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NEWSLETTER

society for invertebrate pathology

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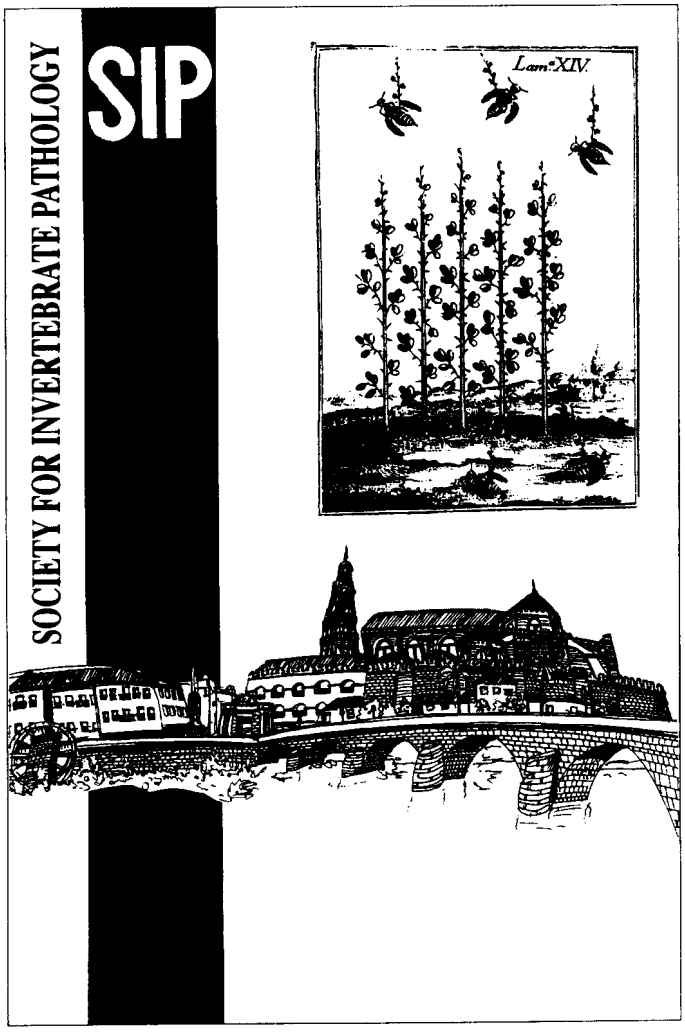

29TH ANNUAL MEETING OF THE SOCIETY FOR INVERTEBRATE PATHOLOGY AND IIIRD INTERNATIONAL COLLOQUIUM ON BACILLUS THURINGIENSIS

SEPTEMBER 1 - 6, 1996. CÓRDOBA, SPAIN

Last Minute Information

The 29th Annual Meeting of the S.I.P. and Third International Colloquium on *Bacillus thuringiensis*, organized by Cátedra de Entomología Agrícola y Forestal, E.T.S.I.A.M., Universidad de Córdoba, will be held on the Universidad de Córdoba Campus at the facilities of the Colegios Mayores Universitarios "Nuestra Señora de la Asuncion" (Avda Menéndez Pidal s/n, 14004 Córdoba-SPAIN). Since accommodation on campus will be available from Saturday, August 31, the Colegios Mayores will be open from noon on Saturday for room assignments.

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Deadline for the next Newsletter is October 15, 1996.

The scientific sessions will occur at the Colegios Mayores and the adjacent building of the Facultad de Medicina.

Travel

Participants arriving by air at the Madrid-Barajas International Airport, can reach Córdoba in 1 hour and 45 minutes by high-speed trains, AVE or TALGO. From the airport, take a direct bus connection to downtown Madrid (Plaza de Colón) and then a taxi to Madrid-Puerta de Atocha Railway Station.

Participants arriving by air at the Sevilla International Airport, can reach Córdoba in 45 minutes also by train. From the airport take a taxi (there is no bus connection) to Sevilla-Santa Justa Railway Station.

AVE Timetable

	Madrid to Córdoba		Sevilla to Córdoba	
Daily	7:00	8:57	7:00	7:43
	9:00	10:52	9:00	9:43
	11:00	12:44	11:00	11:43
	14:00	15:41	14:00	14:43
	16:00	17:52	16:00	16:43
	18:00	19:44	18:00	18:43
	20:00	21:52	20:00	20:43
Monday to Friday				
	7:30	9:22	6:30	7:13
			10:00	10:43
	12:00	13:41	12:00	12:43
	15:00	16:41		
Monday to Friday and Sunday				
	17:00	18:44	17:00	17:43
	19:00	20:44	19:00	19:43
	21:00	22:44	21:00	21:43
Friday and Saturday				
	22:00	23:41		

SIP NEWSLETTER

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Submissions to the following sections are solicited:

Forum: More substantial articles on current issues of concern, limited to approximately five pages.

Letters to the Editor: Issues of concern can be brought to light here.

Microbial Control News: Information on new discoveries, "News Releases", formation of companies etc. pertaining to microbial control.

We also depend on our members to supply us with information for the following sections: **Obituaries, Member News** (Retirements, Awards, Promotions), **Members on the Move** (New addresses), **Positions Available/Wanted, Meeting and Workshop Announcements**, and other **News Items.**

Send all submissions directly to the Editor. Submissions via EMail or on computer disk (WP, MSWORD or ASCII) make our lives much easier and save on costs. Please include a hard copy of any text sent via computer disk.

Deadline for next Newsletter is October 15, 1996.

On Sunday, September 1, members of the organizing team will be at your service at Córdoba's Railway Station. A "Meeting Point" will be located upstairs and will be signposted. For those arriving on other days, take a taxi directly to the Colegios Mayores Universitarios "Nuestra Señora de la Asuncion" (Avda Menéndez Pidal s/n).

For those arriving by car from Madrid, by the old motorway N IV (Autovia de Andalucia) please take the fourth exit: "Granada-Sector Sur". Once in the city (Avenida de Granada), go straight and find a big square (Plaza de Andalucía), cross the bridge (Puente de San Rafael) and just at the end of it, where there is a little square, take the street (Avenida del Zoologico) on your left (please note you have to change to your right lane). At the end of this street, you will see a garden on your right and a Hospital on your left. Turn left and you will find the University Housing (Colegios Mayores) 100 m further on. There is ample parking space available at the meeting site, free of charge.

Registration

A registration desk will be set up on Sunday, September 1, at the foyer of the Colegios Mayores, from 10:00 until 20:00 hrs. From Monday until Wednesday, registration will take place from 8:00 to 20:00, also in the foyer of the Colegios Mayores. For later arrivals, registration will still be possible by contacting the Secretariat at the meeting site.

Late Submission of Posters

Providing poster space is still available, late poster submissions will be accepted at time of registration.

Meals

For participants staying at the Colegios Mayores, breakfast is included in the price of the rooms and will be served at the restaurant. For lunch, the restaurant service at the Colegios Mayores provides meals to those participants **with meal tickets ONLY. Meal tickets must be purchased in advance at registration.** There are very few restaurants close to the meeting site.

Scientific Program

We have received more than 320 contributions so that up to four concurrent sessions will be necessary. We are attempting to prevent overlapping of related topics as much as possible.

The poster size will be 1.2 x 1.2 m. **Double-sided adhesive tape will be provided for the posters.**

Social Program

The social program is open to all meeting participants and their registered accompanying persons. The program includes the mixer on Sunday evening, September 1 (a reception at the Palacio de la Merced, Plaza de Colón, 15), and the concert and reception at the Alcázar de los Reyes Cristianos on Monday evening, September 2. The optional excursion on Wednesday will include a private visit to the Mezquita-Catedral that evening. The banquet will be held on Thursday evening, September 5.

Location and Climate

Córdoba is an universal city. It is the result of centuries of history and vicissitudes; Roman capital and Arab caliphate, Jewish district and city of churches following the Reconquest, a city connected with Christopher Columbus, a place of tolerance and convergence.

Córdoba is located in the north of Andalucía and spreads from the foothills of Sierra Morena to the fertile farmlands of the Campiña and the Guadalquivir Valley, the Guadalquivir River flows through the city from east to west.

The climate is Mediterranean, with scarcely three months of cold weather (December, January and February) when temperatures rarely fall below zero. March, April and May as well as September, October and November are months of ideal weather. The summer months (July and August) are of intense heat.

History

The origin of man's presence is lost in time. However, a date does exist for the foundation of the city as such,

between 169 and 152 B.C. when the magistrate Claudius Marcelus arrived in these lands and established a Roman colony that became the capital of Baetica (the old name for Andalucía). The Roman legacy was destroyed in the period of Visigothic rule, and few buildings remain (Roman Bridge, Temple in Claudio Marcelo street), but in the Provincial Archaeology Museum, a great number of findings are kept: mosaics, sculptures, coins, artistic and domestic artefacts.

The invasion by the Berber tribes from North Africa came in 711, then began the Muslim domination and the establishment of Córdoba as its capital. This meant the beginning of a new era of prosperity and peaceful coexistence between three religions and cultures -Arabic, Jewish and Christian. The caliphate's period of splendour came with the reign of Abd al-Rahman in the 10th century, when the palatial residence Medina Azahara was built. In 1236 the city was taken by the Christian King Ferdinand III, "the holy." A period of Christian reformation began and a lot of parish churches were built. Since then, the city remained linked to the Castilian and later Spanish monarchy.

Presently, Córdoba is a city with a population of 310,000. The city hosts a University with 20,000 students and is an important center for research in Agriculture related fields.

In addition to the flourishing services industry, the city is an area of considerable tourist activity. Córdoba has one of the largest historic centres in Europe. In December 1994, UNESCO, at its conference in Thailand, declared the historic centre of the city a World Heritage Site. This declaration covers monuments such as the Mosque, the Christian Kings Fortress, the Synagogue, the Calahorra Tower, the Roman Bridge, the Posada del Potro, the city walls, several palaces, museums and churches.

Monuments

Getting to know the Mosque is in itself a worthwhile reason for visiting Córdoba. Symbol of a new era, of a splendour and of that superimposing of civilisations which this age-old city has produced, the Mosque is the most significant monument left by Moslem rulers in the West. Other important remains from this domination, in this case destroyed by pillaging in the 11th century and presently undergoing archaeological restoration, are to be found in the ruins of Medina Azahara.

The Alcazar was originally a Roman fortress under Julius Caesar and it has changed over the centuries to an Arab building, then a Christian castle and finally preserving the name of the Christian Monarchs: Isabel and Ferdinand lived here for eight years.

Other monuments are: the Viana Palace, Tower of the Calahorra, the Sinagoga, churches such San Miguel, San Lorenzo, Santa Marina.

The Judería or Jewish quarter is a medieval area set in the middle of the Medina, the Arab city. Its streets surround the Mosque and reach the city walls. Streets are narrow and winding. Houses are thin with a narrow front but an extensive interior.

Athletic Facilities

The Córdoba University athletic facilities will be available to the conference registrants. These include an outdoor swimming pool, tennis courts etc.

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Note on Córdoba Meetings LOGO:

In the upper corner of this meeting's logo, an early Spanish illustration of a mycosed insect is reproduced. It is from the Aparato para la historia natural de España and was published in Madrid in 1754 by the naturalist Fray Joseph Torrubia.

The translation of Torrubis's observations that accompanied the illustration is provided, however, the poem has been left as is, in old style Spanish.

"Being convalescent in a lovely Quinta (which in this land is called Estancia), property of the generous gentleman Don Sebastian de Peñalver, resident in La Habana, thanks to whose charitable mercy, I met consolation and restoration for my health in that delicious retreat, which is about two miles from the city, I found in February 10th 1749 some dead wasps (being the corpses complete with their wings), out of their bellies grew a little tree that could be even 8 span tall. This plant is called GIA by the inhabitants and it is plenty of sharply thorns, which are attributed by the locals to the wasp belly which, they say, is full of them. It was not commonly known the origin from such tree until I gave it to know.

After great observations I did with the microscope, I sent a boy named "Centella" with a dead wasp perfectly preserved with a fully grown tree to the "Sindico General" of my religion, my special benefactor Sr. Don Martín de Arostegui enclosing the company of this poem, honest amusement I allowed myself in that solitude".

DECIMAS

Oy una rama de Gia
  Excede en admiraciones
  A quantas transformaciones
  Trata la Mithología
Tan confufa es la harmonía
  De las Caufas naturales,
  Que de educciones formales
  Trafiega el abyfmo vario
  Por razones de el Ovario,
  O principios feminales.

Sin que ponderacion fea,
  Vine a vér en efta eftancia
  Suceffos de Nigromancia,
  O prodigios de Medéa.
Otra la phyfica idéa,
  La generacion mudable
  Vi un Fenomeno admirable,
  Porque ví, fegun concibo,
  Contento lo Senfitivo
  Solo con ser Vegetable.

Produce abejas la baca;
  Un pelo forma vertebra,
  Conque anima una Culebra:
  Dá Alacranes la Albahaca.
Del fuego el Abeft fe faca
  Sin quemar, fegun of:
  Una Flor bolverfe ví
  Maripofa en perfeccion,
  Efto no es admiracion,
  Lo que yo aqui hé vifto sí.

Qué es lo que has vifto, me dices?
  Hé vifto aqui en un concreto
  Ser arbol un Efqueleto
  Con alas, y con raízes.
Y para que me indemnices
  De facil en el delito
  Con *Centellas* te remito,
  Que vá allá como una chifpa
  Efte efqueleto de Abifpa
  De que nace effe Arbolito.

The Organizing Committee

Workshop: New Products for Microbial Control, 29th Annual Meeting of the Society for Invertebrate Pathology, Cordoba, Spain, September 1-7, 1996

The Microbial Control Division is organizing this workshop and invites you to participate by giving an update on products your company has that are newly marketed, recently registered or nearing registration. It is intended that this workshop will help acquaint SIP members with your activities on the leading edge of microbial control product registration and marketing. This is also an excellent opportunity for you to

highlight your company's recent work to an audience of microbial control researchers and professionals.

Presentations should be between 5 and 10 minutes, depending on the number of presentations. Please contact as soon as possible:

Dr. Ann Hajek, Dept. Entomology
Cornell University, Ithaca, NY 14853 USA
Tel: (607) 254-4902, E-mail: aeh4@cornell.edu

FROM THE PRESIDENT

Plans are moving along very well for the upcoming SIP meeting in Cordoba, Spain. As many of you know, the International Conference on *Bacillus thuringiensis* is holding its biennial meeting in conjunction with the SIP annual meeting, and this synergy always makes for an exciting meeting. As usual, the local organizers under the able leadership of Candido Santiago-Alvarez have planned a strong scientific program, together with numerous complementary social events, and we are anticipating a very good attendance.

Among the numerous issues to be discussed at the Cordoba SIP Council meeting will be consideration of the establishment of two new SIP Divisions: the Bacteria Division and the Insect Virus Division. It is anticipated that the bylaws of each Division will be submitted to Council for their approval. Also on the agenda will be the mailing procedure for the SIP newsletter. We clearly have to develop a policy on the best procedure to get the newsletter to the membership in a timely and cost efficient manner.

During the past year I finalized the composition of various SIP committees. The two most recent ones are the Publications Board and the By-Laws Committee. The Publications Board includes chairman Bob Anderson, Wendy Gelernter, Bob Possee, and Mike Bidochka. The primary purpose of this Board is to explore possible ideas and mechanisms for the SIP to initiate a new relationship with Academic Press. The By-Laws committee includes Co-Chairs John Vandenberg and Don Roberts, Jim Fuxa, and Betty Davidson. The purpose of this committee is to examine the current SIP by-laws and to make recommendations and revisions for updating them.

This will be my last "From the President" letter, as my term in office will end at our next annual meeting. I have found this a very useful means of communicating with the membership on various SIP matters and I hope that this feature will continue in future SIP newsletters. I look forward to seeing many of you in Cordoba. Hasta Luego!!

Bob Granados, President

1996 FOUNDER'S LECTURE

Founders' Lecture Honoree for 1996 - Agostino Maria Bassi (1773-1856)

"Hilgardia. Copyright: Regents of the University of California."

Most insect pathologists are exposed to the work of Agostino Bassi through several works of Edward Steinhaus (Steinhaus, 1956, Microbial control--the emergence of an idea, Hilgardia 26: 107-159; and Steinhaus, 1975, Disease in a Minor Chord, Ohio St.

Univ. Press 488pp.). The following description and information are drawn directly or indirectly from these sources as well as from Cameron (J.W. McBain Cameron, 1973, Insect pathology, 285-306, *in* History of Entomology, R. F. Smith, T. E. Mittler, and C. N. Smith, eds., Ann. Reviews, Inc., Palo Alto, CA.). The reader is encouraged to read these sources for fascinating and detailed accounts of Bassi's life, his approach to his science, his specific findings, and an appreciation for the state of the science and scientific thought in the period in which he worked.

Agostino Bassi was born in 1773 in Mairago, near Lodi, a town in northern Italy where he worked and spent most of his life. He was and is, in fact, often referred to as Bassi de Lodi after his town of residence. He studied law and the natural sciences and held various positions until, in his early thirties, an inheritance allowed him to pay off numerous debts and devote time to the calcino or white muscardine disease that had become a serious factor in the Italian and French silkworm industries.

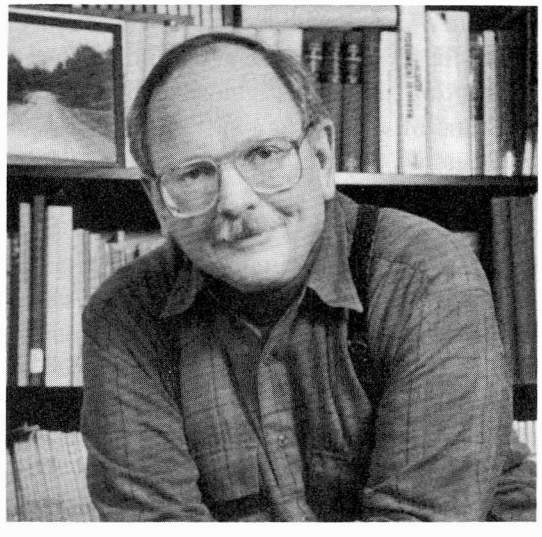
Working at a time when life was generally believed to be generated spontaneously from non-living matter, Bassi was frustrated after five years (from 1808 to 1813) of attempts to demonstrate and prove the spontaneous generation theory. He then spent many years conducting very careful experiments to explore the hypothesis that the disease was spread from contact with an "extraneous germ" rather than arising spontaneously, a concept that was being more widely considered at the time. Bassi conducted sound experiments on what he described as a "vegetable parasite" that grew and developed in the silkworm larvae, causing its death. He determined that this "parasite" could be transmitted by contact, by inoculation and through contaminated food. He recognized the white mass covering the body of infected larvae as being both the causative agent and the source of the "seeds" of contagion.

Bassi was able to determine environmental conditions that were conductive to development of the fungus. He was able to transmit the disease from silkworm larvae to other species and from them back to the silkworm. He also successfully experimented with methods for preventing its spread. After over twenty-five years of work with the silkworm and its calcino disease, Bassi delivered his work in a presentation to a commission of the Faculties of Medicine and Philosophy of the University of Pavia in 1834. His work was subsequently published in 1835 and 1836 as "Del Mal del Segno, Calcinaccio o Moscardino" when he was 62 years of age. He continued to work into his late seventies, considering the human afflictions tuberculosis, cholera and pellagra. During his latter years, and prior to his death in 1856, the importance of his work was recognized through many honors that were bestowed on him.

Insect pathologists pay honor to Agostino Bassi as the first person to associate an entomopathogen (named in 1835 as *Botrytis bassiana* in his honor by Balsamo Crivelli) as the causative agent of disease in an insect. In that this was also the first example of a microbe infecting an animal, Bassi's work takes on a monumentally more important role. Many consider him to be the founder of the germ theory of disease.

Agostino Bassi's life work clearly demonstrates his own brilliance. It also clearly demonstrates that while research on insect pathogens can have impacts that are both obvious and immediate, findings may also go far beyond the hypotheses that one may be testing and have profound influences on and broad implications for science in general.

Founders' Lecturer for 1996 - Dr. Donald W. Roberts



Dr. Donald W. Roberts has made significant contributions in research and teaching in insect pathology and microbial control of insects of agriculture and public health importance in the United States and in developing countries. In particular, he has promoted the use of entomopathogenic fungi for insect control and is a recognized world authority in this field. He is considered one of the most effective ambassadors for insect mycology on an international basis and has been very successful in bridging the fields of mycology and insect pathology.

Dr. Roberts was born in Phoenix, Arizona in 1933 and attended high school there. His interest in insect pathology began as early as 1952. While taking insect samples in cotton as a "sweeper", he noted virus epizootics in cabbage loopers in the fields. Frustrated that no one knew anything about the disease, he expressed to his supervisor an interest in learning more about the virus if he ever got the chance. He attended two years of college in Phoenix, then moved to Utah and completed his undergraduate studies in 1957 at Brigham Young University, majoring in zoology and minoring in botany. In his senior year, he took a mycology course, which fascinated him and stimulated his interest in combining the disciplines of entomology and mycology. He then attended Iowa State University and, in 1959, completed an M. S. Degree in economic entomology under Drs. H. M. Harris and E. T. Hibbs. During this time he heard of Dr. Ed Steinhaus and his program in insect pathology at Berkeley. He applied and was accepted into that program in 1959, receiving support from a U.S. Public Health Service Predoctoral Fellowship for his entire Ph.D. program. From 1959-1964, working under the guidance of Drs. E. A. Steinhaus and M. E. Martignoni, he established a life-long interest in insect pathology. Dr. Roberts' doctoral dissertation focused on *Metarhizium anisopliae*. He examined toxin production, bioassay systems, and induction of mutations, subjects that are still of major concern to insect mycologists today. Following completion of his Ph.D. requirements, Dr. Roberts received a one year postdoctoral fellowship from the National Science Foundation to work at the Swiss Federal Institute of Technology in Zurich with Dr. G. Benz. During this period Dr. Roberts expanded his doctoral research on identification, purification, and bioassay of toxins produced by *M. anisopliae*.

In April, 1965, Dr. Roberts was employed as Assistant Rank Insect Pathologist by the Boyce Thompson Institute for Plant Research. By 1974, he had risen through Associate to Full Rank Insect Pathologist and has continued in that role to the present.

Dr. Roberts' research has encompassed a broad range of topics within insect pathology, focusing on entomopathogenic fungi, fungal toxins, insect poxviruses, pathogens of medically important arthropods, and microbial control of insect pests. Past research projects have included: 1) modes of disease induction by *M. anisopliae* in mosquito larvae, induction and characterization of mutants, and field trials with *M. anisopliae* for mosquito control; 2) production, isolation, and identification of toxins of *M. anisopliae* and other entomopathogenic fungi; 3) biological activity of avermectins; 4) mass production, bioassay, and field tests of *Beauveria bassiana* for control of Colorado potato beetle; 5) studies on *Coelomomyces*, including *in vitro* and tissue culture growth and sporangial stimulation of dehiscence; 6) *in vitro* and *in vivo* biological studies of the aquatic mosquito pathogen, *Lagenidium giganteum*; and 7) insect poxvirus production, purification, characterization, host range, and interactions with vertebrate poxviruses and vertebrate tissue culture cells. Presently, Dr. Roberts is involved in studies of 1) evaluations of host penetration processes of entomopathogenic fungi at the molecular level, 2) epizootiology of *Zoophthora radicans* infecting the potato leafhopper, 3) mortality of soil insects caused by broad spectrum entomopathogens such as *B. bassiana* and *M. anisopliae*, and 4) novel fungal-produced chemicals with potential for insect control. Dr. Roberts has published over 200 papers on insect pathology and has edited many books and monographs. He has been speaker and/or organizer of more than 100 symposia, conferences, workshops, plus numerous seminars worldwide on various topics in insect pathology.

Dr. Roberts has been instrumental in the development of a major concentration of insect pathologists in the Ithaca, New York area. In 1978, he was instrumental

in helping the USDA, Agricultural Research Service's Insect Pathology Research Unit relocate from Orono, Maine to Boyce Thompson Institute. Both groups have greatly benefitted by their subsequent close association. In 1979, he proposed the formation of the Insect Pathology Resource Center (IPRC). This organization, based at Boyce Thompson Institute and coordinated by Dr. Roberts since its inception, includes over 30 scientists and support personnel from Cornell University, Boyce Thompson Institute, and the U.S.D.A., A.R.S. This organization has helped make the Ithaca area an internationally recognized center for insect pathology research. Dr. Roberts has extended his impact on the growth of the field of insect pathology by working cooperatively with many scientists throughout his career. He has hosted 19 postdoctoral researchers and 7 visiting scientists from as many different countries. His association with Cornell University has allowed him to be involved in formal teaching and acting as mentor for students. Through this association he has been adviser to 6 graduate students. In the fall of 1987, Dr. Roberts organized a course in Advanced Insect Pathology for Cornell University students.

As early as 1974, Dr. Roberts recognized the potential for use of microbials for pest control in developing nations and has been actively involved in international work in four different developing countries as well as in Australia. Projects have included short term work in Nigeria on mosquito control with fungi, sponsored by the World Health Organization in 1974 and 1976; work in India on survey, production, and field application of nucleopolyhedrosis virus infecting the agricultural pest, *Heliothis armigera*, sponsored by the Rockefeller foundation and the National Science Foundation from 1976-1978; advising the Brazilian government of the use of fungi for control of pasture spittlebugs (Cercopidae) from 1978 to 1981; survey and development of insect pathogens for control of cowpea pests and training of Latin Americans in insect pathology from 1981 to the present, centered in Brazil and supported through the Title XII Bean/Cowpea CRSP; collaborative research with the International Rice Research Institute in the Philippines on fungal diseases of the brown plant hopper from 1979 to the present, supported by a USAID grant from 1983 to 1986 and by the J. S. Noyes Foundation from 1987 to 1990; teaching the first insect pathology course in Australia; and development of the dried mycelial process for Australian field application of the mosquito pathogen *Culicinomyces clavisporus*.

Dr. Roberts has been recognized and awarded for his extensive contributions to entomology, and especially, to insect pathology. He is a founding member of the Society of Invertebrate Pathology and has been very active in the Society since its formation. He served as President of the Society from 1988-1990 and has held many other offices including Program Chair, Meetings Board Chair, Vice-president, and Treasurer. He received both a Fulbright Senior Research Scholarship and the Thomas Lawrence Pawlett Scholarship from the University of Sydney to work in Australia in 1985. He was the Entomological Society of America, Eastern Branch nominee for the Ciba-Geigy Recognition Award in Entomology in both 1985 and 1986. Dr. Roberts has served on the National Research Council/National Academy of Sciences organizing panel on Microbial Pathogens as Biological Control Agents (1976) and on Under exploited Microbial Processes (1977) as well as on the World Health Organization Scientific Working group on Biological Control of Insect Vectors of Disease, WHO Special Programme on Research and Training in Tropical Diseases (1977, 1978, and 1984). Since 1984, he has been chairman of the Fungal Pathogen subsection of Regional Project (S-135) on microbial control of insects. He has served as member of the editorial boards of the Journal of Invertebrate Pathology (1973-1983) and Intervirology (1973-1984). He has been a consultant or reviewer of grant applications for several organizations including the World Health Organization, U.S. Public Health Foundation, U. S. Department of Agriculture, American Institutes of Biological Sciences, the Brazilian government, Fulbright Senior Research Scholarship program, and the US/Israel Binational Research and Development Fund (BARD).

In addition to SIP, Dr. Roberts is a member of the Entomological Society of America, Sigma Xi, Gamma Sigma Delta, American Association for the Advancement of Science, American Mosquito Control Association, International Organization for Biological Control, American Society for Microbiology,

Mycological Society of America, and the Sociedade Entomologica do Brasil.

Founders' Lecture Committee
Anthony Sweeney
Richard Daoust
David Ellar
Jim Harper, Chair

HONORARY MEMBERS, PART 3

In our final article on SIP Honorary Members, we will review the careers of four Honorary Members who are currently active in the profession or have recently retired. These members often appear at meetings, and will be familiar faces to many of us.

Constantin Vago

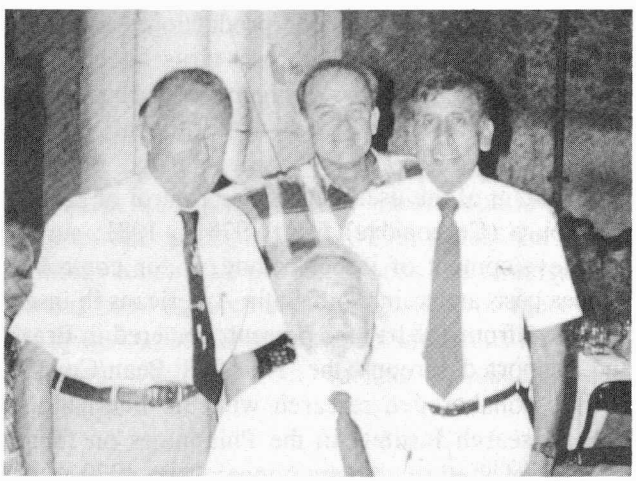
Dr. Vago received the PhD degree from the University of Debracen in Hungary where he was a student of Nobellists Szent-Gyorgyi and Lwoff, and the DSc. degree from University of Marseille. His work in invertebrate pathology spans several fields, including studies of viruses, rickettsiae, chlamydiae, and bacteria in insects and other invertebrates. Dr. Vago isolated some of the earliest strains of *B. thuringiensis* and of insect viruses. Early studies on two new virus types, densovirus and entomopoxvirus, as well as baculoviruses were projects in his laboratory. He is also a pioneer in the development and use of invertebrate cell culture. Dr. Vago is noted for integration of invertebrate pathology with the wider study of general pathology, including medical pathology.

Dr. Vago has trained several hundred pathologists during his career at Montpellier, Marseille and Paris, many of whom are now prominent in their own right. He founded the Research Centre for Comparative Pathology at Montpellier-St. Christol in 1957, one of the first laboratories of invertebrate pathology in the world. Thirty scientists are currently employed at this laboratory. He is the author of ca. 450 publications as well as books and book chapters.

Dr. Vago is well-known for his international collaborations, having developed a network of communications within the discipline. He was a pioneer in bringing together invertebrate pathologists for international conferences, beginning as early as 1962. These included organization of two International Colloquia for Invertebrate Pathology at Montpellier, in 1972 and again in 1994. He is a founding member of SIP and was our third President (1970). He was the Founders' Lecturer honoring Louis Pasteur in 1987, and was himself honored in 1994.

Among Dr. Vago's many honors are elected membership in the Academy of Science of France and of several other countries and of Europe, Awardee of the Gold Medal of the French Academy and Awardee of the Legion of Honor.

Dr. Vago remains active in his laboratory in St. Christol-Montpellier.



Dr. Vago with Karl Maramorosch, Brian Federici & Bob Granados, Montpellier, 1994.

Huguette de Barjac

France has produced two SIP Honorary Members, the second is Dr. Huguette de Barjac. Dr. de Barjac studied at the Institut Pasteur and received the PhD degree from the Sorbonne University. She spent most of her distinguished, 40-year career at the Institut Pasteur in Paris, where she became the youngest head of laboratory, and among the first women to serve in this capacity. She has also been Distinguished Visiting Professor at Rutgers University. The Research Unit of Entomopathogenic Bacteria, of which she was head, has also been a Reference Centre for the World Health Organization since 1981.

Although Dr. de Barjac has studied several areas of insect pathology, she is best known for work on *Bacillus thuringiensis* and *Bacillus sphaericus*. Her laboratory developed H-antigen serotyping for both bacterial species, and provided industries with International Standards for both organisms. She has been instrumental in devising standardized bioassays, investigating host range of *B. thuringiensis* and *B. sphaericus* strains, and maintaining a reference collection of these bacteria. These efforts led to commercialization of several promising new strains. During her career she has served on many international committees including those for the World Health Organization, International Committee on Systematic Bacteriology, and others.

During a recent visit with Dr. de Barjac at her retirement home in Cannes, France, I asked her what was the most exciting moment of her career. She shared her amazement on first observing the rapid activity of *B. thuringiensis israelensis* on mosquito larvae. She could hardly believe that this bacterium could kill larvae in as little as 10 minutes. She felt that her longest lasting contribution was probably the H-antigen serotyping of *B. thuringiensis* and *B. sphaericus*. She expressed concern for the development of resistance to *B. thuringiensis*, and felt that the insect pathology community should look now for very rapid, very contagious viruses, particularly those which may kill adult insects. Dr. de Barjac is happily retired, sharing her time between the beautiful Cote d'Azure and Paris.

Dr. de Barjac with Marguerite LeCadet, Betty Davidson & Al Yousten, Heidelberg, 1992.

Albert K. Sparks

Dr. Sparks received all his degrees from Texas A&M University. It was during work at A&M on oceanography of the Gulf of Mexico that he became interested in diseases of oysters. These studies occupied him during most of his professional life. In 1958 he became director of the Aquaculture Program at the University of Washington, establishing a

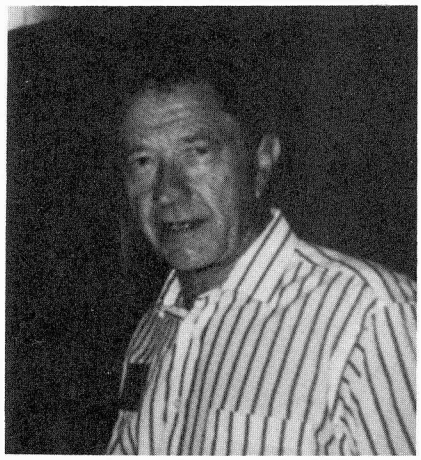
laboratory with heavy emphasis on molluscan infectious and noninfectious disease. Later, Dr. Sparks moved to Galveston Texas to become Director of the laboratory of the Bureau of Commercial Fisheries. He then became Deputy Director and later Director of the National Marine Fisheries Service, in Washington, DC. In 1976 he returned to the laboratory in Seattle and continued with active research on diseases of fish, shrimp, oysters, clams and crabs until his retirement in 1991. He has published over 80 papers over a span of nearly 40 years, as well as two books.

Dr. Sparks was a founding member of the Society for Invertebrate Pathology. As a result of conversations between Dr. Sparks and Dr. Ed Steinhaus, it was decided that a Society for Invertebrate Pathology should be formed. Dr. Sparks was host to the organizing meeting in Seattle on May 9, 1967. He has always been active in promoting the interdisciplinary nature of SIP, encouraging participation of pathologists working with other invertebrates as well as insect pathologists. In addition to the organizing meeting, Dr. Sparks hosted the 1980 meeting in Seattle. He was the second President of the Society, having been elected Vice-President at the organizing meeting.

Dr. Sparks and his wife, Pat, enjoy retirement at their home in Seattle, where he continues to be interested in the progress of invertebrate pathology.

Dr. Sparks with John Harshbarger, Gainesville, 1987.

John D. Briggs



Dr. Briggs received the PhD degree from the University of California, Berkeley, where he was a student of Dr. Steinhaus. His research was among the first to demonstrate inducible humoral immunity in insects. His initial position was at the Illinois Natural History Survey, but he later moved to Biofirm Corporation (International Minerals and Chemicals) where he was heavily involved in development of the first *Bacillus thuringiensis* product, Thuricide. He joined the faculty at Ohio State University in 1962, where he attained the title of Professor, and also served as Acting Dean of the newly formed College of Biological Science. He retired from Ohio State in 1992 after 30 years' service, although he remains active at OSU.

At Ohio State, Dr. Briggs trained many invertebrate pathologists who remain active in the field today, including Fred Hink, Goro Kuno, Ann Cali, Eldon Reeves, Douglas Streett, Albert Pye, and Betty Davidson. He has been very active in international aspects of invertebrate pathology, including work in Mexico, Colombia, Nigeria and Indonesia. He has always been willing to travel and work abroad, including many years with the World Health Organization Special Programme for Research and Training in Tropical Diseases.

Dr. Briggs was a charter member of SIP, and convened the first Annual Meeting in Columbus, Ohio in 1968. He was elected President (1972-1974), and has filled many roles for the Society over the years, including representative to the International Union of

Biological Sciences, preparation of the Directories of Invertebrate Pathologists, securing funding for travel to international colloquia, judging of student papers, and as chair and member of numerous committees. For many years he has also provided the beautiful hand-lettered award certificates which are presented to the Founders Lecture honorees and speakers.

Dr. Briggs remains in Columbus, where he continues to participate in various activities in the Entomology Department.

Dr. Briggs with Ohio State University graduates Ed Hazard, Ann Cali, Doug Streett, Beth-Jane Ellis-Obenchain, Betty Davidson & Fred Obenchain, Ithaca, 1993.

Elizabeth Davidson
Assistant Newsletter Editor

NEWS ITEMS

Database of World's Insect Pathogens

The Ecological Database of the World's Insect Pathogens, produced by David Onstad at the University of Illinois and the Illinois Natural History Survey, will be placed on the World Wide Web in July. This work was supported by the USDA-APHIS National Biological Control Institute with special help from Mauro Martignoni, Rich Humber, Ronny Larsson, Brian Federici, Joe Maddox, Gary Blissard, and Yasuhisa Kunimi. The database can be found on the Survey's home page (http://www.inhs.uiuc.edu) in the database section.

Entomological Society of America on the Internet

The ESA's new WEB site is: http://www.entsoc.org

To All Clients of the ARSEF Culture Collection:

I am pleased to announce the establishment of a new electronic mailbox for the USDA-ARS Collection of Entomopathogenic Fungal Cultures (ARSEF):

arsef@cornell.edu

It is intended that this new mailbox be used for direct enquiries about ARSEF cultures, to request shipments of ARSEF cultures, or for other official correspondence with collection staff.

As of now, the *only* other means to reach the Collection by e-mail other than by using this new mailbox with requests for information or cultures, and other correspondence can also continue to be sent to me at my personal e-mail box: rah3@cornell.edu

Fax communications to me, to the ARSEF collection, or to any of the collection staff should now be send to (607) 255-1132 rather than to (607) 255-2459.

The technician in charge of maintaining the collection can be reached by phone at (607) 255-1274.

Richard A. Humber
USDA-ARS Collection of Entomopathogenic Fungal Cultures
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NEWS FLASH !

Election Results:

President:	Brian Federici
Vice President:	Juerg Huber
Secretary:	Sue MacIntosh
Treasurer:	Ted Andreadis
Trustees:	Jenny Cory
	Jorge Ibarra
Honorary Member:	Thomas Angus

The Teller's Committee:

Gary Blissard
Ray St. Leger
Ann Hajek

Editor's note: Many thanks to the Secretary and the Teller's Committee for making a special effort to ensure that these election results arrived before this Newsletter went to press.

MICROBIAL CONTROL NEWS

Report From Bt Forum

About 130 researchers, growers, educators, crop consultants, and government officials attended a USDA-sponsored National Forum on Insect Resistance to *Bacillus thuringiensis*, April 15-16, in Bethesda, MD. The goal of the Forum was to share ideas and stimulate discussion about strategies for managing insect resistance to Bt.

In his welcoming remarks, USDA Under Secretary Karl Stauber said the Forum is especially timely because this year three transgenic crops (corn, cotton, and potatoes) are ready for large-scale planting in the United States. He said while Bt can provide an environmentally safe alternative to the use of chemicals, it is just as important to assure that Bt remains effective and reliable.

In the keynote address, Bruce Tabashnik, University of Hawaii, noted that most available evidence for resistance management is anecdotal. He emphasized that while models for resistance are fast, inexpensive, safe, and flexible, they are no substitute for rigorous field data. He said now is the time to develop a pro-active approach and develop substantive data on resistance.

The occurrence and management of resistance to synthetic pyrethroids was presented as a case study for managing resistance to Bt. Ian Watkinson, representing the Insecticide Resistance
Action Committee, outlined the lessons learned from cooperative efforts by companies, extension, crop consultants, and growers. He spoke of the dilemma whereby support for a management program is most important at the very time when it is most difficult to achieve - before a problem develops; and if a problem diminishes, compliance quickly follows suit. He went on to offer a list of very practical recommendations for putting together an effective management plan that involves all the players.

Some participants expressed the view that Bt transgenic crops have undergone 10 years of research and testing, and offer a safe and effective alternative to chemically-treated crops. New genes are being discovered and new approaches that combine pest control strategies are being developed. Others expressed the opinion that "outrunning resistance" by sequentially substituting a new product when the current one becomes ineffective, is not the best course of action. Most agreed that more information is needed to build good pest management programs for both foliar applications as well as transgenic crops.

George Kennedy, North Carolina State University, zeroed in on the difficulties of implementation even when there is acceptance that resistance is a problem. Even with acceptance, there may be a tendency to try to outrun it, or to manage it on some theoretical basis. Acceptance that resistance is a problem doesn't ensure that a management plan will be adopted. Implementation of resistance management at the farm level depends on its advantage relative to alternatives, its complexity, and its compatibility with current practices. Is it homegrown or caused by others? What

are the alternatives and what do they cost? What are the benefits? Complexity, or perceived complexity, reduces the relative advantage and leads growers to modify the management plan to make it simpler or more advantageous. Such modifications are likely to reduce the plan's effectiveness. Equally important, resistance management won't be adopted if it doesn't fit easily within existing operations. Kennedy described the ideal resistance management protocol as simple, invisible to the end user, and unmodifiable in its key elements. With an eye to the future, he noted that incorporation of multiple pest resistance traits and herbicide tolerance into Bt crops will lead to increased acreage planted to such crops and make it difficult to maintain adequate refugia for Bt susceptible populations.

In breakout sessions organized for corn, potatoes, cotton, and fruits and vegetables, participants were asked to identify the key components of a resistance management plan for the targeted crop, the hurdles to implementing the plan, how they could be overcome, and the follow up actions needed at the regional or national level.

In closing remarks, Deputy Under Secretary Cathie Woteki, said seven themes were apparent throughout the Forum. First, she said a majority of the participants agreed that Bt is one of U.S. agriculture's most valuable pesticides; second, it is important to prolong its usefulness; third, it's essential to continue research on insect resistance and management; fourth, we need better understanding of the economics involved in their use and production; fifth, more education will be needed; sixth, follow-up meetings will be necessary with USDA taking a leadership role; and seventh, responsibility for research, education, and monitoring will need to be shared. Wotecki said the proceedings of the Forum will be published and distributed widely.

Pat Traynor
Information Systems for Biotechnology

Reprinted from:
ISB News Report - May 1996

Realignment At APHIS Should Not Affect "Customer Service"

When USDA's Animal and Plant Health Inspection Service (APHIS) reorganized in 1988, the new Biotechnology, Biologics and Environmental Protection (BBEP) unit was formed from other small components of the Agency. A biotechnology policy staff from the Administrator's office served as a nucleus. Joining the policy staff was a permits group and an environmental analysis unit from Plant Protection and Quarantine (PPQ), plus two units from Veterinary Services in charge of veterinary biologics licensing and inspection. During the next eight years, the BBEP staff grew substantially and multidisciplinary teams were built to license veterinary biologics and review environmental impacts of genetically engineered plants and microorganisms.

During the last decade, however, the world of agricultural biotechnology continued to evolve. The once young biotechnology industry matured, and trade issues rather than field testing became the key concern of regulators worldwide. Therefore, in an effort to remain viable and ready to meet new challenges, APHIS decided to realign its staff functions.

As of October 1, 1996, BBEP will cease to exist as a unit. The veterinary biologics program will be consolidated into Veterinary Services, some environmental functions will be aligned with the Agency's central policy support staff, and the biotechnology program and environmental testing and monitoring groups will be moved as a unit to the PPQ program.

According to John Payne, Acting Deputy Director of BBEP, the realignment will foster closer coordination between the biotechnology program and other units in the Agency responsible for phytosanitary standards and pest risk analysis. These changes will have no effect on USDA's biotechnology regulations, points of contact, or the processes followed for obtaining field testing permits or notifications, or petitions for non- regulated status. The strong ties that link USDA, the Environmental Protection Agency, and the Food and Drug Administration to ensure a coordinated regulatory framework will remain as strong as ever.

"The realignment will help put APHIS in an excellent position to meet future challenges, such as those related to international trade and the harmonization of regulations," said Payne. With the new emphasis on international trade comes a need for close coordination with others in the agency responsible for phytosanitary standards and those who conduct pest risk analysis in support of international trade in produce and commodities. APHIS may also explore new ways to include environmental analysis in the early stages of program planning and analysis.

The BBEP realignment is part of an overall cultural change taking place at APHIS, according to Payne. "The vision is to provide customers better service with programs that reflect their needs in an ever changing global economy."

Report compiled from USDA sources as reported in the ISB News Report, June 1996.

In Vivo Markers Could Help Mitigate Potential Risks of Gmos

University and corporate researchers are genetically modifying viruses, microbes, plants, and animals for various purposes. Until recently there has been no easy, cost-efficient method to detect, in a mixed sample, which organisms are modified and which are not. Having this information becomes important if one is concerned with tracking individuals or transgenes in time and/or mitigating potential long-term ecological effects of the environmental release of transgenic organisms. If an organism were engineered with an in vivo marker that could be visually detected in real time, then it could be easily monitored. The ramifications of the ability to easily monitor transgenic organisms are not trivial. The existence of a monitoring system will allow researchers to study gene flow, persistence and other ecological effects of transgenic organisms introduced into the environment.

The discovery of green fluorescent protein (GFP), and the cloning of the gene (1), have allowed researchers to engineer organisms to fluoresce green under ultraviolet light (2). GFP is the first universal in vivo marker However, only recently has GFP gene expression been high enough to light up, say, whole plants (3). My laboratory has recovered transgenic plants in which the entire plant glows green under an ultraviolet light. An agricultural gene of interest may be fused translationally or transcriptionally, or simply linked to GFP, allowing easy identification of initially transformed individuals as well as detection of any hybrid progeny carrying the transgene. Thus the ability to use GFP as an ecological marker in higher organisms makes subsequent monitoring in the environment very simple.

There are several applications of such technology. Prasher (2) mentions the possibility of using GFP to monitor sterile insects released into the environment, and to detect microbes from fermentors that are not intended to be released. It also would be useful to keep track of microbes that are used in bioremediation. A novel use for GFP as a biomonitor for baculoviruses was recently published (4). In this report, GFP-engineered virus was used to infect insects, and the insects were subsequently shown to fluoresce green.

The most widespread potential use of in vivo-marker linked tracking will be for monitoring transgenic plants. Canola and sunflower, for example, have breeding systems that are problematic because transgenes may be transferred into nearby weedy relatives. If the transgenes are for traits that can confer higher fitness, such as resistance to herbicides, disease, or insects, then it is possible for the recipient weed to gain a selective advantage and become weedier. In the case of a plant like sunflower, which has its center of genetic diversity in the U.S., introduction of transgenic cultivated sunflower with higher fitness could possibly decrease the genetic diversity of wild sunflower, if the transgene were to be transferred into the wild populations.

GFP technology could help in the mitigation of potential ecological effects of large-scale transgenic plant production. For example, since we cannot fully predict how an escaped transgenic insecticidal plant may affect natural ecosystems, it may be 20 years before the consequences are clear. If plants containing transgenes can be easily tracked, negative effects may be evident sooner. Biotechnology companies may find

it beneficial to use in vivo markers to limit their liability and demonstrate good stewardship. It is also likely that regulatory agencies may require mitigation for the deregulation of certain organism-gene combinations. Now that the technology is available, it would seem prudent to use it.

References

1. Prasher et al. 1992, Gene 111:229-233.
2. Prasher 1995, TIG 11:320-323.
3. Stewart, June 1996 Nature Biotechnology 14:682.
4. Chao et al. 1996, Nature 380:396-397.

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Reprinted from ISB News Report, June 1996.

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Biosys Launches New Products

The first commercial sale of GEMSTAR LC, a liquid concentrate formulation of *Helicoverpa zea* NPV from biosys for control of *Heliothis* and *Helicoverpa* species in cotton and vegetables occurred April, when the USDA-ARS in Stoneville, Mississippi purchased a large quantity to treat approximately 25,000 acres twice as part of a continuing pilot program conducted by Dr. Randy Bell for area wide suppression of tobacco budworm and cotton bollworm. USDA has been spraying HzNPV on wild geraniums and other weeds in early spring since 1990 in order to reduce the size of the generation of moths that leaves the weeds to oviposit in cotton in June. It is anticipated that this program may be taken over by growers and expanded to cover nearly 1 million acres in the Mississippi Delta in 1997. GEMSTAR LC is also available to cotton growers for control of bollworm and tobacco budworm in pre-bloom cotton through Helena Chemical Company, exclusive US distributor of biosys baculovirus insecticides.

SPOD-X LC, biosys' product based on the NPV of beet armyworm (*Spodoptera exigua*) will be sold for the first time in Thailand this year. Biosys received Thai registration for use of SPOD-X LC to control BAW on vegetable crops this past winter and recently shipped the first order to AgrEvo, its distributor of the product in Thailand. SPOD-X LC was launched in US cotton through Helena Chemical Company in 1995, and is also available for use on vegetable and ornamental crops. California registration is expected later this year. Another liquid formulation, SPOD-X GH, has been sold since 1994 in The Netherlands for control of *S.exigua* on greenhouse flowers and ornamental crops. Biosys is expecting to receive an expanded Dutch label for greenhouse vegetables this year, and are working with their Dutch distributor (Brinkman BV) to expand into other European markets.

SPOD-X and GEMSTAR were under development by Crop Genetics International when it merged with biosys in March 1995. Biosys has continued in the development of baculoviruses as microbial insecticides, and now holds EPA registrations for (in addition to SeNPV and HzNPV) the *Autographa californica* NPV, codling moth granulosis virus, and most recently the broad-spectrum celery looper (*Anagrapha falcifera*) NPV licensed from the USDA.

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MEMBERS ON THE MOVE

Surendra Dara graduated with PhD in Entomology from Virginia Polytechnic Institute and State University in January 1996 and moved to West Africa in March to start his new position as post-doctoral insect pathologist at the International Institute of Tropical Agriculture, Benin. He worked on evaluating the potential of the entomophthoralean, *Pandora neoaphidis* for controlling the tobacco aphid for his dissertation. His current work deals with control of the cassava green mite using another entomophthoralean, *Neozygites floridana*. His current address is:

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Cotonou
Republic of Benin, West Africa
Tel: (229) 35 01 88
Fax: (229) 30 14 66
E-mail: s.dara@cgnet.com

Keith Jones has been seconded from the Natural Resources Institute (NRI) (UK) to CARE International in Sri Lanka for the last 18 months as project director for CARE's Integrated Pest Management Project. The project is training farmers in IPM practices. Where appropriate, new IPM technologies are being developed and field tested. As part of this process strong links have been established with agricultural research groups within and outside Sri Lanka. These include the Sri Lankan Department of Agriculture, Eastern University, The Universities of Peradenyia (UoP) and Ruhuna (UoR), FAO, CSIRO and, of course NRI. Keith's background in insect pathology (at NRI he was head of the Insect Pathology Group) naturally means that he is keen to develop and test microbial pesticides in Sri Lanka. Keith has been

appointed to the teaching staff of the Post-Graduate Institute of Agriculture at UoP and has initiated a ten week course on Insect Pathology which will form part of the MSc in Agricultural Biology. PhD studies on locally isolated entomopathogens (fungi and bacteria) have also been started. At UoR a post-doctorate research programme on the use of *Spodoptera* and *Helicoverpa* NPVs is also underway; this forms part of a LINK scheme with the University of Reading and NRI has provided training in UK on insect virology and microbial control to a UoR staff member. Elswhere, the Horticultural Research and Development Institute and The Plant Protection Department are testing commercial Bt strains on vegetables in the field (*Plutella* and *Spodoptera* are major pests). Commercial companies who are willing to provide samples for testing in the field are welcome to contact Keith.

The Insect Pathology Group at NRI (as well as Keith, this includes **David Grzywacz**, **Andy Cherry**, **Margaret Brown** and **Mark Parnell**) continue to work in UK and several developing countries on production, formulation and field testing of insect viruses. Currently the group are collaborating with Tamil Nadu Agricultural University and ICRISAT in India, the Department of Agriculture in Thailand and IITA in Benin, amongst others. People familiar with NRI will be interested to know that the Overseas Development Administration has sold the Institute to a consortium led by the University of Greenwich.

Keith Jones or the Insect Pathology Group can be contacted via NRI at:

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Tel: +44-1634-880088; Fax: +44-1634-880077

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134, Havelock Road
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Tel: +94-1-501218; Fax: +94-1-587572
E-mail: keith_ca@sri.lanka.net

Chris Prior has moved from the International Institute of Biological Control at Ascot to a new job as senior plant pathologist with the Royal Horticultural Society, just down the road at Wisley. Chris was an insect and plant pathologist at IIBC for ten years and worked on insect pathogens and pest control in Mauritius, Papua New Guinea, Colombia and Oman. He helped set up the collaborative programme on biological control of locusts and grasshoppers, now known as project LUBILOSA, and was programme leader 1989 - 1992. This programme is carried out jointly with IITA, GTZ and CILSS in West Africa and concentrates on the development of *Metarhizium* as a mycopesticide for ultra-low volume application against acridoid pests. At Wisley, Chris will revert to his previous career as a plant pathologist, concentrating on diagnosis, training and research for control of horticultural disease problems. He can be contacted at:

The Royal Horticultural Society's Garden
Wisley, Woking
Surrey GU23 6QB
UK

Tel: ++44.1483.224234
Fax: ++44.1483.211750
E-mail: rhs.plantpath@dial.pipex.com

Dr. Christian Luz has moved from the Institute of Tropical Medicine, Tuebingen University in Germany to CENARGEN, EMBRAPA, Biological Control in Brazilia. He will work as a consultant with **Dr. Myrian Tigano** on fungal epizootics in soya bean pests and the control of Triatomine bugs using entomopathogenic fungi.

Christian's new address:

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Moving?

To ensure proper address in future Membership Directory and for receipt of SIP Mailings including the Newsletter:

1) Contact FASEB and provide both **New** and **Old** adresses at:

Society for Invertebrate Pathology
FASEB Membership Department
9650 Rockville Pike
Bethesda, MD 20814, USA
Tel. 301-530-7026
Fax. 301-530-7001
EMail staff@dues.faseb.org

2) Prepare a paragraph including information about past and present postings, new address, telephone, fax and Email address and send to your Newsletter Editor for inclusion in the Members on the Move section in the next issue of the Newsletter. Editor's address can be found on page 2.

PUBLICATIONS

***Bacillus thuringiensis*, Ecology and environmental effects of its use for microbial pest control.** Hansen, B.M., Damgaard, P.H., Eilenberg, J. & Pedersen, J.C. 1996. 126pp. Environmental Project No. 316, Ministry of Environment and Energy, Copenhagen, Denmark. ISBN: 87-7810-526-9 ISSN: 0105-3094

Key subjects in this book are the taxonomy and characterization of *B. thuringiensis* occurrence in Denmark, its interaction with insect pathogens and its environmental fate. *B. thuringiensis* is present worldwide. The variants of *B. thuringiensis* commonly used as microbial pest control agents are present in the natural environment. The effects from use of *B. thuringiensis* are primarily related to the high doses used in commercial applications and should be assessed case-by-case.

Price: DAK 155 (approx. 30 US Dollars)
Distribution:

Miljøbutikken
Danish Environmental Protection Agency
Strandgade 19
DK 1401 Kbh.K.
Fax: +45.33.92.76.90

The Ethics of Biological Control

Call for papers to appear in a Special Issue of AGRICULTURE AND HUMAN VALUES - FALL 1996

With the publication of Rachel Carson's Silent Spring, the use of broad-spectrum synthetic pesticides became a widely acknowledged threat to the well-being of humans and the environment. As such, biological control received an enthusiastic public greeting. The use of living organisms as our allies in controlling pests promised an ecologically-based, environmentally sound "natural" alternative to the abuses of pesticides. The potential benefits of biological control to human well-being, relative to the historical misuses of chemical pesticides, are incontrovertible. However, the environmental risks of biological control are of a unique kind and degree. Because biological control makes use of living organisms that are often intended to reproduce and spread from the point of release, we now have the potential to permanently and irreversibly alter ecosystems on a continental, if not global, scale.

Previous pest control technologies were spatiotemporally limited in their benefits and harms; environmental alterations due to the use of chemical, mechanical, and cultural tools were usually localized and were almost certain to disappear with ecological time. By contrast, when biological control involves the establishment of an organism with the potential to track its host in time and space, the permanent suppression of pest or nontarget species across entire ranges is possible. Thus, along with the potential for indefinite benefit to human interests come the potential for

permanent, unintended, and largely unpredictable disruption of ecosystems, including the extinction of nontarget species.

The purpose of this special issue is to explore the consequences of different strategies of biological control, their effectiveness and, especially, their ethical implications. Papers are invited on topics covering a wide range of issues. Topics may include, but are not necessarily limited to considerations of the following questions.

In a biological control program, how do we balance the value of native nontarget species with the damage done by the target pest?

What are our "obligations" to the species being "used" for our benefit as biological control agents - are there any ethical constraints with what we do to/with other species in this regard?

How do the ethical consequences of an introduction of an exotic biological control agent differ from the concerns related to the release of genetically engineered organisms?

How certain of nontarget effects must we be prior to a biological control release?

When is biological control "natural" and does it matter?

How do we balance the possibility of extinction with agricultural and other human interests?

How do the various forms of biological control (e.g., augmentation of native agents versus introductions of exotic organisms) differ in terms of ethical considerations?

What are our obligations to future generation in the context of exotic introductions for biological control?

What are our moral requirements for compensation to (often poor) countries from which biological control agents are taken?

What are our ethical obligations with respect to being able to reverse a biological control program once the organisms are released?

What is the nature of our obligations in monitoring the beneficial and harmful impacts of biological control?

How do various formulations of environmental ethics apply to biological control?

What social and legal constraints are necessary to assure the ethical application of biological control technologies?

What is the proper role of government regulation with respect to biological control?

Who is responsible for damages from unintended environmental impacts of biological control?

How do ethical considerations vary across the different classes of organisms used in biological control (e.g, insects, mammals, fungi)?

Submission deadline for papers is September 1, 1996. Send two copies to:

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HALF PRICE SALE!
MONTPELLIER ABSTRACTS

Abstracts and Proceedings from the VIth International Colloquium on Invertebrate Pathology and the IInd International Conference on *Bacillus thuringiensis* are available by sending a cheque or money order made out to the "Society for Invertebrate Pathology" in US currency to FASEB, C/O Delores Frances, 960 Rockville Pike, Bethesda, Maryland, 20814 USA.

Handling, processing and mailing fee is $U.S. 9.00 for mailing in North America and $U.S. 13.00 for mailing overseas. Upon payment of the above fee, the costs are as follows:

Abstracts free for members in good standing in 1994.
Abstracts for non-members in 1994.....$12
Proceedings..... $12

If both Proceedings and Abstracts are ordered at the same time, the handling fee remains the same.

MEMBER NEWS

William H. McGaughey, research leader in the Biological Research Unit of the US Grain Marketing and Production research Center, Manhattan, Kansas, was selected by USDA-ARS as one of its four "Area Senior Research Scientists" for 1995.

Patrick V. Vail, director of the ARS Horticultural Crops Research laboratory in Fresno, California, has been named the agency's 1995 "Distinguished Scientist of the Year" for his discoveries leading to environmentally friendly insecticides and faster development of potential human and animal drugs.

Michael Brownbridge of the University of Vermont, would like to announce his new E-mail address and apologize to anyone who has tried to reach him at his old address, which is no longer functional.
MBROWN@moose.uvm.edu

Dr. Jean Adams has retired from the US Department of Agriculture Beltsville Agricultural Research Center after over 33 years research on insect pathology. Dr. Adams is, however, still coming into the laboratory 7-8 hr a day (instead of her previous 9-plus hrs) in order to finish some projects. She is busy scanning some of her best electron micrographs on insect pathology into a photo CD which she plans to make available to Society members. She is also assisting the Biological Control Documentation Center in cataloguing thousands of her electron micrographs, which will be stored in the Center.

At home, she is busy with a new home business producing cheer cards for shut-ins using computer scanned photos in greeting cards.

Dr. Adams graduated from Rutgers University and worked at Rhom and Haas Co. before joining the USDA. She is a founding member of SIP, and is also active in the Entomological Society of America and other Entomological societies. She has served SIP as Secretary, and on the Editorial Board of the Journal of Invertebrate Pathology. She has published more than 80 papers, and with Dr. J-R. Bonami, is the author of Atlas of Invertebrate Viruses.

News from biosys

Mike Dimock recently has been promoted to Business Manager (worldwide) for baculovirus products. **Mark Beach** is now Director of US Sales and Technical Services (incorporates the former Product Development, US Sales, and Registrations groups), and **Doug Kolodny-Hirsch** has been promoted to Manager of Market Development for East Asia. Doug and Mike formerly reported to Mark as Senior Scientists, Product Development.

POSITION WANTED

Ph.D. in Entomology with research expertise in biological control of insects with entomopathogenic fungi is looking for research assistant or postdoctoral positions. I have a background (field and laboratory) in ecology and physiology of fungi (mainly Entomophthorales) ; host/pathogen relationships : life cycle and pathology of fungi, fungal virulence and specificity, and effects of environmental factors.

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FUTURE MEETINGS AND WORKSHOPS

The Sixth IBRA Conference on Tropical Bees: Management and Diversity, San Jose, Costa Rica, 12-17 August, 1996

The conference includes topics on parasites, pests and diseases of tropical bees. Contact:

Sixth IBRA Conference on Tropical Bees
International Bee Research Association
18 North Road
Cardiff CF1 3DY, UK.

30th Annual Meeting of the Society of Invertebrate Pathology, Banff, Alberta, Canada, August 24-30, 1997.

If you have ideas and suggestions for symposium topics, division workshops, etc. please contact Andrew Keddie or Martin Erlandson (Program Co-Chairs).

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Microbial Control of Pests in Sustainable Agriculture, IOBC Working Group: Insect Pathogens and Insect Parasitic Nematodes, Copenhagen, Denmark, August 25-29, 1997

If you wish to receive the first circular, contact:

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EDITOR'S NOTES

Newsletter Mailing. We are still experiencing difficulties in getting the Newsletter to all our members in an efficient manner and are attempting to resolve them. In the meantime we ask for your continued patience.

Newsletter Production at Montpellier. This is the last Newsletter being produced at the CSIRO/INRA laboratories in Montpellier, France, as I shall be returning to Lethbridge at the end of September. I would like to thank **Dr. Mark Lonsdale**, Director of the CSIRO European Laboratory, and **Dr. Pierre Ferron**, Director of INRA's Unite de Recherche en Lutte Biologique, located on the same premises, for their support and permission to use the facilities for production of the Newsletter. Thanks are also due to **Christophe Espiau, Nathalie Smits** and **James Coupland** for their help in setting up the word processing in Montpellier.

Deadline for next issue. Please submit all material by **October 15, 1996** for publication in the November, 1996 issue.

1996 Meeting Site, Colegios Mayores Universitarios, Córdoba, Spain