



VTH INTERNATIONAL COLLOQUIUM  
ON INVERTEBRATE PATHOLOGY  
AND MICROBIAL CONTROL  
Adelaide, Australia  
20-24 August 1990

The Organizing Committee has been most encouraged by the strong response of both members and non-members of the SIP with over 230 invited and proffered papers received to date. Here is a list of organized symposia and invited papers:

ORGANIZED SYMPOSIA AND INVITED PAPERS  
FOR THE Vth INTERNATIONAL COLLOQUIUM  
ON INVERTEBRATE PATHOLOGY  
AND MICROBIAL CONTROL  
(updated 1 June 1990)

**Aquaculture**

(Organizer: L. Owens)

- Collapse and Remedy for the Shrimp Culture Industry in Taiwan. (S.N. Chen)
- Diseases in Australian Invertebrate Aquaculture. (I.G.Anderson)
- Bacterial Control of Insect Vectors (Organizer: E.W. Davidson)
- Commercial Factors Influencing Research Investment Decisions. (B. Gallagher)
- Molecular Aspect of the *Bacillus thuringiensis* subsp. *israelensis* and *Bacillus thuringiensis* Toxins. (S. Pantuwatana)
- Bacillus sphaericus*- An Addition to the Microbial Arsenal in Mosquito Control. (S.T.Jaronski and B.E.Melin)
- Microbial Control of Mosquitoes and Blackflies. (N. Becker)

**Bacterial Symbionts of Entomopathogenic Nematodes.**

(Organizer: R. Akhurst)

- Physiology of Phase Variation in *Xenorhabdus* spp. (N.E. Boemare and R. J. Akhurst)
- Depression of Defence Reactions in Insects by Steinernematidae and their Associated Bacteria. (M. Brehelin, L. Drif and N. Boemare)

**Bacterial Toxins—Mode of Action**

(Organizer: P. Marrone)

- Use of Mutagenic Oligonucleotides for Defining Regions of a *Bacillus thuringiensis* Delta-Endotoxin Involved in Toxicity. (D. Wu and A.I. Aronson)
- Specificity and Mode of Action of *Bacillus thuringiensis* Insecticidal Crystal Proteins Toxic to Lepidopteran Larvae: Recent Insights from Studies Utilizing Midgut Brush Border Membrane Vesicles. (M.G. Wolfersberger)
- Broad Spectrum Cytolytic Toxins made by *Bacillus thuringiensis* (B.H. Knowles, C.N. Nicholls, G. Armstrong, M. Tester and D.J. Ellar)
- Baculoviruses (Organizer: J. Cunningham)
- Baculovirus Enhancing Proteins and their Implication for Insect Control. (R.R. Granados and B.G. Corsaro)
- Development of Baculoviruses as a Contribution to Biological Control of Lepidopterous Pests of Basic Grains in Nicaragua. (B.S. Mulock, S.S. Swezey, C. Narvaez, P. Castillo and C.M. Rizo)
- Development and Use of Soybean Caterpillar Baculovirus in Brazil. (F. Moscardi)

**Bee Diseases**

(Organizer: D. Anderson)

- Chalkbrood Disease of Honey Bees, *Apis mellifera*, Caused by the Fungus, *Ascosphaera apis*: A Review of Past and Current Research. (M. Gilliam)

**Biology of Microsporidia**

(Organizer: R. Larsson)

- The Germination of Microsporidian Spores.(A.H.Undeen)
- The Effects of Microsporidia of the Life Cycle and Development of the Insect Host. (E. Armstrong)
- In Vitro Analysis of Development and Genetic Organization of Microsporidia. (T.J. Kurtti, U.G. Munderloh, S.E. Ross, J.B. Sagers and B.J. Stiller)

**Cell Culture**

(Organizer: L. Owens)

- Establishment of Cell Culture Systems Derived from Molluscs and Prawns. (S.N. Chen)

### **Codling Moth Granulosis Virus (CpGV)**

(Organizer: J. Huber)

–History of the CpGV as a Biological Control Agent– Its Long Way to a Commercial

Viral Pesticide. (J. Huber)

–Effectiveness of the Granulosis Virus of the Codling Moth in Orchard Trials in Canada. (J.P. Jaques)

–Cell culture for in vitro studies of *Cydia pomonella* granulosis virus. (D. Winstanley and N.E. Crook)

–CpGV Molecular Biology and Prospects for Genetic Engineering. (N.E. Crook and D. Winstanley)

–CpGV as a Tool in the Risk Assessment of Genetically Engineered Baculoviruses. (E. Fritsch, J. Huber and H. Backhaus)

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### **SIP NEWSLETTER**

The SIP Newsletter is produced four times a year by the Society for Invertebrate Pathology. Annual dues (U.S. funds) for the Society are: regular members, \$15.00; and students, \$6.00. Members receive SIP Newsletter and a copy of the abstracts of all SIP Annual General Meetings free, whether or not they attend. Application forms for membership in the Society may be obtained from the Treasurer, Mr. Fredrick G. Kern, Cooperative Oxford Biological Laboratory, 18 South Morris Street, Oxford, Maryland 21654, U.S.A.

#### **COUNCIL OFFICERS of THE SOCIETY ARE:**

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SIP Newsletter

Forestry Canada / Forest Pest Management Institute

P.O. Box 490

Sault Ste. Marie, Ontario P6A 5M7

CANADA

DEADLINE NEXT ISSUE: September 30 1990

### **Commercialization of Insect Pathogens for Insect Control**

(Organizer: K.D. Samuels)

–Commercialization of Bacterial Insecticides. (R.A. Daoust)

–Maximizing Economic Feasibility of Microbial Control. (K.H. Reichelderfer)

–Production of Mycelial Granules of the Entomopathogenic Fungus *Metarhizium anisopliae* for Biological Control of Soil Pests. (W. Andersch, J. Hartwig, P. Reinecke and K. Stenzel)

–Simulation of Epizootic Dynamics of a Microsporidium Pathogen of Mosquitoes (T.S. Larkin, A.W. Sweeney and R. I. Carruthers)

–Mechanisms of Transmission of Gypsy Moth Nuclear Polyhedrosis Virus. (J.S. Elkinton, J.P. Burand, K.D. Murray and S.A. Woods)

–Epizootiological Model of *Nosema whitei* and *Tribolium confusum*. (D.W. Onstad and J.V. Maddox)

### **Entomopathogenic Bacteria**

(Organizer: H.de Barjac)

–Characterization of the Mosquitocidal Toxins of *Bacillus sphaericus*. (C. Berry)

–Exploiting the Genetic Diversity of *Bacillus thuringiensis* for Creation of New Bioinsecticides. (B.C. Carlton, C. Gawron–Burke and T.B. Johnson)

### **Entomopathogenic Fungi**

(Organizer: J. Drummond)

–Aspects of the Genera *Hypocrella* and *Aschersonia* as Pathogens of Coecids and Whiteflies. (H.C. Evans and N. Hywel–Jones)

–Fungal Infection Processes– A Minireview. (T.M. Butt)

–Phylogenetic Relationships Within the Genus *Metarhizium*. (G. Riba, M. Rakotonirainy and Y. Brygoo)

### **Entomophthorales**

(Organizer: R. Milner)

–Systematic and Taxonomic Approaches to Entomophthoralean Species. (R.A. Humber)

–Entomophthorales in Pest Control– Recent Developments. (N. Wilding)

–Biological Interactions Within the Entomophthorales with Emphasis on the *Entomophthora muscae* –Complex. (J. Eilenberg)

### **Fungal Control of Insect Vectors**

(Organizer: S.T. Jaronski)

–Oomycete Fungi for Vector Control: Current Status and Prospects. (S.T. Jaronski)

–Control of Vectors by the Entomophthorales: Current Status and Future Challenges. (D.C. Steinkraus)

–Status of the Deuteromycete Fungi, *Tolypocladium* and *Culicinomyces* as Control Agents for Medically Important Diptera. (S.P. Frances)

### **General Protozoa: Current Status as Insect Pathogens**

(Organizer: W. Brooks)

–Flagellatodes of Insects with Emphasis on Blastocritidia Triatomae. (G.A. Schaub)

–Insect Ciliates: Potential for Container–Breeding Mosquitoes. (J.O. Washburn and J.R. Anderson)

–Eugregarines: Current Status as Pathogens, Illustrated in Corn Rootworms. (W.M. Brooks and J.J. Jackson)

### Marine Pathology

(Organizer: L. Owens)

–Bacterial Diseases in Cultured Tropical Marine Invertebrates in Australia. (D.C. Sutton and P.R. Muir)

### Microbial Control of Agricultural Pests

(Organizer: R. Teakle)

–*Bacillus thuringiensis*: Ecological Considerations in Use on Field Crops. (C.F. Reichelderfer)

–Microbial Pesticides—Synergism and Integration With Other Pesticides. (J.D. Harper)

–Use of Baculovirus for the Control of *Heliothis* spp. in Area-wide Pest Management Programs. (M.R. Bell)

### Microbial Control of Forest Pests

(Organizer: H. Evans)

–Questions on the Aerial Application of Microbial Pesticides to Forests. (P.F. Entwistle, H.F. Evans, J.S. Cory and C. Doyle)

–Use of Microbials for Control of Defoliating Pests of Conifers.

(John C. Cunningham)

–Use of Microbials for Control of Defoliating Insects of Broadleaved Trees. (R.C. Reardon)

### Microbial Control of Horticultural Pests

(Organizer: A.T. Gillespie)

–Fungi on Aphids, Thrips and Whitefly in the Greenhouse Environment. (J.J. Fransen)

–The Progress and Prospects for the Control of the Black Vine Weevil, *Otiiorhynchus sulcatus* by Entomogenous Fungi.

(E.R. Moorhouse, A.T. Gillespie and A.K. Charnley)

–Potential for Controlling the Sweetpotato Whitefly, *Bemisia tabaci*, with the Fungus, *Paecilomyces fumosoroseus*.

(L.S. Osborne, G.K. Storey, C.W. McCoy and J.F. Walter)

### Microbial Control of Livestock Pests

(Organizer: D.J. Cooper)

–Microbial Control of Muscoid Flies on Confined Livestock and Poultry Facilities. (B.A. Mullens)

–Potential of *Bacillus thuringiensis* for Fly Control. (K.B. Temeyer)

### Microbial Control of Soil Pests

(Organizer: R.B. Coles)

–Conidiation Kinetics of the Mycelial Granules of *Metarhizium anisopliae* (BIO 1020) and its Biological Activity Against Different Soil Insects. (G.K. Storey, C.W. McCoy, K. Stenzel and W. Andersch)

–Relationship Between *Beauveria bassiana* Conidia and the Fire Ant, *Solenopsis invicta*, in the Soil. (G.K. Storey and C.W. McCoy)

### Microbial Pathogenicity Factors

(Organizer: R. St.Leger)

–Pathogenicity Determinants of Entomopathogenic Bacteria. (D.J. Ellar)

–Secondary Metabolites, Toxins and Entomopathogenic Fungi: an Evolutionary Perspective. (A.K. Charnley)

–The Role of Cuticle—Degrading Enzymes in Fungal Pathogenesis of Insects. (R.J. St. Leger)

### Molecular Biology and Genetic Manipulation of Invertebrate Pathogens

(Organizer: R.R. Granados)

–Molecular Baculovirology, Regulation of Ecdysis and Improved Viral Pesticides. (L.K. Miller)

–Baculovirus Expression Vectors and Foreign Gene Expression. (D.J. Jarvis)

–Expression of Foreign Genes in Insects Using Baculovirus Vectors. (S. Maeda)

–Molecular Biology and Genetics of *Bacillus thuringiensis*.

(C. Gawron-Burke, J. Chambers, A. Jelen, W. Donovan, M. Rupa, C. Jany, A. Slaney, J. Baum, L. English and T. Johnson)

–Expression of *Bacillus thuringiensis* Insect Control Proteins in Genetically Modified Plants. (F.J. Perlak and D.A. Fischhoff)

–Commercial Utilization of Entomopathogens With Examples from the Fungi. (D.W. Miller)

### Nematodes

(Organizer: R. Bedding)

–Critical Aspects of Entomopathogenic Nematode Physiology. (C.Z. Womersley)

–Field Suppression of Three Fruit Fly Species (Diptera: Tephritidae) with *Steinernema carpocapsae*. (J.E. Lindegren)

–Efficacy of Entomopathogenic Nematodes in Field Soils. (J. Curran)

### Polydnaviruses

(Organizer: B. Vinson)

–Chelonus Wasps and *Trichoplusia ni* Hosts: A Study in the Molecular Struggle Between a Parasite and its Host.

(D. Jones, A. Soldevila, J. Chelliah, T. Taylor and A. O'Neill)

–The Interaction of Two Parasitoid Polydnaviruses with the Endocrine System of *Heliothis virescens*. (B. Vinson)

### Recent Advances on Microsporidia Infecting Mosquitoes

(Organizer: A. Sweeney)

–*Edhazardia aedis* (Microsporidia: Amblyosporidae) as a Biocontrol Agent of *Aedes aegypti* (Diptera: Culicidae). (J.J. Becnel)

–Natural Ecology and Epizootiology of *Amblyospora connecticus* (Microsporidia) in Coastal Salt Marsh Habitats of *Aedes cantator* (Diptera: Culicidae) and *Acanthocyclops vernalis* (Copepoda: Cyclopidae) (T.G. Andreadis)

–Life Cycles and Biology of Microsporidia Infecting Australian Mosquitoes. (A.W. Sweeney, S.L. Doggett and Richard G. Piper)

–Horizontal Transmission of *Parathelohania anophelis* and *Parathelohania obesa*, Microsporidian Parasites of Anopheline Mosquitoes. (S.W. Avery and A.H. Undeen)

### Sex Ratio and Incompatibility Organisms

(Organizer: L. van der Geest)

–Sex Ratio and Incompatibility Microorganisms in *Nasonia vitripennis*. (J.H. Werren)

–Evidence for Microbe-mediated Parthenogenesis in Hymenoptera. (R. Stouthamer)

–Cytoplasmic Incompatibility in *Drosophila simulans*. (A.A. Hoffman and M. Turelli)

## LATE REGISTRATION AND SUBMISSIONS

Delegates are reminded to register as soon as possible. Please remember that accommodation is assigned on a "first come first served basis" and late registrants may have to be placed in less conveniently located or more expensive accommodation.

Late registration fees are:

SIP members: Aus \$425.00

Non-members: Aus \$450.00.

Payments should be made by direct deposit/wire transfer to the Colloquium Bank (all bank charges pre-paid) as follows:

Australia and New Zealand Bank (ANZ)

Account Number: 015.010.40.180.0017

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Address: 81 King William Street, Adelaide, S.A.5000, Australia

To assist in the payment of late registration fees, the Organizing Committee has arranged a credit card facility and will accept payments by VISA CARD (international) and BANKCARD (within Australia and New Zealand only). We hope that this will help for late payment of registration fees and optional social programme tours.

**Please note:** To assist participants in the arrangement of travel funds the Organizing Committee will accept late submission of POSTER presentations.

Additional option to social programme

Please note that an additional option to the social programme for delegates and accompanying persons is an evening visit to the Warrawong Sanctuary for a guided dusk tour to observe native Australian fauna. The tour departs from the convention centre on FRIDAY AUGUST 24 at 5.00 pm (return 10.00 pm), cost Aus \$40.00 (includes transportation, tour and super). Warrawong Sanctuary is at high elevation in the Adelaide Hills and persons taking this tour are strongly advised to bring warm clothing and sensible foot-wear. Payment can be made during registration.

All enquiries concerning registration, the social programme for delegates and accompanying persons and the organized post-colloquium excursions should be directed to the colloquium secretariat of the Vth ICIP C/-Elliservice Convention Management, 60 Kensington Road, Rose Park, S.A.5067, Australia.

Telephone: 08.332.4068 (national), +618.332.4068 (international);

Fax: 08.364.1968(national), +618.364.1968 (international)

## ELECTION RESULTS

The results of the recent election for Officers of the Society have been announced. The following are declared elected, to take office at the meeting in Adelaide:

President:

*Dr. Elizabeth W. Davidson*

Vice-President:

*Dr. Chris C. Payne*

Secretary:

*Dr. Lawrence A. Lacey*

Treasurer:

*Dr. Charles F. Reichelderfer*

Trustees: (two)

*Dr. Toshihiko Iizuka*

*Dr. George G. Soares*

Honary Membership:

*Dr. Albert K. Sparks*

We thank all the candidates participating in the election and congratulate the winners. The close vote on all offices, and the strong response of the membership to the election is testimony to the fact that the Nominating Committee once again chose an excellent slate of candidates.

Special thanks also go to the members of the tellers committee, Jean Adams and Kevin Hackett, who counted the ballots.

Respectfully submitted,

*R.S. Anderson.*

## MICROBIAL CONTROL NEWS

The SIP Microbial Control Division is sponsoring this section which features short news items on microbial control. If you have any information which you would like to contribute under this heading, please submit one or two paragraphs to the Newsletter Editor or

Mark Goettel, Chairman,

Microbial Control Division,

P.O. Box 3000 Main, Lethbridge AB, Canada, T1J 4B1,

(FAX. 403-382-3156). Articles do not constitute formal publication and therefore should not be cited without permission of the author(s).

Tests of *Beauveria bassiana* for grasshopper control

Field tests of *Beauveria bassiana* for grasshopper control were conducted by Agriculture Canada and Mycotech. Outdoor cage and a field trials were conducted by Dr. Dan Johnson and his group at Lethbridge and by Dr. Martin Erlandson at Saskatoon. Trials with grasshopper confined in cages were conducted using both bran bait and liquid spray formulations. Bran bait was used in the field trial. Application rates were  $1 \times 10^{13}$  conidia per ha.

Previous laboratory and outdoor cage trials have consistently shown 90-100% mortality from bran bait formulations. In 1989, trials of bran formulations, mortality in cages was poor; 0-40%, while laboratory controls using the same conidia preparations showed typical virulence. Observation by Dr. Erlandson suggested poor bait acceptance as the cause. Spray formulations of the same conidia preparation showed greater than 80% mortality in adult grasshoppers.

This confirms previous cage trials conducted by Mycotech using spray formulations which showed 95% and 100% mortality at application rates equivalent to  $10^{12}$  and  $10^{14}$  conidia per ha.

The field trial was conducted on four, 2 ha plots. Mortality in treated plots

at 13 days post application were 17, 0, 40 and 48%. Bait acceptance and poor adherence of spores to bait may have affected results. Field trials with *B. bassiana* against African grasshopper species are planned.

*Cliff Bradley*

Mycotech BioProducts  
Butte, MT

#### Microbial Control of the Japanese Beetle in the Azores

The Japanese beetle was introduced onto the the island of Terceira (Azores, Portugal) in the early 70's and has since spread to over two thirds of the island. Terceira is approximately 60% pasture and in the absence of natural enemies, the beetle population has burgeoned. The adults demonstrate a preference for elevations above 200m. This, coupled with the very mild summer temperatures results in ground temperatures that seldom rise above 20°C. Unfortunately, the most successfully used microbial control agent in North America, *Bacillus popilliae* requires higher temperatures to produce patent infection and subsequent epizootics. Our program, therefore will be one of operational research aimed at finding the most efficacious agents for use against the Japanese beetle under Terceiran conditions (mild wet winters, mild summers with variable precipitation).

The human resources in the program include the talents of several University of the Azores staff and personnel from the Regional Agricultural Services as well one resident USDA research entomologist and various USDA personnel in the U.S., including Mike Klein at the Japanese Beetle Lab in Wooster, OH. A number of other SIP members have supplied useful information and literature. We actively welcome help with provision of potential (safe) microbial control agents of the Japanese beetle and related scarabs. I can be reached via the U.S. airbase on Terceira (in case Terry Couch decides to fly down!),  
Box 194,  
APO New York 09406, USA.

*Larry Lacey*

USDA Research Entomologist  
Terceira, Azores

#### Milky Disease Bacteria for Control of Scarab Larvae

The milky disease bacterium, *Bacillus popilliae*, was the first microbial insecticide registered in the U.S.A. and is still the only commercially available pathogen for suppression of a soil-inhabiting insect pest. The disease was first noted in central New Jersey in 1933, and the name derived from refractile spores and parasporal bodies of the *Bacillus* developing in larval hemolymph turning the infected grub milky-white. Although the bacteria would not grow and sporulate on artificial media, Dr. S.R. Dutky developed methods of mass production utilizing living larvae of the Japanese beetle, *Popillia japonica*. Spore powder was prepared by collecting larvae from the field, injecting them with *B. popilliae* spores, harvesting spores from the mixture with talc to provide 100 million spores per gram of powder. A colonization program involving State and Federal agencies allowed application of 2 grams of spore powder at intervals of 10 feet over established turf to treat over

160,000 sites with about 245,000 pounds of spore powder between 1939 and 1953. Infection of larvae in the field from ingestion of the spores, and the subsequent larva, fills in the gaps between application points and eventually reduces larval populations. These colonization efforts have generally been credited with reducing the rate of spread of Japanese beetle populations and the severity of damage to turf caused by the larvae in the Eastern U.S.

The Dutky method of production has been the basis for the commercial availability of milky disease spore powder. Fairfax Biological Laboratory, Clinton Corners, New York, has been making "Doom" spore powder from either naturally or laboratory infected Japanese beetle larvae for more than 45 years. In the past year, Ringer Corporation, Eden Prairie, Minnesota, has taken over the Reuter Laboratory line of "Grub Attack" milky disease spore powder. This product is being produced on artificial media by large scale fermentation using a recently patented process. The in vitro "Grub Attack" is formulated about 6.4 times the strength of the in vivo spore powder to give the two materials similar activity in laboratory bioassays. If field and laboratory trials substantiate the breakthrough of producing virulent spores on artificial media, increased usefulness for milky disease products can be anticipated.

At the present time, the use of milky disease bacteria appears to be limited to the U.S., and to suppression of Japanese beetle larvae in particular. Even here, serious concerns about the effectiveness of *B. popilliae* in reducing grub problems, particularly for the homeowner, have been raised. Production of milky disease spore powder on artificial media may allow development of strains that infect other species of scarabs throughout the world, that infect grubs at lower temperatures, or that infect grubs more rapidly and reliably in the field. All of these attributes are needed to allow greater use of these organisms in microbial control programs for insect suppression.

*Michael G. Klein*

USDA-ARS, Wooster, OH

**Color Slide Atlas of Microbial Control:  
Bioassay, Production and Application  
Methods – Call for submissions**

There's still time to include your slides in the atlas. All submitters will be acknowledged in the atlas. Please send all submissions to:

Mark Goettel, Chairman,  
SIP Microbial Control Division,  
Research Station, P.O. Box 3000 Main,  
Lethbridge, AB, CANADA T1J 4B1.

If you have any questions, please call me  
at 403-327-4561 or send a Fax at 403-382-3156.

Selected slides will be duplicated and all submissions will be returned; however, to reduceduplicating and postage costs, if at all possible, please send duplicates/slides rather than originals.

Please include the following information

1) a short description of slide including scientific names of pathogen, host

- and crop (as the case may be),  
2) place and year,  
3) reference citation if slide is associated with a publication  
(authors, year, journal, volume #, pages)  
4) Name, address and telephone number of submitter.

Once completed, the atlas will be offered to those interested at cost price.

#### **New Bioinsecticides Registered by Ecogen Inc.**

Since September 1989, Ecogen Inc. has received Environmental Protection Agency (EPA) registration for several of its novel biological insecticides containing genetically-modified strains of *Bacillus thuringiensis*.

Cutlass ® WP bioinsecticide was registered on September 21, 1989 for the control of lepidopterous larvae, e.g. beet armyworm, cabbage looper, diamondback moth, imported cabbageworm, and other caterpillar pests of leafy vegetables. Cutlass is applied at a rate of 1 to 2 lbs/acre. Over the last 3 years, Cutlass has been field tested extensively in the U.S. and overseas against the lepidopterous pest complex on a variety of vegetables, such as broccoli, cabbage, cauliflower and lettuce. Product performance with Cutlass has been excellent, often providing superior control to other chemical and biological products used for vegetable production. Cutlass WP bioinsecticide was first marketed in the U.S. in late-1989.

Condor ® OF bioinsecticide was also registered on September 21, 1989 for the control of gypsy moth and spruce budworm larvae on forests, shade trees, and shrubs. An expanded product label was received in April, 1990 that included control of lepidopterous pests of soybeans, primarily the soybean looper, velvetbean caterpillar and green cloverworm. The product is used at a rate of 1.5 to 2.5 pints/acre on forest trees and 2 to 4 pints/acre on soybeans, and will be marketed for the first time in 1990.

A third product, Foil ® OF bioinsecticide, was registered by EPA on April 6, 1990 for control of 2 major insect pests of potato plants. Foil OF bioinsecticide will be marketed nationally by Ecogen this year for use in protecting potato plants from damage by the Colorado potato beetle and the European corn borer. Ecogen believes that Foil OF is the first EPA-registered biopesticide consisting of a single species of microorganism for use to control insects from 2 different orders. Foil's performance in field trials has been equal (or better in areas of resistance)

to chemical pesticides in controlling both the Colorado potato beetle and European corn borer. Foil not only outperforms biopesticides registered for use against the Colorado potato beetle but also provides the additional advantage of protecting against the European corn borer.

*Richard A. Daoust*  
Ecogen, Langhorne, PA

#### **New Journal Biocontrol Science and Technology**

Biocontrol Science and Technology is a new quarterly international bioscience journal to be published from March 1991. The journal will present original research and reviews in the fields of biological pest, disease and weed control from a diversity of perspectives, encompassing basic scientific research, the application of new techniques such as genetic manipulation, and the technological development and application of biocontrol measures.

Biocontrol Science and Technology will be published four times a year. These four issues will constitute one volume. An annual index and title-page will be bound in the December issue.

Subscriptions rate: one year (one volume) US\$220.00, post free. Individuals receiving the journal at a private address for their own personal use may subscribe at a 50% discount (i.e. US\$110.00) under the terms of the Personal Subscription Plan. Order forms for the new journal can be obtained from the publisher:

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