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### President's Messages:

Past President's Message: Dave Ormrod



It has been another eventful year for those of us affected by agricultural pests and diseases. BSE, Avian Influenza and Sudden Oak Death have impacted the beef, dairy, poultry and landscape nursery industries of BC. BSE and AI have

caused losses in the hundreds of millions of dollars. Quick action by the BC Landscape & Nursery Association in co-operation with CFIA may have averted serious losses from SOD. Time will tell. Those of you who had the stamina to stay until the end of the 2005 PPMABC meeting were treated to well-informed commentary on the AI and SOD outbreaks.

I would like to talk to you now about something completely different that nevertheless has ties to the early days of IPM in the Fraser Valley.

During the past few years, one of my part-time jobs besides farming and various consulting jobs, has been as Food Safety Advisor with the BC Vegetable Marketing Commission. In this role, I have visited practically all of the field vegetable farms in BC and all

the vegetable greenhouses in the Interior. The purpose is to ensure that all growers are following practices that produce safe food without harm to the environment. To pass inspection, growers must provide such things as clean toilets with soap, water and paper towels for workers; secure pesticide storage; adequate spray records; potable water for crop washing; proper disposal of wash water and crop refuse; and proper procedures in the application of livestock manure.

During the first round of farm visits in 2000, I encountered quite a few sceptical growers who thought I was working for the government, probably as a spy for the Ministry of Labour. One grower refused to let me into his field because he said it would spook the workers and they wouldn't come back the next day. One farmer showed his disdain by opening and reading all his mail while I tried to conduct an interview with him. Another wouldn't get off his tractor so I had to ride around the field shouting questions in his ear while he shouted the answers back. On one dairy farm, I had to climb a long ladder into the hay mow to conduct the interview while the farmers were throwing hay bales. One vegetable grower who hates all forms of regulation was trimming cabbages with a large butcher knife when I visited the farm. He responded to every question with a sinister grin and a menacing gesture with his butcher knife.

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By the second and third rounds of visits from 2001 through 2004, the growers were becoming more receptive. Many of them seemed to be looking forward to my visits and we had many long conversations in the workshops or at the kitchen tables. During this time, I realized how fortunate I was to have such an opportunity. Imagine, travelling throughout BC and having the chance to become friends with all the vegetable growers and getting paid for it to boot. During my last tour of the Southern Interior, I was feeling particularly satisfied after having visited farms in obscure places like Wyndel, Winlaw, Nakusp and Lumby. After visiting farms in Vernon and Armstrong, I had my sights set on a farm in Salmon Arm. I stayed overnight in Enderby and phoned the grower to say I would be there at 8:00 am the next day. The response was, "We're not growing any regulated vegetables next year so you don't need to come". I was taken aback but said I would still like to come to chat for a few minutes. The reply was, "We'll be busy harvesting carrots and won't have any time to talk to you". That was a serious reality check. I thought: how sad that I have come all this way to make a connection between this Interior grower and the Commission at the Coast and the grower wants no part of it. I will probably never see those people again. To them, it didn't matter. To me, it did. Since that experience, I have tried to pay more attention to people that I meet in the realization that I may never see them again.

Visiting a BC vegetable farm can be very rewarding to the spirit when you are lucky enough to hit one that is in a successful and expanding mode. There are some in every region that make you feel proud. Unfortunately, there are many more that are dying and disappearing from sight and memory. In serious decline are the mucklands of Cloverdale. Thirty years ago, the Cloverdale vegetable farms were by far the most successful and profitable in BC. There were about 20 farms growing lettuce, celery, cauliflower, onions, potatoes and carrots that were marketed throughout western Canada. Dr. Bob Vernon, started one of Canada's first and best vegetable IPM programs here and it was a great help to growers for many years. Unfortunately, over the past few years wet weather and poor prices have forced them out of business one after another. There are only two or three left now. Most of the abandoned vegetable farms have been planted in blueberries or left to grow weeds. Much of the land is too wet in winter for good blueberry production so many of the farms will not be very successful. There are also a number of recent immigrant growers attempting to make a go of leafy vegetable production. They are hampered by a lack of clean irrigation water and must compete against California imports that tend to be very cheap in the summer. The death of the Cloverdale vegetable industry has gone largely unnoticed by the BC public.

For students and recent graduates in pest management, the message is clear. Prepare to work with crops that are in an expansion phase but be versatile and prepare to change crops as production and markets change. Currently, storable vegetables with the exception of potatoes are dying. Greenhouse vegetables, blueberries, landscape nurseries and all types of organic production are expanding. As Debbie Henderson said in her presentation at the annual meeting, many commodity groups now have funding arrangements that enable contracts for research into IPM and other issues of importance to industry. Also, keep in mind that there will be ongoing demand for young, physically-fit people to fight off the onslaught of pests and diseases attempting to invade the country. If you do end up working for government, remember who is paying your salary and treat **all** of the public with respect. It is a great privilege to be able to serve your fellow Canadians.

President's Message: Art Guité



Those of us who work in pest management, especially structural pest management, often wonder if we were quite sane in entering this business. On some days, it's like being a vet in "All Things Great and Small." On others, we feel vilified as 'nozzle heads'

especially by our more youthful brethren in universities. So, I thought that I would write about the trials and tribulations of running a small business. I don't consider myself an expert but perhaps some of my experiences will help some of you are considering going on your own.

I completed my MPM in 1980. I did the course work for the degree between 1975 and 1976 and immediately got a job with a pest control supply company and then BCIT. There were few jobs that were easily definable as pest management, especially in the environment health field where I had worked previously. In the same period of time, a number of my class mates were becoming involved in small business: Norm Alexander in Sylva Pest, Paul Mumby in Phero Tech and Professional Ecological Services, Al Vaudry in a small company in the Okanagan. Ches Brocklebank was an influence on many of us old timers – he founded BC Pest Control in 1948, and was a fellow student in 1975. The company is still in operation and is owned by John Van. Some of these companies have been discontinued; others have been quite successful (Phero Tech). One of the first and most important lessons in small business management – few businesses survive. Those that do survive do so because they are profitable or those behind the firm

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support the business for some other reason (eg. The development of a research idea or a life buoy in case another job is discontinued). Commitment to the business must be high in order to survive. There are easier ways of making a living!

After several years teaching Environmental Health at BCIT, it was clear that my position was not assured. So, I started Ridpest Service Ltd. as a part-time operation in 1982. The main objective of the company was to provide services in structural pest control to residences. I thought of the structural field because it would utilize my work experience in vector control and environmental health. I had operated municipal rodent and mosquito programs prior to starting my MPM degree and also had worked for a structural pest control supplier when I finished my MPM degree and worked for a structural pest control supplier when I finished my MPM.

I had good technical background but my experience in business was limited.

The first things that I did in my part-time business were to buy a small ad in the Yellow Pages and a minimal amount of operating equipment and chemicals. I used the family car as a service vehicle and waited for the phones to start ringing. They didn't exactly ring off the wall! A few buzzes would be a more accurate description. But, I had a full-time job and a pretty full schedule. To my surprise, I started getting some business almost as soon as the ads appeared in the Yellow Pages. I wasn't particularly ready for the work. I did have access to some of my friends in the structural pest control field, old SFU connections and a copy of Mallis' Pest Control Manual. This went on for about three years. This period of time allowed me to get my feet wet. I was doing a few thousand dollars in sales each year and I started to get a feel for a market in the residential structural pest control service at the time. If you are starting a business today, I recommend that you get involved in a business development program before you start. These are short courses (four months or so) offered by BCIT, community colleges, and sometimes by instructors who work on contract with HRDC. Major objectives of these courses are to allow you to assess your motives in starting a company and to develop a business plan. MBA programs don't teach people how to start small businesses.

When my job at BCIT ended in 1986, I decided to try operating my company full time. I concentrated on increasing sales. I placed a larger Yellow Pages ad in the local directory, waited for residential business and started to look for commercial accounts. I was not getting much more business with the larger ads in the late summer, but I was also working for another pest control service on an occasional basis. My wife was

working and the family was surviving. I expected that the competition would be stiff. Large firms often buy large ads (they are now up to two pages per company with significant yearly costs) the smaller firms are left with less desirable spots. Potential customers using Yellow Pages ads usually call those firms with the larger ads closer to the front of the listing. So, my little ad with a company that started with 'R' was not very successful. A local competitor was also starting out – he had placed a half-page ad and yet was a one-man operation. He lasted about two months. Lessons learned: if you're going to rely on Yellow Pages ads make sure that your ads are reasonably large and that your company name puts the listing close to the front of the category listing. Keep a large amount of money available to pay for the ads since they will not produce an easily predictable and constant flow of cash into the business. Make sure that you have someone available in the office with good 'people skills' who can speak to customers, answer their questions and concerns and make appointments. Make sure that you or your applicators can do the jobs when the phone calls come in. Be ready for situations where you get large volumes of calls during short time periods when one group of pests is particularly active (eg. When carpenter ants are flying, or when wasps are active). Recent marketing studies by the National Pest Management Association have shown that customers of pest control services expect firms to solve problems quickly. If you have to be called back more than twice to a customer because a treatment was ineffective, the customers will assume that you are not the expert and professional that you claim. News of a bad job gets around more quickly than that of a job well done.

I do little residential pest control work now. The market is filled with firms who are able to provide immediate emergency services which are what much of this market demands. A lot more capital is needed to carry out a residential program efficiently.

By late 1986, I started to get some commercial contracts. None of these were particularly lucrative, but they did provide the firm with some cash flow. In 1987, I got a vegetation control contract with BC Hydro, which I carried out as a joint venture with BC Pest Control and Valley Pest Control. My association with these two companies lasted until the late 1990's. My company and I decided to take a part time position in infection control at Burnaby Hospital. The position became full-time in 1991. I worked at Burnaby Hospital until 1995 and kept the company going throughout that time. I was amazed that I could keep the business going on a part-time basis. We kept contracts without any trouble. The contracts were reasonably profitable and I was able to provide one applicator with half to full-time employment. The demands of working full-time and operating a business was good in many ways. The business became much

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more efficient and we were not quite as hungry for capital. Time-management is all important in maintaining a business.

Growing the business required more time. My expectation from the hospital was that it would be part-time and that it probably would last for about three years. I did not expect that I would stay in it for 8 years. In 1995, there was a major re-organization in the hospital and the job ended. The company carried on. The objectives of the company had widened from structural pest control to include vegetation control and some teaching (pesticide applicator courses).

The notable thing about the contract work was that it came from networking and word-of-mouth. Little came from advertising. In 2000, I got a sizable contract for a commercial ornamental nursery. This contract, along with the contracts in industrial vegetation control and a small commercial structural business formed the core of my business until last year. The vegetation control portion of the business is now much smaller. I now work on contract as an auditor for the Agrochemical Warehousing Standards Association, and I am hoping to expand the consulting aspects of the business. Spraying contracts and a small amount of commercial structural business continue.

### **Norman Alexander, M.P.M.**

1932 – 2004



Norman Alexander attended Victoria High School and Victoria College and then began a long career in Forest Biology, specializing in forest pest management. At different times he conducted projects and training courses for the Pacific Forestry Centre, BC Ministry of Parks, BC Ministry of Forests,

Canadian Forest Products, BC Hydro, Alberta Parks, Okanagan Helicopters and the Department of Indian Affairs.

He developed and taught courses in Forest Ecology at BC Institute of Technology from 1967 until 1993. During that time, he also took time off to be part of the first M.P.M. class at Simon Fraser University, graduating with an M.P.M. in 1976. He was one of the founding fathers of PPMABC along with Bob Vernon, Staffan Lindgren and Paul Mumby.

He was president of PPMA in 1990 and was awarded an honorary lifetime membership in 1994. After retirement from BCIT, Norman continued to teach forest pest management at the Nicola Valley Institute

of Technology from 1993-1997. He was presented with a Distinguished Service Award from BCIT in 2001.

Norman was an avid photographer and many of his photos were used in forestry publications. He was also an enthusiastic supporter of the Boy Scout movement progressing through Cub, Scout, Rover, Scoutmaster, District Scoutmaster and District Commissioner between 1939 and 1967. He received a Long Service Award from the Boy Scouts of Canada. Norman was also a member and supporter of BCAACP and the National Black Coalition for Western Canada.

Norman passed away at Surrey Memorial Hospital on December 17, 2004.

### **Elections**

The 2005 elected and appointed positions that were voted on this year included Vice-President, Secretary, Pesticulars editor and student representative. The results were the election of Shannon Buckshaw to Vice-President, Dave Trotter to Secretary, Melanie Hart to Pesticulars editor and Eileen Jones appointed to student representative.

### **Phero Tech Award**

This year's recipient of the award was Linda Gilkeson. The award was presented to Linda by Alan Vaudry, the new President and Chief Operating Officer of Phero Tech (as well as the first MPM graduate in 1974).

### **Honorary Lifetime Award**

Raj Utkhede of Agriculture and Agri-Food Canada presented this year's honorary lifetime award to Jim Rahe (of SFU). For a biographical write-up and an article by Jim, please see last year's issues of Pesticulars.

### **Presentation Abstracts from the 2005 AGM**

#### [A Review of Literature on Conservation Biocontrol in Urban Landscapes](#)

Virginia Wilson, Kwantlen College

Conservation biocontrol has been the least researched of the three traditional forms of biocontrol (classical, augmentation and conservation). Themes emerging from some 75 articles on conservation biocontrol include: studies specific to urban landscapes (only four); the effect of refugia on arthropod populations; intraguild interactions; plant influences on arthropods; plant selection for insectary borders; dispersion behaviour of natural enemies; pesticide use and biocontrol; and the application of ecological theory to research. Meta-analyses show that conservation biocontrol has had mixed success. The complexities of arthropod/arthropod interactions, as well as

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plant/arthropod influences, make it difficult to predict outcomes. While conservation biocontrol holds much promise as pesticide use in the landscape diminishes, a better understanding of the complexity of ecosystems is needed to increase the effectiveness of conservation biocontrol based on environmental enhancement.

### Effects of Queen Pheromone on Honey Bee Colony Defensive Behaviour



Working with the bees

Nicole Gervan and Mark Winston, SFU  
Colony defensive behaviour remains one of the major challenges in beekeeping. Honey bee queen pheromone (QMP) influences many aspects of worker behaviour and physiology. Anecdotal information and preliminary testing suggested that

aggressive colonies may become calmer when they are exposed to QMP. We determined the effects of QMP on colony defensive behaviour. We assessed colony responses to a stimulus by counting the stings on a leather patch and the number of guard bees at the colony entrance. Colonies with queens had a decrease in defensive behaviour when exposed to liquid QMP. Colonies without a queen had no change in the number of stings, but had a decrease in the number of guard bees. Bee Boost (synthetic QMP lures) had no effect on colony defensive behaviour in colonies with or without queens.

### Landscape IPM: Policies, Politics and Pesticide Reduction

Linda Gilkeson, Ph.D.

The history of adopting integrated pest management programs for landscapes in BC contrasts with the rise of initiatives to restrict residential pesticide use in eastern Canada.

In the early 1990's municipalities in BC began adopting IPM policies for public parks. In 1997, the provincial pesticide legislation was amended to include a definition of IPM and requirement that pesticide use on public land must be conducted within the terms of an IPM program. Over the 1990s, IPM training was incorporated into the provincial pesticide applicator certification requirements and the BC Landscape and Nursery Association became pro-active on behalf of its members in promoting adoption of IPM. As of December 2004, the provincial IPM Act and Regulation was enacted to replace the Pesticide Control Act.

Meanwhile, in 1991, the town of Hudson, Quebec, passed the first municipal bylaw restricting pesticide

use on private residential property; the decision was eventually upheld in the Supreme Court. In 2000, Halifax became the first major city enacting a pesticide bylaw. By the end of 2004, 66 municipalities had adopted pesticide by-laws and Quebec had enacted province-wide regulations. When all existing regulations and by-laws come into full effect, over 11 million Canadians (ca. 35% of population) will be living in pesticide 'ban' jurisdictions.

In the eastern provinces, IPM for landscapes was not actively promoted by provincial governments: there were no required IPM training or coordinated public information programs. The pesticide use debate has been left to interest groups, who frequently defined IPM as a pesticide based program. This contrasts with the situation in BC, where IPM was defined and promoted as decision process based on prevention. Because IPM was promoted by the provincial government through training and information projects, knowledge of an IPM approach was relatively established in professional practice before the 'bans' movement arrived in the province. Municipalities in BC are now enacting pesticide bylaws, but the local landscape industry is in a much better position to do business under the new bylaws than their eastern colleagues were when the first bylaws came into effect.

IPM programs have been shown to eliminate unnecessary pesticide use and they enable practitioners to provide successful pest management where pesticides cannot be used. Although pesticide restriction bylaws are intended to eliminate unnecessary pesticide use, only IPM offers a systematic approach for achieving pest management objectives. I am concerned that the IPM message may be in danger of being lost in the polarized debate over pesticide use.

### Infamous spiders of western Canada: do they have cause for libel?

Maxence Salomon and Samantha Vibert, SFU



Female black widow

Owing to the fact that spiders are venomous arthropods that often coexist with humans, they are commonly considered to be dangerous and harmful animals. In western Canada, two species of spiders are thought to be of medical importance: the western black widow spider, *Latrodectus hesperus*, and the hobo spider, *Tegenaria agrestis*. These two synanthropic spiders are often implicated as causative agents of various unaccredited physical injuries. Moreover, they are typically blamed for being

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aggressive. Here, we evaluate these allegations by examining what evidence has been put forward to assert their medical significance. Well-documented studies based on compelling experimental evidence have demonstrated the potential health threats associated with western black widow venom. While it is true that their bite is poisonous and may lead to systemic illnesses, it is very unlikely that these spiders will ever bite humans, as they are reclusive and only bite as a last defense. Since the 1980's, hobo spiders have been accused of being aggressive spiders whose bites cause dermonecrotic lesions. Yet, this spider has never been reliably identified as the source of such wounds; there are no confirmed records of hobo spider bites in Canada. Moreover, their alleged aggressive tendencies have never been demonstrated. Therefore, we recommend caution and especially verification of available data before designating spiders as a threat to human health. Their notorious reputation is usually undeserved.

Reference: Bennett, R.G. & Vetter R.S. 2004. An approach to spider bites. *Can Fam Physician* 50:1098-1101.

### Use of biological agents and biotechnology for diseases of greenhouse crops

Raj Utkhede  
Agriculture and Agri-Food Canada, Agassiz.

Greenhouse crops are grown worldwide for nutrition in the human diet. Fungal plant pathogens can cause devastation in these crops under the appropriate environmental conditions. Growers confronted with the challenges of managing pathogens have the opportunity to utilize biological control agents for sustainable crop production through crop health management. The challenges for growers in managing these diseases are ever-increasing, as consumer demand for year-round availability of vegetables with reduced or no pesticides residues. Concerns over the potential impact of disease management practices, including the use of pesticides, on the environment or on consumer health have prompted producers to examine alternative methods to control plant diseases. A number of commercially available biological products have demonstrated significant disease reduction. The potential uses of microbial biological control agents for control of diseases on greenhouse crops are discussed. Some of the microbials appear to protect plants against a wide range of pathogens and the potential for commercial utilization is promising. One such example is that of PreStop, which has the potential to control *Botrytis* stem canker, *Didymella* gummy stem blight, *Pythium* root rot, and *Fusarium* fruit rot.

Techniques in biotechnology are becoming

increasingly applicable to studies on the biological control of plant diseases. Correct identification of pathogens by conventional methods typically requires several days or weeks. Molecular methods of identification have been developed for *Botrytis cinera*, *Didymella bryoniae*, and *Fusarium subglutinans* which reduce time required for a definite identification to a day or two. Molecular techniques would allow rapid diagnosis of disease in infected plants from growers' fields, and would facilitate breeding resistance against plant diseases. Rapid and accurate disease identification allows for timely disease control, thus increasing crop production, and for rapid assays of propagating materials to develop disease resistant plants. In addition, the molecular assay could be valuable for epidemiological and etiological studies of plant-pathogen interactions.

### Mosquitoes as Diagnostic Tools

B. J. Leighton, B.D. Roitberg, C. Lowenberger  
and P. Belton, SFU



Feeding mosquito

Surveillance of disease in wildlife involves trapping or killing large numbers of animals for direct sampling of blood and can be difficult, expensive and dangerous to field personnel. Sampling of wildlife may be unacceptable in parks and wildlife preserves or with endangered species. Blood-fed mosquitoes that are captured in the wild contain a sample of whole blood taken from vertebrate hosts. Whole blood includes specific antibodies which, if detectable, can provide a history of the immune responses of the vertebrate host. If antibodies, specific to particular disease agents, such as rabies virus or the spirochaete agent of Lyme Disease could be detected in mosquito blood meals, then the collection and immunological assay of mosquitoes or other haematophagous arthropods could be used to detect and monitor these diseases in wildlife populations, reducing the need to capture or kill wildlife.

### Modeling the development of *Bacillus thuringiensis kurstaki* resistance in greenhouse Cabbage Looper populations

Alida Janmaat, UBC

Resistance to the microbial control product, *Bacillus thuringiensis kurstaki*, in local greenhouse populations of *Trichoplusia ni* (Cabbage Looper) has resulted in poor control with *Btk* sprays. Laboratory experiments were used to determine the inheritance of *Btk* resistance in greenhouse collected cabbage loopers. From these experiments, it appeared that *Btk*

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resistance was likely due to multiple genes, two of which confer moderate (24-fold) *Btk* resistance and one gene which confers high (>100-fold) resistance (“super” gene). This information was used to develop a selection model that simulates the evolution of *Btk* resistance in greenhouse cabbage looper populations.

Model simulations were employed to reconstruct the probable chain of events that led to evolution of *Btk* resistance in *T. ni* populations and to examine the rate of resistance development at different *Btk* application rates. Increases in the frequency of resistance genes in greenhouse *T. ni* populations would result in noticeable declines in *Btk* efficacy. With the application of low *Btk* doses, the model predicts that declines in *Btk* efficacy would be due to increases in moderate resistance genes. At doses 5-fold higher, a reduction in *Btk* efficacy in model simulations was largely due to increases in the “super” resistant gene frequency. Due to the recessive inheritance of the “super” resistant gene, a rapid decline in *Btk* efficacy would be observed once the frequency of the “super” gene exceeded 0.5 in the treated population. In the greenhouse and laboratory this increase in resistance would appear abruptly following a number of applications at high *Btk* doses. Interestingly, if the frequency of the moderate resistance genes is higher than the “super” resistant allele frequency, there was a delay in the evolution of resistance at high *Btk* doses. It was, therefore, suggested that growers should apply low *Btk* doses early in the growing season to elevate moderate resistance allele frequencies to prevent selection for the “super” gene at higher *Btk* doses.

Presentations were also given by Anna Lucynski -- Development of quality tests for biocontrol agents, and Debbie Henderson – Career options in biocontrol and controlling European chafers with nematodes.

### Panel Discussion on Sudden Oak Death

Our first discussion group of the meeting dealt with sudden oak death (SOD). Our guest speakers gave us different perspectives from which to examine the problem; Ken Wong from CFIA, Barbara Edwards from Hort Care Services, and from the BC Landscape and Nursery Association.

### Avian Influenza Symposium



The cull

Our second group of the afternoon discussed the hot topic of the avian flu. Aleina Tweed from the BC Centre for disease control, Orlando Schmidt from the BC Ministry of Agriculture, Food and Fisheries, and Louisa Nicholls from the Backyard Farmers' Association presented us with the

problems encountered by the government and the individual.

### **Upcoming Events**

#### **IPM BioControl Technical Cuba Trip 2006**

**Dr. Debbie Henderson**

#### **Background**

The impetus for a tour of biocontrol and integrated pest management in Cuba came from my recent association with the Provincial Plant Protection Branch (a division of the Ministry of Agriculture) of Sancti Spiritus – which in turn, had its beginnings with the Farmer to Farmer Canada-Cuba project, a brainchild of Wendy Holm. In 1999, a group of Cuban farmers and technical/extension personnel visited British Columbia as part of the Farmer to Farmer project and I had the privilege to meet and talk with the Cubans about their use of biological control. They are very advanced in the use and production of biocontrol agents – microbial and insect – including *Trichogramma*. Because of this, we prepared a proposal in 2001 to work together to have *T. sibericum* produced in Cuba for use here. Since then, I've made 3 visits to Cuba and two Cuban scientists have visited us. Their lab was once fully funded by the government but now they are self supporting (government cut backs – a familiar story!) and they do it by developing, producing and selling biological products to farmers, providing IPM monitoring services and nursery stock to the tourism industry, and selling seedlings of crop plants to farmers. One of the goals of the station is to develop international links – thus the tour plans crystallized.

#### **Some of the sites we may visit in Sancti Spiritus:**

- ∞ The Provincial Plant Protection Branch, which consists of labs including: microbiology, virology, chemistry, and a seed lab. The branch also has responsibility for Quarantine, Plant protection (strategies, distribution, logistics), Development and technical services (training), and Certified seed
- ∞ Center for Biocontrol “Conbio” – the powerhouse of biocontrol research, production and grower services. Microbials produced in the province in 2002 included: Bt – 48 tons, Metarhizium 20 tons, Beauveria 4 tons, Verticillium 2 tons, and some of the insects: *Trichogramma* 1157 million, *Crytolaimus* 20,000+.
- ∞ Some of the 10 territorial stations and CREES (regional production centers for biologicals) in the province. The territorial centers provide extension services to the surrounding agricultural areas and provide classes for farmers and others. We will meet and perhaps

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follow around, some IPM scouts as they do their monitoring. We will also visit a new community plant diagnostic center with a demonstration garden featuring biological control.

- ∞ Farms and crops: among which could be a tomato and papaya greenhouse operation, field planted root crops (lots of potatoes in S.S.), onions – with corn refugia for biocontrols, yucca, boniato, sugar cane, banana, mango, coffee, milking cows and others.
- ∞ Organoponicos – urban organic gardens that were a key strategy in helping Cuba feed its urban population during the 90's when starvation was their most critical issue.
- ∞ Genetic Engineering Branch – a federal institute. It is collaborating with the group at the Center for Biocontrol to identify and genetically profile local Bt strains.
- ∞ Sede Universitaria Sancti Spiritus – a branch of the university of Santa Clara. It has 2000 undergrads and 5000 grad students in 4 faculties including Agriculture and operates field schools in the province.
- ∞ The intriguing agricultural province of Sancti Spiritus – 700,000 H in cultivation with cattle, sugar, mixed vegetables, rice, tobacco, coffee, orchards and even some grape production. The province also has significant forestry activity in the mountains. There are some 19,500 producers (excluding sugar cane), Major exports from Sancti Spiritus are; sugar, tobacco and coffee. The ZaZa reservoir is the largest in Latin America.

The city of Sancti Spiritus is 489 years old – a Spanish town with narrow streets and fascinating architecture. Only a trickle of tourists find it, in sharp contrast to nearby Trinidad (a world heritage site and quite similar in age and history) and of course, world famous Havana.

### **Tour Format**

This tour is planned for one week and since it follows spring break (March 12-19 across the country) it will be easy to arrange to extend your trip to spend that week as a holiday with family. This is something we can help you arrange or you can do by yourself.

DRAFT PROGRAM

**DAY 1. ARRIVAL MON. March 20: VARADERO**

- Arrival at Varadero Airport (transfers can be arranged from Havana). The group will be welcome by a CubaNatura Guide.
- Transfer and Check-in at Acuazul. Free day at one of the most beautiful beaches in the Caribbean, Lunch on your own. Dinner at hotel (included) and evening tour orientation and social for participants.

### **DAY 2. TUES. MARCH 21: SANCTI SPIRITUS**

- Breakfast at Acuazul, Varadero
- Departure to Sancti Spiritus by air conditioned tour bus
- Lunch on arrival at CATEC facility
- City Tour
- Check in at Los Laureles – on the quieter outskirts of the city with lots of trees and a pool
- Dinner at Hotel Plaza or other historical site in city center
- Evening free to explore sights and sounds of the city/ make new Cuban friends.

### **DAY 3. WED. MARCH 22: SANCTI SPIRITUS**

- Breakfast at hotel
- Morning visit to technical institute organized by CATEC.
- Lunch at CATEC facility
- Afternoon: visit to one or two technical sites organized by CATEC.
- Dinner at Hotel or restaurant in Sancti Spiritus (included)
- Evening Poster session with interpreters followed by wine and cheese with Provincial Plant Protection Lab scientists

### **DAY 4. THURS. MARCH 23: SANCTI SPIRITUS**

- Breakfast at hotel
- Morning: visit to technical institute organized by CATEC.
- Lunch at CATEC facility.
- Afternoon: visit to one or two technical sites organized by CATEC.
- Dinner at hotel or area restaurant
- Evening activity with Provincial Plant Protection Lab scientists (poster session or individual meetings)

### **DAY 5. FRI. MARCH 24: SANCTI SPIRITUS**

- Breakfast at Hotel
- Morning: visit to technical institute organized by CATEC.
- Lunch at CATEC facility
- Afternoon: visit to technical institute organized by CATEC or one on one meetings with Cuban scientists
- Farewell BBQ/Caldoza at Conbiol with music (CATEC)

**DAY 6. SAT. MARCH 25: TRINIDAD.**



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- Breakfast at hotel
- Morning departure to Trinidad, one of the oldest settlements founded by the Spaniards in Cuba. Guided tour of Guided city tour of Trinidad historical centre.
- Lunch at Manaca Iznaga restaurant
- Check in at Costa Sur Hotel swim in the warm Caribbean
- Dinner at local paladar in Trinidad
- Evening venue: Cuban Popular Music Live at Trinidad Down Town.

### **DAY 7. SUN. MARCH 26: TOPES DE COLLANTES-VARADERO.**

- This morning we leave on former Russian army trucks for Topes de Collantes in the Escambray Mountain Range, Cuba's second highest mountain range - reaching 3,700 feet atop Pico San Juan. The mountains are home to small mountain villages and are a delight for birders and walkers alike. Slopes are swathed in Caribbean pines, ancient tree ferns, bamboo, and eucalyptus.
- Arrival at Hacienda Codina, an old Spanish Hacienda, once part of a large Spanish coffee plantation where we will have a typical lunch.
- Continue on to Acuazul in Varadero.
- Farewell dinner at local restaurant and feedback session

### **DAY 8. MONDAY, MARCH 27: DEPARTURE**

- Transfer to Varadero International Airport (or can be arranged to Havana)
- lunch on your own this day – depending on your flight times

#### **How much will it cost?**

The cost will be less than \$1,500 CAD per person (double occupancy, add \$100 for single), virtually “all inclusive”, and will be finalized within the next few weeks. Depending on your Canadian departure point, airfare will cost approximately \$600 to \$1,000 per person round trip.

We will have the capable and experienced supervision of Canadian Agrologist Wendy Holm for the duration of the tour as well as interpreters Tina Buijs and myself.

#### **What does this include?**

All accommodation (double occupancy), all meals except for the two lunches noted, entrance to tourist and technical venues, all ground travel arrangements, and translation. Accommodation in Varadero is 4 star and in Sancti Spiritus – Cuban style – but quite acceptable (I'd call it 3 star).

#### **Not Included:**

- Airfare.

- Tourist Card \$20 CAD (most airlines include this in your ticket price)
- Lunch on the first day March 20 (in Varadero) and lunch on the day of departure March 27 (depending on your arrival and departure times)
- Personal expenses (the shopping is great in Trinidad)
- Cuba Departure Tax at Airport \$35 CAD
- Gratuities (Guide, Driver, Chambermaids, etc)
- Beverages

#### **What about air travel? Two choices:**

1. Book your own air travel and arrive coincident with the tour dates or arrive a few days early or stay a few days later in Varadero or Havana .
2. Let us make your travel arrangements for you. We can book hotels in Havana or extend your stay in Varadero.

#### **What airlines fly to Cuba?**

- **Air Transat** operates non-stop charter flights into Varadero (one or two week round trips only) from Vancouver, Calgary, Edmonton, Toronto and Montreal. Tickets cannot be changed.
- **Air Canada:** Direct flights Toronto to Havana daily, other departure airports sometimes added in high season. Check on the possibility of Varadero flights with the airline. Flexible arrival and departure dates and tickets more easily changed.
- **Air Cubana.** Direct flights Toronto to Havana daily. Flexible arrival and departure dates and tickets more easily changed.

#### **How many people can go?**

Because of space limitations in labs and on buses we will need to limit this group to 22 participants so it's first come first serve.

#### **When do I need to decide?**

Basically, ASAP. We have 9 registered as of Nov. 4, and expect to fill this tour before Christmas.

#### **How do I reserve my spot?**

An email to Wendy Holm ([holm@axion.net](mailto:holm@axion.net)) or me ([debhend@axion.net](mailto:debhend@axion.net)) will start the process...

#### **Can I take my family?**

The reason we chose the dates for this tour was to make it easier for participants to holiday for the week of spring break before the tour with their families if they wished. Here are a couple of ideas –

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1) holiday with family the week before the tour. While you are on tour, the family could either continue on at a resort by the ocean or they could return home having had a lovely holiday.

2) Alternately, if spring break is not when you must take holidays, stay for the week after the tour. There are lots of opportunities in Cuba for eco tourism, scuba diving, exploring Havana, or just relaxing.

**Be aware that spring break flights book very early so consider booking these NOW.**

**When do I have to pay for it?** A \$500 deposit is payable on booking and the balance by Dec. 1. This will be handled through the Canada-Cuba Farmer to Farmer Project and Wendy Holm. Please contact Wendy for more information. (604) 947-2893, holm@axion.net

I really hope you can make it!

Debbie Henderson

### **Endnotes**

**AGM Sponsors** 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. Interested? Please contact Art Guité.

**Electronic Publishing** Pesticulars will become an electronic publication starting with the 2006 Spring Edition. 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 Art Guité.

**Pesticulars** is 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 Melanie Hart: greenmellybean@yahoo.ca

Please help us make our 2006 AGM the best ever by telling a friend or co-worker about our event. We welcome new members and want to spread news of the AGM. Feel free to post the following page, announcing the meeting, at work or. Hope to see you there.

**2006 PPMABC AGM**

**Simon Fraser University, Burnaby BC**

**Legs, Wings and Biting Things**

**January 17<sup>th</sup>, 2006**