

Why join the Professional Pest Management Association of B.C.?

Consider the member benefits

- ∞ Admission to the Annual General meeting and a copy of the proceedings. The AGM has gained a reputation for strong agendas and interesting speakers
- ∞ An established means for communication amongst your professional peers
- ∞ Collective voice for advocating the pest management approaches you believe in: see our mission statement
- ∞ Your copy of *Pesticulars* the popular PPMA newsletter, published twice a year, including the AGM proceedings
- ∞ A facility to shop your resume in case you are looking for employment
- ∞ A venue for students to talk about their research
- ∞ And ... the lowest membership fee for any professional organization ... *on the planet*

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Past President's Message

Robert McGregor

Pest management is clearly alive and well in BC. The PPMABC annual general meeting this past February provided substantial evidence of this. Our AGM returned this year to the Halpern Center at SFU and the membership provided an excellent program of talks.

Presentations were made on numerous issues in pest management. These spanned topics as diverse as swimmer's itch and cranberry dieback disease (see the meeting abstracts in this issue of *Pesticulars*). Talks were presented on plant diseases and insect pests in agriculture, structural and domestic pests, and pests that impact human health (bed bugs). Management strategies, public policy and basic biology of pests were covered in a wide variety of presentations.

I believe that the diversity of topics presented indicates that pest management science is extremely healthy in BC. PPMABC provides an excellent forum for interaction among pest management professionals whether they be government scientists or extension staff, university and college faculty, private consultants, industry representatives or students.



The student presentations at the AGM were excellent. Our congratulations go to all the students who presented at the meeting and especially to the winners of our student awards, Eric Siljander and Jerry Ericsson.

Congratulations also go to Dave Raworth and Gerhard Gries the recipients of our Lifetime Achievement and Phero Tech awards. Best wishes to Dave on his retirement from Agriculture and Agri-Food Canada and good luck to Gerhard in future endeavours.

Finally, I would like to encourage all pest management professionals to participate as members in PPMABC. New memberships and membership renewals are essential to the future of PPMABC. The 2008 Executive led by new president Todd Kabaluk will carry the association forward with some new ideas to increase the profile of PPMABC. Continued participation across disciplines and sectors will ensure that PPMABC retains its important role in BC pest management through 2008 and beyond.

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2008 AGM

This year's PPMABC Annual General Meeting was held at the Halpern Centre at SFU.

Abstracts

Biocontrol mechanisms of bacterial agent *Pseudomonas aeruginosa* in suppression of Fusarium Root and Stem Rot of greenhouse cucumber

G. Bradley and Z.K. Punja
Simon Fraser University

Isolates of the bacterium *Pseudomonas aeruginosa* recovered from locally produced composts were assessed for ability to suppress the Fusarium Root and Stem Rot of greenhouse cucumber. Several mechanisms of action were investigated for their role in disease suppression including antibiotic production and induction of systemic resistance in the host plant.

Colonization of cucumber plants by the biocontrol fungus *Gliocladium catenulatum*

S. Chatterton and Z.K. Punja
Simon Fraser University

The fungus *Gliocladium catenulatum*, a biocontrol agent against Fusarium root and stem rot of greenhouse cucumber, was genetically transformed with the β -glucuronidase gene. Colonization was observed on the plant surface, inside plant structures and resulted in reduced infection by the pathogen. These results suggest that *G. catenulatum* is an endophyte and competition in the root zone is a key factor in its biocontrol ability.

Attraction of Indian meal moth (*Plodia interpunctella*) to specific wavelengths of light.

T. Cowan and G. Gries
Simon Fraser University

Foraging gravid females of the Indian Meal Moth (IMM) are well known to respond to semiochemicals from potential oviposition sites. Here we report results of laboratory experiments with Light-Emitting-Diodes (LED) that virgin and gravid females as well as males are strongly attracted to specific wavelengths of light. LED-baited traps have potential to become a tactic within integrated IMM control programs.

Is decreased generalized immunity a cost of *Btk* resistance in cabbage loopers *Trichoplusia ni* (Hubner)?

J.D. Ericsson¹, A. Janmaat², J.H. Myers³, and C. Lowenberger¹

¹ *Simon Fraser University*

² *University College of the Fraser Valley*

³ *University of British Columbia*

Cabbage loopers (*Trichoplusia ni*) that are susceptible to *Bacillus thuringiensis kurstaki* (*Btk*) show induced tolerance following exposures to low doses of *Btk*, while resistant populations do not exhibit this inducible increase in tolerance. We suggest that resistance to *Btk* is associated with the initial stages of toxin ingestion, and at the cost of other immunity mechanisms.

Toxins or sleep meds? Wireworm response to novel insecticides

W. van Herk
Pacific Agri-Food Research Centre (AAFC)
Simon Fraser University

Recent laboratory work confirms results from field efficacy studies that some novel insecticides used for wireworm control only cause temporary inactivity (morbidity) in the larvae. The duration and severity of wireworm morbidity depends on the type and concentration of insecticide it is exposed to, the duration of exposure, recovery from previous exposure, and temperature. Following recovery, wireworms can continue to feed and pupate. Besides reducing an insecticides' efficacy, recovery from temporary morbidity induced by the insecticide may enable wireworms to develop behavioural resistance to it.

Tuber Flea Beetle: IPM on the 'Edge' of Potatoes in BC

Tracy Hueppelsheuser
BC Ministry of Agriculture and Lands

In this paper, the tuber flea beetle IPM program is discussed as a 'made in BC' success story. Tuber Flea Beetle (*Epitrix tuberis*) is the major potato pest in coastal BC. Other flea beetles occur, but are not as great of concern, i.e.: Potato flea beetle (*Epitrix cucumeris*). Coastal BC's other major pest are aphids, which are suppressed by natural biological control agents if an IPM program is in place. Most information discussed here is from ES Cropconsult Ltd.'s experience and research, Dr. Bob Vernon's research at Agriculture and Agri-Food Canada, and the Vegetable Production Guide, BC Ministry of Agriculture and Lands. The goal of potato IPM is to limit the use of broad spectrum pesticides repeatedly applied (for Tuber Flea Beetle, etc) in order to conserve naturally occurring aphid biocontrol agents, and therefore reduce the reliance on additional pesticide sprays (for aphids and other secondary insects).

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Oviposition-inhibiting cues for house flies, *Musca domestica* (Diptera: Muscidae).

K. Lam, K. Thu, C. Geisreiter, M. Moore, and G. Gries
Simon Fraser University

House fly larvae face several challenges during their development to adulthood. They must: (1) condition their resource while avoiding intraspecific competition; (2) avoid and combat growth of competitive fungi; and (3) obtain sufficient bacteria as food supplements. Here we show that house fly eggs use specific bacteria, and fungi-produced semiochemicals (message-bearing chemicals), to address these challenges.

Swimmer's Itch in British Columbia

B. J. Leighton
Simon Fraser University

Swimmer's Itch is a widespread problem affecting many types of recreational lakes, and has recently become a problem at a marine beach. The biology of the parasite and its hosts were studied at a number of lakes and at Crescent Beach. Methods for control of the problem are limited.

Exclusion and harborage reduction of urban pests using construction sealants

L. Mircioiu
Bioconcept Pest Management Ltd.

Increased public awareness, pesticides availability and performance, and high costs associated with "difficult accounts" are just a few examples of factors contributing to the dynamic of today's urban pest management. In these conditions, non-pesticide strategies like exclusion and harborage reduction are growing in importance as clients and professionals are looking for long term solutions. Construction sealants can be used with success in preventing pests from entering the human inhabited structures, accessing their food sources and growing to infestation levels. This presentation will discuss the management strategies and sealant materials used in exclusion and harborage reduction of urban pests in three buildings infested with house mice, German cockroaches and carpenter ants.

Epidemiology of *Blueberry scorch virus*: dynamic interactions between relative plant virus titres and aphid populations

D.A. Raworth and S. Mathur
Pacific Agri-Food Research Centre (AAFC)

Blueberry scorch virus (BIScV), a devastating pathogen of highbush blueberry, is transmitted by aphids in a non-persistent manner. Here we link aphid population dynamics with temporal trends in relative BIScV titres, and derive relative virus transmission

probabilities. The interaction is dynamic and complex, and has important implications for virus-transmission management.

Cranberry dieback disorder: a new and emerging threat to cranberry production in British Columbia.

S. Sabaratnam¹, S. Fitzpatrick², T. Forge², A. Dicarolo¹, M. Cook², C. Koch² and A. Fronda².

¹ *BC Ministry of Agriculture and Lands*

² *Pacific Agri-Food Research Centre (AAFC)*

British Columbia is the largest cranberry producer in Canada, generating 85 million pounds annually, i.e. 12% of North American cranberry production. In recent years, cranberry fields in the lower mainland of British Columbia have been affected by a severe vine-decline, referred-to as cranberry dieback disorder (CDD), resulting in substantial yield losses. Symptoms of CDD appear as patches of dying plants with copper to burgundy coloured leaves on dying uprights in spring and small to large blackened areas of dead vines in late summer. The most noticeable symptoms can be seen on runners, where blackening of peripheral tissues and brown to dark-brown discoloration of pith tissue are distinguishable from healthy vines. A comprehensive field and grower survey in spring 2007 excluded insect pests, particularly cranberry girdler or Dearness scale damage, herbicide injury or poor field conditions as causes for CDD. To identify possible casual agent(s), systematic field observations and sampling and laboratory analyses of roots, runners, uprights and soils from 32 affected cranberry beds were carried out in spring/summer 2007.

The major pathogenic fungal genera recovered from symptomatic runner tissue were *Allantophomopsis* (causal agent of Black Rot, a post-harvest fruit rot), *Coleophoma* (causal agent of Ripe Rot, a post-harvest fruit rot), *Colletotrichum* (causal agent of Bitter Rot, a post-harvest fruit rot), *Pestalotia* (potential causal agent of post-harvest fruit rot), *Phyllosticta* (causal agent of Early Rot, a pre- and post-harvest fruit rot and blighting of flowers, leaves and stems), *Fusarium* and *Rhizoctonia*. Although the detection of fruit rotting fungi in cranberry beds highlights the significance of their presence in BC cranberry fields and importance of managing such pathogens in cranberry beds to minimize pre- and post-harvest fruit rot, their association with or role in CDD may not be significant. Although *Phytophthora cinnamomi* was detected in soil from 14 beds by nested PCR; it was isolated only from one bed confirming its presence in B.C. In addition, *Phytophthora cryptogea* (tentative identification) was also isolated from one of the beds. Low levels of *Phytophthora* spp. in cranberry soil indicate that *Phytophthora* spp. may not be the cause for CDD. Among the fungi isolated *Coniothyrium sporulosum*, *Cylindrocarpon* sp. and a new *Phomopsis* sp. showed a very strong correlation with CDD and were recovered

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from 40 – 55% of the fields with CDD symptoms. Although these fungi have not been previously recorded as pathogens on cranberry they have been implicated as pathogens on other plant systems. In order to identify the causal agents of CDD, pathogenicity and virulence of *C. sporulosum*, *Cylindrocarpon* sp. and a new *Phomopsis* sp. on cranberry and the symptoms expressed by cranberry in the field need to be investigated.

Contact and airborne aggregation pheromones of the common bed bug, *Cimex lectularius* Linnaeus (Hemiptera: Cimicidae)

E. Siljander¹, D. Penman¹, H. Harlan², R. Gries¹, G. Khaskin¹ and G. Gries¹

¹ *Simon Fraser University*

² *621 Maple Hill Lane, Crownsville, MD 21032, USA*

In dual choice olfactometers, paper discs previously exposed to bed bugs elicited arrestment responses by bioassay insects and revealed evidence for juvenile- and adult-specific contact pheromones. In extracts of headspace volatiles from the bed bug laboratory colony, 14 candidate pheromone components were identified by gas chromatography – mass spectrometry. In olfactometer experiments, 10 of these 14 components were essential to elicit behavioural responses from juveniles.

Update on establishment of apple maggot in BC: Can we mitigate its introduction into the Okanagan?

G. Zilahi-Balogh

Canadian Food Inspection Agency

Apple maggot was detected for the first time in 2006 in the lower Mainland of BC. By the end the season in 2006, 16 sites from Vancouver to Chilliwack and 3 sites in southern Vancouver Island captured adults in traps or larvae in fruit. Because of the wide area, CFIA made the decision to deem the lower Mainland and Vancouver Island as areas infested with apple maggot. The challenge is to protect the interior commercial fruit growing areas from introduction of apple maggot. Pest management and regulatory challenges are discussed.

Awards



This year's recipient of the **Phero Tech Award** was Gerhard Gries, presented by John Borden of Phero Tech (above). Sheila Fitzpatrick of Agriculture and Agri-Food Canada presented this year's **Honorary Lifetime Achievement Award** to Dave Raworth (below).



AGM Sponsors

Thank you to our sponsors for this year's AGM:

**Phero Tech Inc.
Koppert**

The PPMABC is looking for companies who would be interested in sponsoring or co-sponsoring a coffee break or lunch at next year's AGM in return for advertising space. Morning coffee with muffins costs \$300, mid-morning and afternoon coffee costs \$200 and lunch costs \$1000. If interested, please contact Todd Kabaluk (ppmabc@sfu.ca).

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Election

Also at this year's AGM, candidates for positions on our executive were elected or appointed. A big 'thank you' to our outgoing executives as we welcome our new executive committee.

President: Todd Kabaluk



Research Biologist at Agriculture and Agri-Food Canada in Agassiz. He is currently experimenting with microbial controls of agricultural insect pests. Other activities include biopesticide registration and regulation, and insect sampling statistics and population dynamics using data acquired from pest monitoring companies.

Vice President: Victoria Brookes



A graduate of the U.B.C. Department of Agricultural Sciences, who began working with Agriculture and Agri-Food Canada in Agassiz as a summer student in 1973 and has been on regular staff since 1977. Presently involved with the Pesticide Reduced Risk and Minor Use Program and work with a variety of projects in the vegetable, fruit, nursery and greenhouse industries primarily concerning insects, diseases and weeds. This involves cooperation with commodity group representatives and researchers across Canada and also with the IR-4 Minor Use Program in the U.S.

Past President: Rob McGregor



Has spent much of his career studying integrated pest management of agricultural pests with a focus on biological control. Since 1999, Rob has been a faculty member in the Biology Department at Douglas College where he is also Director of the Institute of Urban Ecology. Current research includes projects on biological control of

tomato psyllid, conservation biological control in community gardens, ground beetles in urban riparian habitats, and reproductive parasites of *Trichogramma* wasps. Rob previously served as Membership Director of PPMABC and is currently a member of the Board of Directors of the Entomological Society of BC.

Treasurer: Tammy McMullan



Currently a Senior Lecturer at SFU: since 1988, Tammy has taught a wide range of courses, including graduate-level field courses in pest management. Tammy has held numerous Research Assistant positions and been involved in several research projects on a wide variety of insect pests, served as Director of the BC Entomological Society, and has previously held the positions of Secretary and Student Representative.

Secretary: Wim van Herk



Currently completing his PhD investigating wireworm behaviour in response to insecticides. Wim is being supervised by Dr. Bernie Roitberg (Simon Fraser University) and Dr. Bob Vernon (Pacific Agri-Food Research Centre).

Membership Director: Nadene Sawyer



A MPM graduate from Simon Fraser University, currently working for ES Cropconsult where she has coordinated a program to introduce IPM and pesticide safety awareness to Asian grower groups. Nadene also works as a pest management consultant for greenhouses in the BC lower mainland.

Student Representative: Tom Cowan



Currently enrolled in the MPM program at SFU researching methods of controlling the Indian meal moth. Before entering the MPM program, Tom was working for the Ontario Ministry of the Environment as a Pesticides Specialist, and has also worked in agricultural, greenhouse, and nursery pest management.

Pesticulars Editor: Alex Chubaty



Currently working toward his PhD under the supervision of Dr. Bernie Roitberg (SFU) and Dr. Chao Li (CFS, Northern Forestry Centre, Edmonton AB). Alex is investigating the role of body condition in host-selection behaviour of mountain pine beetle.

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Featured Lab

Each issue, as a new feature of *Pesticulars*, we will highlight ongoing research in pest management. In this feature's debut, we profile this year's Phero Tech award winner, Dr. Gerhard Gries, and his lab.

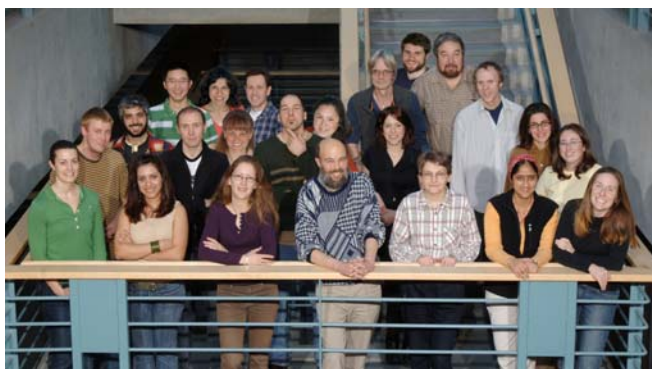
If you would like to recommend a lab for feature in *Pesticulars*, we welcome suggestions for future issues. Please contact Alex Chubaty (ppmabc@sfu.ca).

Gerhard Gries

Simon Fraser University

We study mechanisms of insect/spider communication and host selection. We elucidate sonic, semiochemical, visual, infrared and bacterial foraging cues and communication signals, and investigate how these cues/signals may have evolved in response to community composition, scarceness of larval resources, and physical parameters of the habitat. We also develop acquired knowledge for sophisticated control of pest insects.

Most of our current study objects (hobo spiders; house flies; *Drosophila* fruit flies; mosquitoes; twig and tree borer moths; lymantriid moths; earwigs; *Cimex*, *Boisea*, and *Leptoglossus* bugs; cecidomyiid midges; cockroaches; braconid, encyrid and ichneumonid wasps; social wasps; silverfish and firebrats; etc.) have major economic or ecological implications. We work on them under the premise that their biology and communication ecology is as intriguing as that of any other insect.



Lab members (left to right): Kelsie Thu (now at UBC), Eric Siljander (now with CFIA), Zaid Jumean, Nooshin Karimifar, Kevin Lam, Cory Campbell, Pilar Cepeda, Kelly Ablard, Samantha Vibert, Thomas Cowan, Joseph Schwarz, Shannon Derksen (now with CFIA), Gerhard Gries, Stephen Takács, Rosanna Wijenberg, Nathan Woodbury, Regine Gries, Grigori Khaskin, Isak Andreller, Gagandeep Hehar (now with CFIA), Adela Danci, Eloise Rowland, Melanie Hart. Not photographed: Chelsea Eby (MPM student), Sean McCann (PhD student) Tracy Zahradnik (PhD student), Bryan Jackson and Michelle Tsang (both recipients of an NSERC - Undergraduate Student Research Award). Photo credit: Greg Ehlers (LIDC-SFU).

Findings of our research can be developed for earth-friendly control of insects in urban, agricultural, and forest settings. This is why we attract funding from Industrial Sponsors. In June 2004, our lab has obtained an NSERC-Industrial Research Chair (IRC) in Insect Communication Ecology, with Pherotech International Inc., SC Johnson Canada, and Global Forest as (industrial) sponsors. This NSERC-IRC is a triple-win because: (1) it provides a perfect training and research environment for many graduate and undergraduate students, and pushes the frontiers of science; (2) it provides society with earth-friendly solutions for insect problems; and (3) it generates new products and technologies for the industrial sponsors.

Endnotes

Upcoming Meetings and Events

- Canadian Phytopathological Society Annual Meeting
June 15-19, 2008, Charlottetown, PEI
<http://www.cps-scp.ca/meetings.htm>
- 5th International Weed Science Congress
June 23-28, 2008, Vancouver, BC
<http://iws.ucdavis.edu/5intlweedcong.htm>
- Western Apiculture Society Annual Conference
August 17-21, 2008, Victoria, BC
http://groups.ucanr.org/WAS/Conference_Information
- Entomological Society of British Columbia AGM
October 3-4, 2008, Vancouver, BC
<http://www.sfu.ca/biology/esbc/>
- Joint Annual Meeting of the Entomological Societies of Canada and Ontario
October 19-22, 2008, Ottawa, ON
<http://www.canacoll.org/JAM2008/>
- McCarthy Lecture
November 6, 2008, SFU, Burnaby, BC
- Canadian Weed Science Society Annual Meeting
November 25-27, 2008, Banff, AB
<http://tinyurl.com/49Lucc>

Electronic Publishing

Pesticulars is now an electronic publication. To ensure that you receive your copy, please send us an updated email address. Email addresses and mailing information (for ballots and voting information) can be sent to Nadene Sawyer (ppmabc@sfu.ca).

Website

Our new website address is www.sfu.ca/~ppmabc/. Check it out for information on our association, contact details, copies of *Pesticulars*, and upcoming events.

Webmaster: Alex Chubaty (achubaty@sfu.ca).

Pesticulars Submissions

We are always looking for pest management topics to publish. If you or know of others who have information to relay, exciting research to share, or upcoming events that you would like posted in one of our issues, please contact Alex Chubaty (achubaty@sfu.ca).