions

If you wish to nominate someone for the Graduate Student Travel Award, please read the **terms of reference** for this award [next item] in this issue of *CPS-SCP News*. If you wish to nominate someone for any other award, please send me 5 copies of:

1) a short letter of nomination indicating why this candidate should be considered for the award,

2) a citation prepared according to the style of previously published citations in the *Canadian Journal of Plant Pathology*, and

3) a recent curriculum vitae of the nominee before **March 15, 2000 deadline**. If you do not receive confirmation that I have received your material, please contact me immediately.

Reminder

As to the **Dr. and Mrs. D.L. Bailey Award**, it ceased to exist in 1999 according to CPS by-laws. Money in the Bailey award fund has been assigned to the Best Student Presentation Awards. Finally a notice for registration to the contest for the **Best Student Presentation Awards** will be posted in the March issue of *CPS-SCP News*.

Dr. Luc Couture
Chair, CPS Awards Committee

Soils and Crops
Research and Development Centre
Agriculture and Agri-Food Canada
2560 Hochelaga Boulevard
Sainte-Foy, Quebec G1V 2J3

Phone: (418) 657-7985, ext. 221
FAX: (418) 648-2402
Email: couturel@em.agr.ca

Graduate Student Travel Award - Terms of Reference

Canadian Phytopathological Society

Purpose

To provide financial reimbursement to selected graduate students to attend the Annual Meeting of the CPS.

Guidelines

1. There shall be 2 travel awards given annually by the CPS, each for a value of $300 per student.

2. Applications for awards should be ranked by the Awards Committee of CPS, and a recommendation made to the President of CPS no later than 8 weeks prior to the meeting.

3. The financial reimbursement shall be used to offset travel, accommodation, registration, or other related meeting costs.

4. The travel award applications can be made from any postsecondary institution (in Canada or elsewhere) and the student need not be a member of CPS.

Application procedure

1. The student shall provide 5 copies of the application (an original and 4 photocopies) and forward them to the Chair of the CPS Awards Committee by March 1 of the year of the CPS annual meeting.

2. The student must be registered in a Master's level or PhD degree program at the time of application and undertake a research project in the area of plant pathology.

3. The application must include:

a) A copy of the abstract of the presentation to be published in the *Canadian Journal of Plant Pathology*.

b) A one-page statement from the student outlining the significance of the research to be presented and its scientific, economic and/or societal implications.

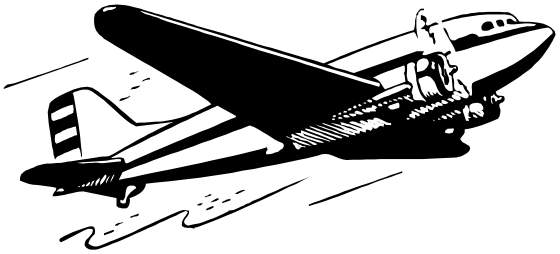
c) A letter of support from the senior supervisor outlining the student's research and academic abilities and other evidence of scholarship.

d) A brief (2-page) resume of the student's background and relevant experience.

e) Academic transcripts inclusive of undergraduate and graduate training (one original copy should be attached, if available).

Criteria for selection

Applications will be ranked based on scholastic performance, significance of the research conducted, and other evidence of contributions to the field of plant pathology. Applicants will be notified of the outcome of the committee's deliberations 6 weeks prior to the annual meeting. The successful students will be presented with a cheque at the CPS Banquet. All travel and other arrangements are the responsibility of the student.



Joint Meeting of the Canadian Phytopathological Society and the Pacific Division of the American Phytopathological Society

"Working Together for Healthier Plants"
June 18 - 21, 2000

Victoria Conference Centre,
Victoria, BC, Canada
http://www.uvcs.uvic.ca/conf/cps_aps

The Organizing Committee invites abstracts for oral and poster presentations.
Abstract Submission Deadline with Abstract Fee(s): **February 29, 2000**
Author Registration Deadline: April 17, 2000

Submission, Program, Travel, Accommodation, and Registration information will be posted at the website

Please refer there for updated information or contact Pat McGuire at Conference Management, University of Victoria
Email: pmcguire@uvic.ca

Technical Program: Simon Shamoun
Email: sshamoun@pfc.forestry.ca

Sponsors and Exhibits: Zamir Punja
Email: punja@sfu.ca

Join us in Victoria, one of the most livable cities in the world. Bring along your family to experience our westcoast hospitality, lush natural surroundings and diverse outdoor and recreational activities.

http://www.travel.bc.ca

Success for the First International Powdery Mildew Conference

The First International Powdery Mildew Conference was held in Avignon, France from August 29 thru Sept 2 1999. The Organising Commmittee, chaired by Richard R. Bélanger, was comprised of W.R. Bushnell, USA, T. Carver, Wales, A.J. Dik, The Netherlands, H. Kunoh, Japan, P. Nicot, France and A. Schmitt, Germany. P. Nicot was also in charge of local arrangements and all the activities took place in the Congress Centre of the magnificent and historic Palace of The Popes. The Congress Centre facilities were fully saturated as over 200 delegates from more than 20 different countries attended the meeting.

The conference was divided into seven different sessions that covered the latest research developments in one of the four main topics: the fungus, the plant, epidemiology, and control. Each session was opened by a keynote address from an expert in the field and followed by oral presentations from the contributed papers. W.R. Bushnell gave the opening keynote address. In addition, over 100 papers were submitted for the poster session. The program allowed several discussion and poster periods so that old and new colleagues could exchange notes and ideas on their favorite subject, powdery mildew.

On the social front, participants were treated to a unique tour on Wednesday afternoon. It started with a lunch at Le Pont de Gard and was followed by wine tasting in some of the world famous estates of Chateauneuf-du-Pape and a banquet in the village of Chateauneuf-du-Pape with some typically Provençal entertainment. On Tuesday night, a dinner cruise on the Rhône was on the program with a close-up view of the renowned Pont d'Avignon.

There was a general concensus among the participants that the conference had not only filled a void in plant pathology research but should be the starting point of recurrent conferences on powdery mildew. California has been mentioned as the possible site for the Second International Powdery Mildew Conference. In the meantime, the conference has highlighted the need for a textbook on powdery mildews: this book, edited by Bélanger, Dik & Bushnell, will be published by APS Press and should be released toward the end of 2000.

Grande réussite pour le "First International Powdery Mildew Conference"

La Première Conférence Internationale sur le Blanc (First International Powdery Mildew Conference) s'est tenue à Avignon, France, du 29 août au 2 septembre 1999. Le comité organisateur, présidé par R. R. Bélanger, était composé de W.R. Bushnell, Etats-Unis, T. Carver, Pays de Galles, A.J. Dik, Pays-Bas, H. Kunoh, Japon, P. Nicot, France et A. Schmitt, Allemagne. P. Nicot était également responsable des activités locales et le tout s'est déroulé au Centre des Congrès du magnifique Palais des Papes. La conférence a atteint ses limites d'accueil avec une participation de 200 délégués représentant plus de 20 pays différents.

Le programme comportait sept sessions distinctes qui couvraient les plus récents développements scientifiques dans l'un des sujets suivants: le champignon, la plante, épidémiologie et méthodes de lutte. Chaque session était introduite par un conférencier invité et complétée par des présentations orales sélectionnées parmi les résumés soumis. W. R. Bushnell a ouvert la conférence avec un séminaire relatant la recherche passée et présente sur le blanc. Pour les sessions de posters, plus de 100 travaux de recherche étaient présentés. Finalement, plusieurs périodes de discussion avaient été prévues au programme pour permettre rencontres et échanges entre tous les participants.

Au niveau social, les congressistes ont eu droit à des activités uniques. Suivant la session du mercredi matin, le tout a commencé par une visite et un lunch au Pont de Gard près de Nîmes, qui a été suivi par une dégustation de vins dans les domaines réputés de Châteauneuf-du–Pape et s'est terminé par un banquet dans le village de Châteauneuf-du-Pape agrémenté de danses typiquement provençales. Pour la soirée de mardi, on avait organisé un souper-croisière sur le Rhône qui nous permettait presque de 'danser' sur le Pont d'Avignon.

Dans le cadre de la session de clôture, les participants ont unanimement reconnu que la conférence avait non seulement répondu à un besoin en recherche mais qu'elle devrait servir de point de lancement pour des rencontres récurrentes sur le sujet. A cet égard, il semble que la deuxième conférence internationale sur le blanc aura lieu en Californie. Entretemps, la conférence ayant fait ressortir le manque d'un livre récent sur le blanc, APS Press a offert de s'associer à une publication sur le sujet: ce livre, qui sera édité par Bélanger, Dik & Bushnell devrait paraître vers la fin de l'an 2000.

People

Robin Morrall travelled to Uppsala, Sweden in mid September to act as "opponent" for the Ph.D. thesis defence of Eva Twengstrom at the Swedish University of Agricultural Sciences. The thesis was about epidemiology and forecasting of sclerotinia stem rot of oilseed rape. Thus, it was right up Robin's alley, particularly since most oilseed rape in central Sweden is spring-sown, as in western Canada.

The role of the opponent in a Swedish defence is an interesting one for people accustomed to the north American system. At the public defence the opponent makes the initial presentation and is required to (a) present the background to the thesis topic in layperson's terms and (b) highlight the main findings of the student's thesis work. Fortunately (c) they also may (perhaps must) speak in English! Subsequently, the opponent has up to two hours to question the candidate. All this sounds like hard work and it is. Furthermore, the day before the thesis defence Robin presented a seminar on production and diseases of pulse crops in western Canada. However, before anyone feels sorry for recycled retirees, please read on.

The thesis defence went well, as did the celebratory lunch afterwards, and the even-more-celebratory dinner party in the evening, which took place on a lake cruise boat. Happily, Robin's wife Barb was able to participate in all the above events (Heaven knows why she wanted to listen to the seminar!) as well as a 10-day holiday afterwards in Sweden, Norway and Britain. One highlight of this holiday was the day after the defence, which, fortuitously, was the annual musical culture night in Uppsala. Robin and Barb had been told that this was the only night of the year when one could dance between the stacks in the Uppsala public library to the strains of a big band playing on the main floor. They were not disappointed. The band was excellent and the hardwood floor very good; just the space between the stacks was a little restrictive.

Contact the Editor

E-mail: **cps-news@home.com**
phone: (306) 934-1088
FAX: (306) 652-2708

702 Lansdowne Ave.
Saskatoon, SK S7N 1E5

You may be wondering when and if this issue would ever arrive. I like to think the newsletter is anticipated every quarter with bated breath. Did Kaminski's computer succumb to the so-called millennium bug? No, in fact it was Kaminski who succumbed to a much deadlier virus you may know as procrastination. This I attribute to anxiety on the eve of a turning point much bigger, for me, than the less-than-apocalyptic Y2K.

It's the Y4O bug. Yes, middle age and all that entails is upon me. "Why so melodramatic and morose" you ask "It's a threshold many are happy to get to and, as they say, 'life goes on'." The truth is that it's not an age I expected to experience. From my early teens, I had a strong premonition that I would not have a long life, not likely see 30.

So much like the pundits and computer nerds who predicted the end of life as we know in it in a grand computer-mediated melt-down, I have to admit I was wrong. I have gone on to raise a family, embark on a career, pay taxes, contribute to society.

Have you any advice for a man on the verge of mid-life? Redouble my efforts? Try harder? Work smarter? Eschew obfuscation? Now there's an idea - become an irascible plain speaker! I now have licence. To quote a toothless lion in an ancient dental health commercial, "Cut the guff mouse . . .and chew!"

If you're looking for advice on where to turn first in this issue (as though this isn't the last *item you read in the News), I direct you to a thought provoking treatise on how women have found their way into plant pathology and the obstacles they have faced in doing so. Are you a closet chauvinist? Accept women as equals but chafe at the idea of equal opportunity or having a female superior?*

Or, if you're feeling as though Canadian initiative does not cut it on the world stage, consider the precedent setting Powdery Mildew Conference sparked by some of your Canadian colleagues.

Happy reading. See you in March. - David (Ed.)

Regional Report

The BC regional group of the Canadian Phytopathological Society had its annual meeting at the Pacific Agri-Food Research Centre (PARC) of Agriculture and Agri-Food Canada (AAFC) in Summerland, BC, on October 19 and 20, 1999. The BC regional group of CPS has been meeting annually since 1972. This was the 28th annual meeting and I apologize for some confusion since I reported last year's meeting as being the 26th annual meeting when it was in fact the 27th.

Close to 50 people attended the meeting organized by Guus Bakkeren (PARC). The meeting was held immediately after the Western Forum on Pest Management, which allowed scientists from Alberta, Saskatchewan and Manitoba to attend. We thank these participants for their attendance and their valuable input at our regional meeting.

The participants were given a welcome presentation by Peter Burnett (AAFC, Lethbridge, AB). Peter was the Acting Director at PARC while Gordon Neish was away. A total of 13 papers were presented including the traditional and entertaining annual report from the BCMAF plant diagnostic laboratory (Abbotsford, BC). Guus Bakkeren managed to get three sponsors for this meeting: Agro Pacific Industries Limited (Abbotsford, BC), BC Fruit Growers' Association (Kelowna, BC), and Dow Agroscience Canada Inc. (Calgary, AB). Their contributions facilitated the organization of a mini-symposium on rusts entitled "What can we learn from well-studied pathosystems". Don Harder (AAFC, Winnipeg, MN) gave a presentation entitled "Bountiful harvests - a tribute to a century with the rusts in Canada", a historical overview of an area of plant pathology in which Canadians have excelled. This was followed by a presentation by Roland Line (USDA-ARS, Pullman, WA) entitled "Integrated control of rusts and other diseases of wheat and barley". It was fascinating and humbling to see the phenomenal amount of scientific work and progress in management that has been done in North America for these pathosystems.

Participants became sensory evaluators at the banquet by trying a wide range of BC wines. The keynote speaker was Dick Hamilton who broadened our horizons with his presentation entitled "Plant pathologists and global food security". With his scientific knowledge in biotechnology and experience as president of the International Society for Plant Pathology, Dick was able to give us a very unique perspective on our global role as plant pathologists. Very lively exchanges and discussions followed his presentation. Related to this, Dick also informed us of a website where emerging plant diseases are discussed. The address is (http://www.healthnet.org/programs/promed.html).

The winners of the 1999 competition for Best Student Papers were Brad Hoffman from the laboratory of Colette Breuil (UBC) for his paper entitled "A comparison of homologous subtilases in sapstaining fungi", and Caroline Jackson, a student of Jim Rahe (SFU) working in the laboratory of André Lévesque (PARC), for her paper entitled "*Pythium jasmonium*, a new species with ornamented oogonia isolated from jasmonate-deficient *Arabidopsis* mutant". They each received a cash prize and a one year CPS membership.

During the business meeting the winners of the 1999 John Yorston award were announced. They were Dawn Higginson (UBC) and Peter Isaacson (SFU). Eric Littley, Plant Health Consulting, Kamloops, was elected as BC's CPS representative, replacing André Lévesque after 3 years of service. Ken Ng was appointed as the industry rep for BC.

The BC members of CPS will meet next year in Victoria at the national CPS meeting to be held jointly with the APS Pacific Division meeting, June 18-21, 2000. The website address is (http://www.uvcs.uvic.ca/conf/cps_aps/). The 30th annual BC regional meeting of the CPS, to be held in October, 2001, will be organized by Bob Copeman (UBC).

Submitted by C.A. Lévesque, B.C. rep 1997/99.

Book Review: Modern Fungicides and Antifungal Compounds II

by George Lazarovits

My job, when I started working at the London Research Institute, was to investigate the mode of action of systemic fungicides. Thus, I looked forward to catching up on the topics covered in the book "Modern Fungicides and Antifungal Compounds II" Edited by H. Lyr, P.E. Russell , H.W. Dehne and H.D. Sisler and published by Intercept, Andover, UK (www.intercept.co.uk). The papers in this book were presented at the 12th International Reinhardsbrunn Symposium held in 1998 in Thuringia, Germany. The book has 505 pages, comprising 62 papers, in 7 sections. The work is mostly from Europe, although there are papers from the US, Japan, Israel, and Russia. The book has some excellent articles but suffers from the inclusion of many papers that contribute only marginally to our knowledge about modern fungicides. Many such articles could have been reduced to one or two pages and several could have been omitted altogether. This would have allowed for expansion of those papers that report on more recent and relevant research. The organization of the book could have been improved by more judicious placement of related articles within a section.

Section one deals with "Current status and development of fungicide science" and is one of the most informative. Topics covered include registration, the value of fungicides in global plant protection, target based fungicide discovery, and the use of molecular genetics in fungicide research. Section two on "Mode of action of fungicides" has many papers which do not deal with mechanisms at all. One of the better articles covers the potential role of the ATP binding cassette (ABC) transporters in pathogenicity and fungicide resistance of fungi with a wide host spectrum, such as *Botrytis*. We have known for a long time that fungicides can also have potent activity on plant physiology and section three discusses such aspects. Articles of note cover the impact of strobilurins on plant vigour and whether plant derived polyamines could replace polyamines in fungi when blocked by chemical inhibitors that specifically block this pathway. Section four examines integrated control of plant diseases. The paper dealing with a four year trial to control early and late blight in Israeli potato production is an excellent case study of efforts needed to manage two very different organisms with reduced applications of chemicals. An article on managing disease and fungicide resistance in pome fruit pathogens in Belgium is also well done. The section on management of fungicide resistance has as an impressive report on the use of genetic tags to screen for Benomyl resistance. Chemicals that work by induced resistance (IR) are now being marketed and remain an intriguing topic in plant protection. While there are several interesting reports presented on inducing agents, such as phosphate and $AlCl_{3,}$ as well as on the use of parsley cells for screening of IR inducing chemicals, the chapter does not do justice to this area of work. The last section deals with natural products and biological control agents, an area which is certainly also better covered in other books and reviews. Topics covered include the fungicidal activity of products such as gramicidin S and pyrrolnitrin derived from bacteria, volatile oils such as clove extract, and *Trichoderma* preparations.

Overall, I had hoped for more from this book because it could, with some planning, have become a vital reference source for information about new chemicals and fungicide technology. I was particularly surprised at the omission of papers on the most promising development of the century in plant protection and that is incorporation into plants of novel genes that code for fungicidal products, such as antifungal peptides. This book does have important fungicide science and will have uses as a reference source. It may also be a reflection of the loss of effort in the development of chemical protectants that has been ongoing for the last two decades.

Plum Pox Potyvirus found in Pennsylvania

On October 20, 1999, the US Department of Agriculture and Pennsylvania Department of Agriculture announced the discovery of the D-strain of plum pox potyvirus (PPV) on peaches grown in an orchard in Adams County, Pennsylvania. This is the first North American report of PPV. As a result, the Canadian Food Inspection Agency has suspended all import permits for *Prunus* plant material (including nursery trees, scionwood and rootstocks) with the exception of cherry from the United States. The D-strain of PPV is not known to affect cherry.

Surveys and testing of *Prunus* trees in orchards in the surrounding area have been undertaken by the US Animal and Plant Health Inspection Service (APHIS) and the Pennsylvania Department of Agriculture (PDA). The PDA has since established a quarantine zone, prohibiting the movement of *Prunus* fruit stock and budwood out of the infested area, and commenced traceback and traceforward work on infected trees.

Plum pox is generally considered one of the most serious diseases of plums, apricots and peaches and is of great economic importance in many European countries. Sweet and sour cherries are affected by some strains. Fruit quality, size and quantity are adversely affected, often necessitating removal of infected trees. Yield losses and overall economic losses have been catastrophic to plum and peach growers in large geographic areas of the affected countries. In these areas all affected trees have been removed by the growers and replaced with resistant varieties or with other crops.

The virus was first reported in Bulgaria, but is now known to occur in practically all European and Mediterranean countries. In the central and eastern European countries, PPV spread relatively early and levels of infection are generally high. In the Mediterranean countries, PPV is a more recent event and further spread is possible. In the northern and western countries, levels of PPV are very uneven and outbreaks are sporadic and usually localized. It also occurs in Chile, having first been reported in 1992.

The main source of the virus is infected trees. From these, PPV is transmitted either by grafting or by aphids in a non-persistent, stylet-borne manner to uninfected hosts. Furthermore, the virus can survive in the roots of rogued infected trees and spread from there by natural root grafting.

Symptoms may appear on leaves or fruits of infected trees, and are particularly evident on leaves in spring when chlorotic spots, bands or rings, vein clearing and even leaf deformation is evident. Infected fruits show chlorotic spots or rings, and diseased plums and apricots are deformed with internal browning of the flesh and pale rings or spots on the stones. Symptoms are highly variable.

Plum pox has proven to be difficult to control in Europe. Once introduced the virus can spread and become quickly entrenched in the native vegetation. Control of the virus is primarily removal of infected trees. There is no anti-virus treatment that can be applied to infected trees or orchards.

The use of disease-free propagative material at all times is fundamental to preventing introduction to new areas. Measures to reduce the importance of plum pox in areas where it is present include the use of disease-free planting stock when planting new orchards or replenishing existing ones, removal of infected trees (including their roots), use of tolerant or less susceptible species or cultivars where possible, proper spacing of trees to reduce the rate of spread, control of aphids to slow spread and weed control (including wild *Prunus* species) to eliminate reservoirs of either aphids or PPV.

A task force with representatives from the CFIA, provincial ministries and producer groups across Canada has been formed with the objective of determining the best course of action for Canada in light of reports of the virus in the US. There is a plum pox link to more information on the CFIA home page at www.cfia-acia.agr.ca.

Fusarium Workshop: The worst disease threat to cereal crops in 50 years

Winnipeg, Man., Dec. 6, 1999: It's the worst disease threat to Canadian cereal crops since rust in the 1950s and a "time bomb" that could get worse before it gets better. That's the message from more than 25 speakers at the recent Canadian Workshop on Fusarium Head Blight (FHB)/Colloque Canadien sur la Fusariose.

The numbers are staggering says Dr. Jim Bole, Director of Agriculture and Agri-Food Canada's (AAFC) Cereal Research Centre in Winnipeg. In recent years Canada's yield losses to FHB have totaled above $500 million. Quality losses resulting in downgrading have totaled another $400 million in Western Canada alone. Factor in the millions lost by farmers and the industry to manage the disease, and the total rises to well over $1 billion.

FHB is a regular problem in the Maritimes, Quebec and Ontario and in recent years incidence has increased dramatically in Manitoba and eastern Saskatchewan, threatening the western prairies. The more than 200 researchers, grain producers, processors, marketers and consumers attending the Workshop broke into discussion groups and provided recommendations for actions.

In an overview of the emerging issues, Dr. Andre Comeau of the AAFC Ste. Foy Research Centre, Quebec summed up the urgency of the problem and the challenges of the research effort. "We are on a time bomb with respect to Fusarium," he says. "The genetic variability in Fusarium is very dangerous, and the problem could get worse."

From a scientific perspective, the disease is unusually complex, Comeau says. There are many questions regarding how it occurs and how it can be stopped. "It's going to take coordination, national and international, sharing of ideas and methods, and prioritization of the scientific research gaps. We have to bridge those research gaps."

Photos of PPV-infected plums & symptoms on leaves courtesy of J.McDonald, Centre for Plant Quarantine Pests, CFIA, Nepean, ON.

Though there has been some progress in wheat breeding - wheat varieties with improved FHB resistance are expected beginning in 2001 - researchers need to find a wider and more diverse base of resistance to provide a long-term defense. In addition, the industry lacks fundamental information about the epidemiology of the most serious fusarium pathogen, *F. graminearum*, and the mycotoxin it produces.

Canadian researchers observed that some help may come from the United States. A handful of U.S. scientists were in attendance, including Dr. Bob Stack of North Dakota State University, who delivered an overview of the FHB situation south of the border, where the disease took hold long before it became a major issue in Canada.

"Let's make sure we ask the Americans so we don't simply redo what they've already done, in terms of making breeding crosses and so on," cautioned Canadian barley breeder Dr. Brian Rossnagel of the University of Saskatchewan. "We've always had a very good relationship with people in the American barley group . . . and they're very willing to share information with us."

The scientific and technical concerns highlighted at the meeting were bolstered by concerns from farmer and consumer representatives. Producer representative Dennis Garlick, of Roland, Man., outlined the yield and quality losses and other "lost opportunity" costs that farmers are facing due to FHB, including restricted rotations, limited varieties to choose from and limited marketing opportunities. Most top grades and markets for wheat and barley have a "low or zero tolerance" for the FHB mycotoxin.

Farmers would benefit from improved forecasting and better information on how crop varieties respond to FHB, Garlick says. "The current system is not specific enough. We need some kind of an early warning system."

Daryl Embury of the Canadian Food Inspection Agency, reporting comments of participants interested in consumer issues, emphasized the need for the grain industry to be accountable to the public on food safety concerns, such as those raised by the presence of FHB-produced mycotoxin in the grain supply. While there may be no current risk to consumers, the industry has a responsibility to keep the public informed of the FHB situation, he says. "The public, the people who buy the product, have a right to know what's going on. Clearly an education effort is needed to bring these people up to speed." The Workshop concluded with agreement to form a steering committee to address the Fusarium problem.

****

Fusarium Workshop: Genetic progress is best defense for Canadian grain industry

Winnipeg, Man., Dec. 6, 1999: While farmers fight Fusarium head blight (FHB) in grain fields across Canada, the long-term winner of the battle will be decided in the laboratory, according to speakers at the recent Canadian Workshop on Fusarium Head Blight/Colloque Canadien sur la Fusariose in Winnipeg.

Crop breeding research to develop improved cereal varieties, backed by supporting research in several disciplines, offers the best long-term hope to turn the tide on FHB, which has already cost the Canadian grain industry an estimated $1 billion.

That was the view emphasized by more than 25 speakers at the workshop, largely from the scientific community, who outlined the challenges ahead. The Workshop was organized by the Canadian Agri-Food Research Council (CARC) to provide a forum for information exchange and ongoing collaboration. Along with scientists, the more than 200 participants included grain producers, processors, other industry, regulators, marketers and consumer representatives.

FHB, a fungal disease that attacks Canada's major grain crops, including wheat, barley, corn and oat, reduces yields and quality, and may make the grain difficult to market. For plant breeders, the challenge is identifying genes with resistance to FHB and breeding

that resistance into new cereal varieties.

In cereals, the most promising effort has been in wheat, where breeders have developed several potential varieties with FHB resistance. Agriculture and Agri-Food Canada's (AAFC) Cereal Research Centre in Winnipeg has a Canada Prairie Spring line that could be registered by 2001, followed by a Canada Western Red Spring in 2002 and a Canada Western Extra Strong in 2003. However, the FHB resistance identified in wheat is largely based on one genetic source, which increases the chances it may be overcome by the disease within several years.

An additional problem is that the resistance wheat breeders are using comes from Chinese wheat material poorly adapted to Canada, says Dr. Fred Townley-Smith of the Cereal Research Centre. "The Chinese source has lots of problems with agronomy, quality and other disease resistance," he says. The difficulty of transferring FHB resistance from that poor material is further increased because the resistance is based on several genes. However, breeders will get help from recent progress in molecular genetics. Researchers led by Dr. Doug Procunier and Dr. Jeannie Gilbert at the Cereal Research Centre have developed DNA markers that make it easier to identify and transfer FHB resistance in breeding programs.

In barley, the breeding effort toward resistance started later and is much further behind. So far, researchers have been unable to find good sources of FHB resistance within barley species, and, as in wheat, the limited resistance in barley is complex, says barley breeder Dr. Bill Legge of the AAFC Brandon Research Centre.

The good news is that several current barley varieties appear less susceptible to the disease, most notably the newer two-row malt types such as AC Metcalfe, CDC Kendall and CDC Stratus. However, "less susceptible" is a far cry from resistant, says Legge. "It will take a long time to develop highly-resistant varieties. But we are making progress."

The outlook is brighter for corn, says breeder Dr. Lana Reid of AAFC's Eastern Cereal and Oilseed Research Centre, Ottawa. Reid and colleagues have identified several sources of very good FHB resistance in corn, which they have used to develop potential new varieties. A challenge is that corn is affected by several Fusarium species, some of which cause infection through the corn silk and others which directly attack the kernel. "It's tough to get resistance to multiple species," says Reid.

In oat there is currently no breeding effort in Canada, but that could change if FHB becomes a persistent problem for the crop. "We know that Fusarium head blight can affect oat, but there's not much work done in North America," says pathologist Dr. Brent McCallum of the Cereal Research Centre. "There appear to be varietal differences so breeding for improved resistance may be possible."

All researchers in breeding expect to benefit from further advances in molecular genetics and other research areas. The more they understand about FHB, the easier it will be to identify resistance and develop successful breeding strategies. Such advances may also make genetic transformation a viable option for improving FHB resistance, but researchers at the workshop expressed reluctance to venture into that area, given the climate of market concern. The Workshop ended with the formation of a steering committee to coordinate research and information on Fusarium.

For more information contact:

Dr. Andy Tekauz, Workshop Co-chair
Cereal Research Centre,
Phone: (204) 983-5533
Fax: (204) 983-4604
Email: atekauz@em.agr.ca

Acknowledgement: Communications sponsored jointly by Western Grains Research Foundation, Meristem Information Resources and the Canadian Workshop on Fusarium Head Blight/Colloque Canadien sur la Fusariose.

Gender Discrimination in Plant Pathology – Perception vs. Reality

by Sue Boyetchko and Karen Bailey

Is there equality for women in plant pathology? While pondering this question, eloquently posed to us by a CPS roving reporter, our initial reaction (perception) was that there are no real differences in **our** scientific discipline. We are not sexist, after all. However, MIT president, Charles M. Vest, recently wrote: "I have always believed that contemporary gender discrimination within universities is part reality and part perception . . . but I now understand that reality is by far the greater part of the balance." His comments were based on a study initiated at the School of Science at MIT to resolve a dispute regarding charges of inequity towards female professors (*Boston Globe*, March 21, 1999). So, gender issues do occur in some science disciplines. That made us wonder about what happens in our own backyard. Do women in plant pathology have an easier or harder time of attaining success and recognition in science?

Our initial premise (hypothesis) was that we are all individuals and experiences differ for both men and women. Yet, women scientists must often make choices in their personal lives that will affect their career choices. To test our hypothesis, we approached our women colleagues throughout North America and posed precise questions to determine how they got into biological sciences and plant pathology. Are women in plant pathology a privileged group or downtrodden by gender issues? We approached our survey and quest for answers in a scientific manner. If we have 25 replicated statistically significant experiments, we should be able to reach a definitive answer to our hypothesis . . . isn't that how our research turns out anyway? The following summarizes our findings, much of which is anecdotal, but some facts and figures have been gathered and presented. Phrases in italics indicate specific comments made by women responding to our survey.

The reality is that women, like men, are diverse in their natures and interests. When asked about how they chose their current profession, the responses were diverse. Some entered plant pathology by accident, while others entered with some forethought. Most of the women agreed that gender had nothing to do with their choice of a specialization in science. Some knew they would be scientists at a very young age. There were often individual professors, most often men, who inspired these women into this area. Our male colleagues have had similar experiences.

In the late 1960's, it was quite unusual to find women plant pathologists, let alone scientists. In those early years, the presence of a woman in a research environment often made many male colleagues uncomfortable. Despite the presence of several female graduate students in the discipline, few women pursued careers in science . . . maybe because the majority of mentors for women were men. By 1975, the number of women in tenured faculty positions nationwide (USA) was 18% and by 1995 this number grew to 26% (*Boston Globe*, March 21, 1999). For many years, encouraging young women to enter into science was a challenge, partly because there were few women mentors and partly because of the old perception that *girls just don't like science*. Based on the growing numbers of women in pathology and science in general, we are happy to say that this is not the norm in the 1990's.

Comments by some male colleagues such as "Don't you notice how many more women candidates there are than men for that position?" have been recently noted. The fact that affirmative action policies encourage the hiring of women candidates, particularly when advertisements for jobs in science target women and minorities, fuels the debate. Although this approach attempts to address the fact that women are unequally represented in science, most women would not wish to have their merits and qualifications come into question when [they have been] awarded a position. Perhaps those feelings expressed by our male colleagues are partially borne out of frustration [in finding] that

ever-elusive permanent position rather than the belief that some women were hired because of their gender.

So what about job opportunities and promotions? Are they any different for men and women? Does it take a great deal more time for women to be recognized for their contributions compared to men? MIT discovered that gender issues related to salaries, laboratory space, access to funding, and inclusion of women in positions of power were prevalent. Although the discrimination was often subtle, it was recognized that inequity at MIT and other research institutions does exist. As a result, women's salaries were increased an average of 20%. Women at other Canadian universities have also seen more than one salary adjustment due to male/female equity evaluations.

In our current environment in Canada, it would be difficult to find anyone who is not frustrated to a certain degree about promotion prospects. *Hardly anyone of either gender has been promoted recently*. Lack of recognition of the contributions and the impact that plant pathologists have on agriculture is an issue for both genders.

So, have women received more or less recognition than men for their professional strengths and abilities? Women are perceived to have "nurturing" capabilities and often find themselves mentoring young students, men and women alike, giving talks to schools and counseling undergraduates and graduate students. Some women try to do it all, spending considerable time commitments on mentorship programs and giving freely to numerous committees. Has the advancement of women been impeded by not being more *greedy with their time* and selecting more opportunistic appointments?

One interesting aspect about women scientists is how their interactions with other male and female colleagues and their leadership abilities are perceived. Women and men would probably agree that working relationships can be bad or good with both genders. *The success or failure of working relationships depends very much on the personalities of the individuals involved, not their gender.* The women scientists we talked to feel they are respected for their leadership roles, organizing and chairing meetings and involvement in scientific societies. However, many have *encountered individuals, mostly older men in managerial positions, who seem to have difficulty with the idea of women in positions of authority*. Unfortunately, it is quite rare to find a woman in a position of authority where decisions about hiring and funding are often made.

According to Dr. Judith Rosner, a management professor at the University of California, gender does matter in management styles (*Globe and Mail,* June 9, 1999). Men tend to define themselves through their job. Male leaders often have a command and control style, while women more often use an interactive style, preferring to share information and encourage participation. In 1990, the interactive style was perceived as being weak and *not acting like a man*, but 10 years later this perception has changed. One style is not necessarily better than the other, we have to recognize that they are just different.

Women often feel that their personal relationships suffer due to career choices. Some months ago during a meeting, while taking a break with a female colleague, we asked how life was treating her. The work was great, and her move to the new job allowed her to be closer to her significant other. As it turns out, the relationship is no longer, yet the career thrives. We nod; it sounds familiar.

Some women perceive that their advancement may be a little slower if they take time out to care for children. Women who chose to have children may have difficulties in juggling a demanding career with a family, particularly during the early stages of their careers. *Those few female academics who do have families are either rarely present at their job and are not considered to be pulling their weight compared to others, or they frequently have their children with them at the university*. There are those women who choose to take a short maternity leave in order to minimize the impact it has on their careers or

their ability to show productivity [and] to attain a permanent or tenure-track position. The fact that absence from their jobs could disrupt the momentum in their research programs may be viewed as a lack of commitment to career is often not taken lightly. Childbearing years also coincide with the years when most women get tenure at universities. It was commented that there is a great deal of stress and guilt associated with balancing a demanding job and raising a family, something that the majority of partners still do not have to deal with. *The guilt laid on working women by the society they were raised in is less of a problem today, but it has not changed* [that] *much over the years*.

We have discussed some of the perceptions of women on their personal lives, but what are the real demographics? At MIT, a study showed that there were 7 women in tenure-track faculty positions and 55 men. Of the women in these advanced positions, only half had children (no information was available on the men). At selected Agriculture and Agri-Food Canada research institutes, our survey indicated that of all scientific staff (including plant pathologists), 22% were women and 78% were men. Of the women employees, 28% were married with children, 44% married with no children, and 28% were not married (and no kids). Of the male employees, 96% were married with children, and 4% were married with no children.

The reality is that many women take into consideration the impact of their chosen career on their personal lives, present or future relationships, and ability to have a family. These are issues that most men often have little need to contemplate. The question whether female academics have families, whether by choice or design, and whether sacrifices for one over the other in order to have a successful career plays heavily on young women's minds can be debated. We acknowledge that the women who choose to have a family consider it to be no sacrifice at all, but we often wonder if there are those like ourselves who feel that it is a choice some of us are more hesitant to make. The reality is that there are more women in science (and pathology) who are either single or married with no kids, than those who have families. When trying to decide about future career goals, some young women felt they had to *consider the demands of career, family, and personal life and wondered if they could have it all!*

At the end of our survey, we are hard-pressed to make any conclusions about whether women have easier, harder, or similar obstacles to overcome than our male colleagues. Most of our results are based on anecdotal evidence, with some facts and figures generated from our somewhat limited survey. However, there are some rather undeniable truths about what women experience in this chosen profession. The number of women entering the plant pathology is increasing, women do have different leadership styles, and their career ambitions, personal goals, and family ties are closely intertwined. Many recent scientific surveys, such as that conducted at MIT, prove that gender bias does exist.

For many of us, there is a strong bond between our professional and personal lives. While contemplating these varied and long-term relationships with our male and female colleagues in plant pathology, we have concluded that within our profession we have several great friendships with men and women alike. There is the odd one who we like not at all (both genders). As young graduate students, we had many more male friends than female ones (mostly because there were fewer women in graduate school at that time), many of whom we are in contact with to this day. As we get a little older, we realize how special our colleagues and friends in plant pathology and other scientific disciplines are and we would not trade them for one moment. But it also seems that as women [in science] build in number, we begin to appreciate our female colleagues all the more and gain a greater understanding of the choices we've made and where we're heading.

So, what was the question again?

Membership Survey Form

Name:.....

Degree(s) & Academic Institution(s) *[Please complete if new member]* .....

.....

All members, please complete the following:

Gender:
..... Male
..... Female

Age Group:
..... < 25
..... 26 -40
..... 41-65
..... > 65

Employment Status: *[Select one]*
..... Retired
..... University / College
..... Provincial / State Government
..... Federal Government
..... Private Sector .....
..... Other .....

Chief Function: *[select one]*
..... Extension
..... Research
..... Teaching
..... Other .....

Position / Title: *[select one]*
..... Head of the Dept.
..... President
..... Prof /Assoc Prof /Assist Prof
..... Sr. Scientist/ Scientist
..... Research Scientist
..... Research Fellow
..... Post-doctorate
..... Researcher
..... Consultant / Private practitioner
..... Marketing / Sales .....
..... Technician
..... Student
..... Other .....

Area of Expertise: *[Select maximum 5]*
..... Agronomy
..... Bacteria / Prokaryotes
..... Botany
..... Breeding
..... Entomology
..... Foods - Production/Storage
..... Forestry
..... Genetics
..... Horticulture
..... Microbiology
..... Molecular Biology
..... Fungi
..... Nematodes
..... Pesticide Industry
..... Plant Pathology
..... Parasitic Seed Plants
..... Soil Science
..... Statistics
..... Viruses
..... Weed Science
..... Other
.....

Specific Interest / Field *[Select maximum 5]*
..... Abiotic Diseases
..... Administration
..... Consulting
..... Diagnosis
..... Disease Control - Biological
..... Disease Control - Breeding/ Resistance
..... Disease Control - Chemical
..... Disease Control - Regulatory
..... Ecology of diseases & Microorganisms
..... Epidemiology
..... Host-parasite interaction
..... Industrial microbiology
..... Integrated Pest Management
..... Pathogen genetics
..... Physiology/ Biochemistry
..... Phytoplasma & Rickettsia-like diseases
..... Seed Pathology
..... Soil borne pathogen & diseases
..... Toxins
..... Vector mediated disease transmission
..... Virology & virus diseases
..... Other .....

Crops: *[Select maximum 5]*
..... General (all plants)
..... Brassica
..... Cereals
..... Cucurbits
..... Forage crops
..... Fruit crops
..... Grasses (Turf/ non-turf)
..... Greenhouse crops
..... Interior / Landscape plants
..... Legumes
..... Ornamentals
..... Root crops
..... Row crops
..... Stored crops
..... Tropical / sub-tropical plants
..... Vegetables
..... Other .....

Specific Crops: *[Select maximum 5]*
..... Alfalfa
..... Aromatic & Medicinal plants
..... Barley
..... Berry crops
..... Canola
..... Citrus
..... Cotton
..... Flax
..... Cane Fruits
..... Pome Fruits
..... Small Fruits
..... Stone fruits
..... Grapes
..... Maize
..... Mushrooms
..... Oats

..... **Specific Crops:**....continued ....
..... Pea
..... Peanut (groundnut)
..... Potato
..... Rice
..... Rye
..... Safflower
..... Sorghum
..... Soybean
..... Strawberry
..... Sugarbeet
..... Sugarcane
..... Sunflower
..... Tobacco
..... Tomato
..... Wheat
..... Other .....

Industry / Business: *[Select all that apply]*
..... Biotechnology
..... Chemicals / Pesticides
..... Consulting / Diagnosis
..... Crop Production
..... Equipment
..... Publishing
..... Research
..... Other

The information provided here (but not gender and age) will be used for improving the membership directory and may be printed.

Please indicate by circling (Yes / No):

Yes ..... I would like to receive the CPS membership directory

No..... I do not wish to receive CPS membership directory.

THE CANADIAN PHYTOPATHOLOGICAL SOCIETY

Renewal Of Membership

For Year 2000 (January - December)

Name: ..... Title : .....
Department: ..... Organization: .....
Street Address: .....
Town/City: ..... State/Province ..... Postal Code: ..... Country .....
Phone: ..... Fax: ..... E-mail: .....

2000 MEMBERSHIP (income tax deductible less a Journal fee of $25)

Regular & Fellow Membership (Canada) @ Can $75.00 ..... _____
(USA) @ Can $85.00 or equivalent US$ …..... _____
(Outside Canada & USA) @ Can $95.00 or equivalent US$..... _____
Emeritus (retired & member for >10 years, no cost for all benefits except the journal, or $25.00 to continue to get the journal) ..... _____
Student Membership @ Can $25.00 (sign below) ..... _____
Sustaining Associate minimum Can $175.00 ..... _____

DONATIONS TO CPS (income tax deductible)

Award for Outstanding Research (donations from Henry & Yarwood) ..... _____
Gordon J. Green Outstanding Young Scientist Award ..... _____
Best Student Presentation Awards (donations from Vanterpool)..... _____
Dr. and Mrs. D.L. Bailey Award (For an article demonstrating the benefits of plant pathology to humanity) ..... _____
Glenn Anderson Lectureship (Given at joint CPS-APS meetings) ..... _____
Student Travel Award Fund ..... _____
Other (please specify) ..... _____

JOURNAL SUBSCRIPTIONS

Use the enclosed form for NRC Journals and place order directly with NRC.
Ann. Rev. Phytopathol. (available directly from Ann. Rev. Inc at a discount to members)

TOTAL REMITTED (in Canadian Funds) ..... _____

STUDENT MEMBERSHIP CERTIFICATION

This certifies that _____ is a full-time student in the Department of _____ at the University of _____.

Supervisor's Name _____ Signature _____.

METHOD OF PAYMENT

- **Cheque or Money Order.** Please make this payable to **The Canadian Phytopathological Society** in Canadian funds.

- **Credit Card.** Charge my __ Visa or __ MasterCard or __ American Express

Card Number _____ Signature _____

Expiry Date _____

Receipts for income tax purposes will be mailed to you later.

Please Return This Statement With Your Payment By Post, FAX or E-mail To:

Dr. Vikram Bisht, Membership Secretary (CPS),
Ag-Quest Inc., P.O. Box 144,
Minto, MB, R0K 1M0 Canada

FAX: (204) 776-2250 E-mail: agquest@agquest.com