

IOBC Newsletter 60

ORGANISATION INTERNATIONALE DE LUTTE BIOLOGIQUE CONTRE LES ANIMAUX
ET LES PLANTES NUISIBLES (OILB)

OCTOBER 1994

IOBC/OILB is affiliated to the International Council of Scientific Unions (ICSU)
as the Section of Biological Control of the International Union of Biological Sciences (IUBS)

IOBC FORUM

Code of Conduct for the Import and Release of Bio- logical Organisms

We would like to take the opportunity to make IOBC aware of certain problems that the current draft FAO Code of Conduct for the import and release of biological organisms may cause for the researchers and regulators.

The first draft of the Code was sent by FAO to the members and Regional Plant Protection Organisations (RPPOS) in December 1993. Acknowledgements and comments were received from 43 FAO members, four RPPOS and six organisations and individuals. The original version of the Code was modified in appearance. However, the context of the Code was essentially the same.

The FAO has now circulated the Code for a second consultation.

With the cooperation of the Committee of Experts on Phytosanitary Measures (CEPM), it is hoped that

the Code will enter the FAO Committee of Agriculture, Council and Conference system in 1995.

Governments and interested groups have until October 1994 time to send comments to the International Plant Protection Convention (IPPC) secretariat in order to prepare a final version for endorsement by FAO conference in November 1995, as an international standard, and published subsequently.

Our concerns on the draft can be summarised as follow:

- There has been a lack of governmental regulatory authorities, industry and researchers, participating in the development of the draft code. In fact, our comments were completely ignored.
- It is understood that the Code is only dealing with exotic, naturally occurring strains of macro- and micro-organisms and thus the title should reflect this.
- The scope of the Code includes many types of organisms, such as vertebrates, invertebrates, microbial pathogens including fungi, bacteria and viruses. Since the requirements for importation

President: E.S. Delfosse, USDA/APHIS, Office of the Administrator, Fed. Build., Room 350, 6505 Belcrest Rd., Hyattsville MD 20782, USA Fax 301 436 78 23

Vice-Presidents: B. Napom-peth, National Biol. Control Res. Centre, Kasetsart Univ., P.O. Box 9-52, Bangkok 10900, Thailand

A.I. Smetnik, All-Russian Institute for Plant Quarantine, Pogradichnaya 32, Bikovo, Moscow Region 140150, Russia

Secretary-General: F. Bigler, Swiss Fed. Res. Station for Agronomy, Reckenholzstr. 191, 8046 Zürich, Switzerland Fax 1 377 72 01

Treasurer: E. Hoebaus, Ministry of Agriculture and Forestry, Abt. II C12, Stubenring 1, 1010 Vienna, Austria Fax 711 006 507

Past-President: J.R. Coulson, Inst. Biocontrol Lab., USDA/ARS, BARC East BD. 476, Beltsville MD 20705, USA

and release are not identical for these categories, it is very difficult to see how a common approach can be applied for import and release.

- There should be a single, identified authority in the importing countries to handle both, importation and release of biological control agents (Regulatory Authority in the first instance).
- Requirements for a first registration or field testing should be defined separately from these requirements for "routine impor-

tation" of products for sale (a positive list of registered organisms was proposed).

- Discussion should be held in advance with the identified Regulatory Authorities concerning the first importation and release to ensure all information available and prevent the need for quarantine requirements (absent in many countries).
- Routine importation of registered /sales products should not be subjected to same stringent

control for first introduction (it is clear that the high standard of quality control/responsibility have to be maintained).

We feel that the proposed Code in its current form will add an additional hurdle to development of biological control and therefore supports the need for clear guidelines built on science-based regulations to ensure the further use of biological organisms for pest management.

M.C. Neale, Ciba-Geigy Ltd.
on behalf of GIFAP's Bio-
technology Round Table

ENTOMOPHAGA

As decided at the IOBC Global Council meeting in February 1994, an ad-hoc Review Committee of Entomophaga was designated. Its members are: Co-chairs: A. Cameron, IOBC/NRS and A. Minks, IOBC/WPRS; members: J. Coulson, IOBC Global Past-President; C. Gessler, IOBC/WPRS; L. Lacey, IOBC/NRS. The Committee convened the first time in August 1994 in Montpellier. A number of actions were discussed and the members of the Committee agreed for specific assignments.

The Committee is publishing a brief summary of the main discussion points and invites the IOBC members to send their ideas and comments to either of the co-chairs.

Invitation for suggestions and comments

Since its inception in 1956, *Entomophaga* has been devoted to biological control of noxious insects. In recent years, biological control of weeds has become an important area of interest for the journal; other disciplines such as plant pathology, nematology, and invertebrate pathology, are increasingly important in biologically based management of pest problems. A Committee has been appointed by President

Delfosse (see IOBC Newsletter 59, pp. 4-5, March 1994) to examine the needs of our journal, and to make recommendations for changes to serve our Society and the scientific community in the best possible way as we move into the 21st century.

Among the areas considered by the Committee, in a recent meeting in Montpellier, France, are the scope of the journal and the likelihood of a change in name to reflect a broadened scope, the editorial structure and procedures, financial arrangements, and appearance of the journal. Although we have not yet determined the scope, it is clear already that it must be enlarged. We anticipate, therefore, contributions from a much broader scientific area, and a much larger audience. This might require subject editors in addition to the Editor in Chief. Content could consist of invited review articles, forum papers, original research papers across the broad domain of biological control, and integrated ecosystem management. Scope could be narrowly restricted to exclude anything not specifically incorporating biocontrol agents. On the other hand, scope could include effects on non-target organisms, management strategies, host resistance, genetic engi-

neering, and molecular and biotechnological approaches.

During our Montpellier meeting, the Committee met with Dr. J.M. Rabasse, Editor, to examine ways in which this evolution can most effectively proceed. His ideas and comments are essential to the success of our endeavors.

The Committee invites the comments and constructive suggestions of every member of the Society to guide its deliberations. The first person to suggest the name eventually selected for the journal will receive a free subscription for one year.

Please forward your ideas and comments to either of the Co-Chairs, Dr. Albert K. Minks, Research Institute for Plant Protection, P.O.B. 9060, 6700 GW Wageningen, The Netherlands (Fax (31) 8370-10113; Internet: A.K.MINKS@IPO.AGRO.NL, or Dr. E. Alan Cameron, 501 A.S.I. Building, Penn State University, University Park, PA 16802, USA (Fax (1) 814-865-3048; Internet: ACAMERON@PSUPEN.PSU.EDU). Comments should be received as soon as possible.

A. Cameron
for the Review Committee

Subscription rates 1994 for IOBC members:

France:	FF 350.-
Europe:	US\$ 80.-
Others:	US\$ 90.-

International training course and workshop

Pesticide Registration and Evaluation of Pesticide Effects on Natural Enemies

13th - 25th March 1995, PLANTI, Serdang, Malaysia

This practical training course is co-organized by the International Institute of Biological Control (IIBC) and the **International Organization for Biological Control (IOBC)**, with funding from the United Nations Development Project (UNDP) UNIDO programme, the Swiss Development Corporation (SDC) Germany's *Gesellschaft für Technische Zusammenarbeit* (GTZ) and IOBC.

Course Aims

To provide pesticide and crop protection research staff in developing countries with practical skills for measuring the effects of pesticides on natural enemies at laboratory, semi-field and field levels.

Workshop Aims

To adapt pesticide testing and registration protocols developed in European cropping systems to the needs and conditions in tropical developing countries.

The course will include practical computer, lab. and field sessions, including a 4 day field trip.

Who should attend?

Officials of government agencies involved in pesticide

registration and testing.

Scientists from plant protection research and extension institutes.

Staff from university faculties of agriculture involved in teaching, research, pesticide evaluation and IPM.

Course fee US\$ 1'550.- (incl. board and lodging)

We hope to repeat the training course in 1996.

For further information please contact:

Stephanie Williamson, Training & Information Officer IIBC, Silwood Park, Ascot, Berks. SL5 7TA, UK. Tel +44 344 872999; Fax +44 344 875007; e-mail CABI-IIBC@CABI.org

It is the first time that IOBC and IIBC jointly organize an international training course. As agreed at the IOBC Global Council meeting in February 1994 (see Newsletter 59, p. 3), IOBC provided substantial assistance in searching funds and qualified lecturers. The two main lecturers of the course are members of the IOBC/WPRS working group "Pesticides and Beneficial Organisms". In addition, IOBC/WPRS provides funds for travel expenses of the two lecturers.

REGIONAL SECTIONS

WPRS

West Palaeartic Regional Section

President: D.J. Royle, University of Bristol, Long Ashton Research Station, Bristol BS18 9AF, UK. FAX: 275 39 4007

Secretary General: S. Poitout, INRA Stat. Zool., B.P. 91, F-84143 Montfavet Cedex, France. FAX: 90 31 62 70

Treasurer: J. Huber, Institute for Biological Pest Control, Heinrichstr. 243, 62287 Darmstadt, Germany. FAX: 6151 40790

A new Council and Auditing Committee was elected in October 1993.

Council members: D.J. Royle, UK (President); P. Castanera, Spain (Vice-President); D. Degheele, Belgium (Vice-President); A.K. Minks, Netherlands (Vice-President); S.H. Poitout, France (Sec.-General); J. Huber, Germany (Treasurer); M. Afellah, Morocco; P. Esbjerg, Denmark; A. Frazao, Portugal; C. Gessler, Switzerland; F. Kozar, Hungary; L. Masutti, Italy; J. Petterson, Sweden; C. Yavriyas, Greece.

Deputy members: H. Bayat Assadi, Iran; J.C. Malausa, France; H. Hokkanen, Finland; D. Rosen, Israel.

Auditing committee members: P. Amaro, Portugal (President); S. Blümel, Austria; E. Dickler, Ger-

many.

Deputy members: R. Albajes, Spain; J. Freuler, Switzerland.

EPRS

East Palaeartic Regional Section

President: A.I. Smetnik, All-Russian Institute for Plant Quarantine, Pogranichnaya 32, Bikovo, Moscow Region, 140150, Russia; FAX: 95 924 2051.

Secretariat: Journal "Plant Protection", Sadovaya-Spasskaya 18, attn. IOBC/EPRS Secretariat, Moscow, 107807, Russia; FAX: 95 924 6655.

NRS**Nearctic
Regional
Section**

President: G.R. Buckingham, USDA/ARS, P.O: Box 147100, Gainesville, Florida 32614. FAX: 904 955 2301

Secretary-Treasurer: J.M. Nechols, Department of Entomology, Kansas State University, Manhattan, KS 66505. FAX: 913 532 62 32

Corresponding Secretary: R. van Driesche, Department of Entomology, University of Massachusetts, Amherst MA 01003. FAX: 413 545 2115

ATRS**Aftrotropical
Regional
Section**

President: J. Boussienguet, Prog. Nat. Lutte Biol., B.P. 1886, Univ. O. Bongo, Libreville, Gabon. FAX: 241 73 13 30

Secretary: N.T.C. Echendu, Nat. Root Crops Res. Inst., Biocontrol, Umudike, Umuhia, Nigeria.

**Share your
information**

Activities and events within IOBC Regional Sections do interest your colleagues outside the Sections as well. They will most probably not be informed if you don't tell them. You may share information by sending any kind of **NEWS** to me.

F. Bigler, Editor

SEARS**South
East Asian
Regional
Section**

President: R. Muniappan, Agricultural Experiment Station, University of Guam, Mangilao, Guam 96923 USA. FAX: 671 734 6842.

Secretary-Treasurer: M. Marutani, (same address as R. Muniappan)

NTRS**Neotropical
Regional
Section**

President: Francisco Ferrer, Servicio Biologico, Carrera 5 No. 4-76, Urbanizacion del Este, Barquisimeto, Estado Lara, Venezuela. FAX: 58-51 316 253

Secretary: Miguel C. Zapater, Facultad de Agronomia, Universidad de Buenos Aires, 1417 Buenos Aires, Argentina. FAX: 54-1 743 6461

Treasurer: Vanda Paes Bueno, Departamento de Fitossanidade, Escola Superior de Agricultura de Lavras, Caixa Postal 37, CEP 37200-000. Lavras, Minas Gerais, Brasil. FAX: 55-35 829 1100

WORKING GROUPS**WG Fruit Flies of
Economic
Importance**

Chairman: M. Aluja, Inst. Ecol., A.C. Apdo Post. 63, Xalapa, Veracruz 91000, Mexico. Fax 281 86 809

Co-chairmen: J. Piedade-Guerreiro, Div. Luta Biol., Inst. Invest. Cient. Trop., Junqueira 14, 1300 Lisboa, Portugal. Fax 364 20 08.

B.A. McPheron, Dept. Entomology, Pennsylvania State University, Univ. Park, PA 16802, USA. Fax 814 865 30 48.

**Fourth International Fruit
Fly Symposium**

This Symposium was successfully carried out at Sand Key, Clearwater Beach, Florida from June 4 to 10, 1994. A total of 283 participants from 33 countries were registered.

There were over 138 contributions, either as posters or oral presentations (keynote speeches), divided in 15 sessions (Biology / Ecology, Behavior, Pheromones / Attractants, Host / Food Lures, Biocontrol of Weeds / Plant Interactions, Genetics

/ Biochemistry, Genetic Sexing, Morphology / Systematics / Evolution, Gibberelic Acid / Host Plant Resistance, Host Range / Population Dynamics / IPM, Biological Control, Rearing / Quality Control / Nutrition, Post Harvest / Quarantine / Economics, SIT, Action Programs). The keynote address, entitled "Messages From a Non-Pest Fruit Fly", was given by Dr. Linda Partridge.

The proceedings will be edited by Dr. Bruce A. McPheron (address above) and Dr. Gary Steck, Gainesville, FL.

Survey 1994

The biannual survey of the WG has been initiated and will last until September 1994. All fruit fly workers around the world are encouraged to fill the form and return it to M. Aluja by September 1994. Entry forms might be obtained from M. Aluja. The results of this survey will be published in our newsletter "Fruit Fly News" by the end of 1994.

I would like to take this opportunity to thank you and IOBC for all your support during my time as Chairman of this important WG.

Pablo Liedo

Fly News" by the end of 1994.

I would like to take this opportunity to thank you and IOBC for all your support during my time as Chairman of this important WG.

Pablo Liedo

P. Liedo has resigned as convenor of the WG after having served as chairman during the last four years. On behalf of IOBC I would like to thank him for his efforts and devotion to the Fruit flies group.

F. Bigler

WG Ecology of Aphidophaga

Chairman: D. Horn, Dept. Entom., Ohio State Univ., 1735 Neil Ave., Columbus OH 43210-1220, USA.

Co-chairmen: R. Chambers, Entom., AFRC Inst. Hort. Res., Worthing Rd. Littlehampton W. Sussex BN17 6LP, UK.

I. Hodek, Inst. of Entomology, Czech Academy of Sciences, Branisovska 31, 37005 Ceské Budejovice, Czech. Republic.

WG Quality Control of Mass-reared Arthropods

Chairman: N.C. Leppla, ASDA/APHIS, Fed. Bd., 6515 Belcrest Road, Hyattsville MD 20782 USA. Fax 301 436 6013.

Co-Chairman: M. Benuzzi, Biolab, Via Masiera 1, 1191, 47020 Martorano-Cesena, Italy. Fax 547 380795.

Proceedings of the 7th meeting held in Rimini, Italy, in September 1993 can be ordered from M. Benuzzi.

The next full meeting of the IOBC WG will be held in California, in autumn (last week of September or

1st week of October) 1995.

An excellent reprint of the QC proceedings of the 5th workshop of the WG was prepared and issued by the staff of the National Biological Control Institute (NBCI) at Hyattsville, USA. This is a surprise and good news for all those who asked for a copy of the booklet which was out of print for quite a while. Orders can be mailed to the Chairman (N.C. Leppla).

A workshop sponsored by the European Union (see IOBC Global Newsletter 58, p. 11-12) was held in Evora, Portugal, September 18-20, 1994. The main points were: 1. Improvement of product quality test methods for marketed natural enemies, 2. Presentation and discussion of new test methods (e.g. flight tests), 3. How to use basic statistics in QC and 4. Regulation issues (e.g. registration practices of mass reared natural enemies in different countries, impact of FAO Code of Conduct for Importation and Release of Natural Enemies on production and distribution of natural enemies). A report will be available in 1-2 months (contact the co-chairman, M. Benuzzi for a copy).

WG Trichogramma and other egg Parasitoids

Co-chairmen: S.A. Hassan, Inst. Biol. Pest Control, Heinrichstr. 243, 6100 Darmstadt Germany. Fax 6151 40 790

E. Wajnberg, INRA Station Zool., 37 bv. du Cap, B.P. 2078, 06606 Antibes Cedex France. Fax 93 67 88 25

The book "Biological Control with Egg Parasitoids" edited by E. Wajnberg and S.A. Hassan is now available (for more information see page 11 in this Newsletter).

WG Biological Control of Plutella

Co-chairmen: N.S. Talekar, AVRDS, P.O. Box 42, Shanhua Tainan 74199, Taiwan, Fax (06) 583 0009.

J.K. Waage, CABI/IIBC, Buckhurst Road, Silwood Park, Ascot, Berks SL5 7TA UK. Fax 344 875 007.

The 2nd WG meeting is scheduled for December 1995 in Nagoya, Japan during the 3rd Intern. Workshop on the Management of Diamond-back Moth and other Crucifer Pests.

WG Biological Control of Bruchids

Chairman: A. van Huis, Agric. Univ., Dept. Entom. P.O. Box 8031, 6700 EH Wageningen, NL.

Co-chairman: J.P. Monge, Inst. Bioc. Exp., Univ. Rabelais, Fac. Sci., Parc Grandmont, 37200 Tours, France.

WG Chromolaena odorata

Chairman: R. Muniappan, University of Guam, Agri-cultural Experiment Station, Mangilao, Guam, 96923 USA, Fax (671) 734-6842.

The last Chromolaena Newsletter was released in January 1994. Ask the Chairman for a copy.

I would like to ask the chairmen to put my name on their mailing lists and send me all information on activities of their WG.

F. Bigler (address page 1)

IOBC International Conference

"Technology Transfer in Biological Control"

Montpellier, France, September 9-11, 1996

Please take notice of the enclosed first announcement in this Newsletter

Anyone who intends to organize a special workshop during the Conference is invited to address its interest to F. Bigler (address on page 1 of this Newsletter). Special consideration to the Conference in Montpellier should be given by the Chairmen of the IOBC Working Groups. It will be an excellent opportunity to convene your WG meeting 1996 before or after the Conference.

WG Training, Information, Education (TIE)

Co-chairman: R. Wang, CABI/IIBC,
Silwood Park, Buckhurst Road,
Ascot, Berkshire SL5 7TA UK.
FAX: 44 344 875 007.

M. Orazé, Nat. Biological Control
Institute, USDA/APHIS/NBCI,
Federal Building, 6505 Belcrest
Road, Hyattsville MD 20782
USA. Fax 301 436 7823.

IWGO - *Ostrinia*

Chairman: H.K. Berger, Federal In-
stitute for Plant Protection,
Trunnerstr. 5, 1020 Vienna, Au-
stria. Fax 1 216 08 25.

Co-chairmen will be elected in 1995.
The next meeting is scheduled for
September 1995 in Romania. The
meeting will take place in the Maize
Research Institute in Turda; accom-
modations will be in Cluj, about 30
km away from Turda.

For further informations contact:
Harald K. BERGER (Chairman).

P. Anglade has resigned as chair-
man of IWGO. On behalf of IOBC
and the members of the working
group I would like to thank him for all
he has done for IWGO during a
number of years.

F. Bigler

The International Working Group on *Ostrinia*

One of the oldest Working Groups
within Global IOBC is certainly the
International Working Group on
Ostrinia (IWGO). The group was
started in 1968 during the XIIIth
International Congress of Entom-
ology in Moscow, but the roots
reach back to the US - regional
project on *Ostrinia* already begun in
1951. IWGO was founded under
the aspect of this US regional
project. The founders of the group
were D. HADZISTEVIC (Yugoslavia), who had the original idea of

founding a group of international
cooperation, H.C. CHIANG (USA),
who brought the ideas of the US
projects into the group, I.D.
SHAPIRO from Russia (USSR), T.
PERJU (Romania), C. KANIA
(Poland) and B. DOLINKA (Hun-
gary), all well known researchers or
maize - breeders. The group grew
in the future and has today 16
"member - states". The group was
originally organized in the way, that
each member country is represented
by a "member", all other participants
from this country are "associate
members". Researchers taking part
in the meetings and coming from
the country where the meeting takes
place are "guest members".

The original idea of IWGO was to
exchange inbred lines within the
group and test these lines for
resistance against the most im-
portant maize pest throughout the
world, the European Corn Borer
(*Ostrinia nubilalis* Hbn.). The results
of this breeding programme should
be available for all member coun-
tries. Up to now three synthetics
resistant to ECB have been devel-
oped and released (IWGO 1, 2, and
3, both late and early). Most of the
results of this testing programme
were published during the last years.
By the time the group was growing,
the interests to be discussed changed:
a pheromone project was estab-
lished by France (INRA). The
influence of other pests on maize
became more and more important:
colleagues from Asia wanted to
include problems with *Ostrinia*
funeralis and southern European
members brought research work
concerning *Sesamia nonagroides*
into the group. In the last year the
appearance of *Diabrotica virgifera*
in Europe (Serbia) seems to be a
matter of discussion within the
group. Subsequently borer biology
and host response were also
studied. More recently biological
control has been emphasized.
Therefore, within the last years,
IWGO became more and more a
working group on all maize pest
problems and left its original topic of
exchanging inbred lines for testing

resistance against the European
corn borer.

The group has held 17 annual (since
1980 biannual) meetings in one of
the member states. The meetings
in St. Paul, Minnesota (USA, 1974)
and Beijing (China, 1986) and were
certainly highlights of these sym-
posia. Meetings of a "Technical and
Publications Committee" completed
the work of the group. Several
publications were released and are
still partly available. Since 1981
"IWGO - NEWSLETTER" is pub-
lished, a medium to uphold contact
within the group, to distribute
information about the members and
to publish the abstracts of papers
presented at the congresses. After
several meetings proceedings of
the papers presented were issued.

Prof. H.C. CHIANG (St. Paul, Min-
nesota, USA) was the first president
(convenor) of the group and held
this position until 1982. From this
time until 1993 the group elected P.
ANGLADE (Bordeaux, France) as
new president. Since 1994 Harald
K. BERGER (Vienna, Austria) is
convenor of this international group.
As the group and the topics to be
discussed and researched grew,
the necessity of the nomination of
vice presidents (Sub- or Co -
Convenors) came up. They will be
nominated (elected) during the next
meeting of the group in Romania in
September 1995.

So IWGO, which has been affiliated
to Global IOBC in the meantime,
became a well established large
international working group which
now deals with all matters of maize
pests and pest resistance. The
group is open to all scientists with
interest in working within an inter-
national group (with familiar and
personal contact among the mem-
bers).

H.K. Berger, Chairman / IWGO

Reports on Bio-Control Activities

Biological Control Coordination and Advocation:

A Symposium of the XIX International Congress of Entomology

Beijing, China

June 28 - July 4, 1992

This symposium provided a forum for addressing the need to develop a collective vision for the future of international biological control. To stimulate active discussions, the following topics of international importance were proposed: Commitment: Advancement versus capitulation, Centralization: International Institutes for Biological Control, Expectations: Realistic Opportunities, Applications: Developed versus Developing Countries, Financing: Research and Development, Strategic Planning: Long-Term versus Short-Term, Impetus: Relationship to Environmental Issues, Economics: Cost/Benefit, Documentation: Recording Success, Systems Approach: IPM and Areawide Contexts, Targets: Native Species, Host-Specificity Testing, Education: Information and Training, Regulation: Procedures for Release, Commercialization: Profitability, Quality Control: Performance Assurance, and International Cooperation: Global Structure. The final program was composed of six of these topics, based on the expertise of the discussion leaders.

The Organizer and Chairman of the symposium was Norm Leppla (USA) and the Discussion Leaders were Dick Soper (USA), Ed King (USA), Jeff Waage (UK), Franz Bigler (Switzerland) and Del Delfosse

(USA). The format was designed to encourage active audience participation and maximize creative thinking about the future of biological control. The symposium helped develop concepts, create ideas, identify possibilities for advancing biological control, and establish linkages for collaborative action.

Financing (Dick Soper)

Competition for funds is the most divisive issue for biological control research in the USA. This research depends on OPM, "other peoples's money," so clients are the source. These clients have at least the following requirements for their support: 1) Address real problems, 2) Design a plan of action, 3) Provide an economic solution, 4) Develop advocacy at all levels, and 5) Identify a product champion. Clients include governmental agencies, grower groups, environmental organizations, and private companies or citizens.

In the United States Department of Agriculture (USDA), Agricultural Research Service, there are four scientifically-based biological control working groups: Classical, Augmentation, Ecological, and Microbial. Classical is considered to not be commercially profitable, so it is conducted by the government and therefore funding is influenced by political pressure. The other three can be commercially profitable and may be developed by private industry in partnership with the government. For example, ARS may fund basic research and grower groups pay for parasite releases during a pest crisis. Environmental movements in Denmark and Sweden have resulted in assessments of funds from pesticide producers and users for investment in developing biological control alternatives. There are proposals to establish

this kind of national policy in other European countries and elsewhere in the world.

There are other important considerations for biological control funding. Initial investments can be leveraged by enlisting additional cooperators. Teams should be organized and financed that incorporate research, farming, extension, and other kinds of expertise. Funding must be long-term, 10 years is the standard in Australia. It is also an advantage to have commodity-specific financing. Implementation deserves more attention, along with monitoring and evaluation to determine the return on investments.

Commercialization (Ed King)

Commercial biological control is increasingly justified because of pest resistance, environmental contamination, non-target effects, purchase and application costs, and other shortcomings of chemical pesticides. Therefore, partnerships should be encouraged between government researchers and commercial interests. Some grower groups in the USA have supported both classical and augmentation biological control through Cooperative Research and Development Agreements (CRDA's) with the USDA. Also, confidentiality agreements, licenses and patents can be used to protect commercial investments. Conservation biological control is supported by decision-support software, private consultants, and other sources of environmental expertise.

A "National Agenda" for biological control is needed in many countries that will centralize and focus national programs, minimize regulatory constraints, and develop technologies to the point of implementation. Field efficacy must be based on scientific data and critical evaluation not "folklore." For example, the technical feasibility of *Trichogramma* has been proven but control depends on release rates that cannot be reduced to save costs. In New Zealand government and private researchers compete for funding that is intended to move

more products to the field and assure their success.

The commercialization of natural enemies requires some protection for products that are expensive to develop. For example, should genetically-modified organisms be protected by patents? Are natural enemies the property of sovereign nations? Will the Food and Agriculture Organization (FAO) of the United Nations, Code of Conduct for the Import and Release of Biological Control Agents eventually address foreign exploration? How will these questions affect the movement of natural enemies back and forth among both developed and relatively undeveloped countries? Can IOBC help resolve these questions? These and other issues must be resolved to encourage development of a private biological control industry.

International Cooperation

(Jeff Waage)

New biological control centers are being established throughout the world, including Africa, Asia, Europe, and North America. At present, these centers are important "experiments!" Many are disseminating technical information and addressing local policy issues. However, there is no global policy group that can address international structure. Quarantine standards, scientific training and expertise, resource allocation, and other needs vary widely throughout the world. Can an international model for animal germplasm be based on the one that has been developed for plants? Can the FAO Code of Conduct be expanded and made more comprehensive? Would enforcement be a problem or even a realistic goal? Clearly, international databases and coordination are needed to facilitate foreign exploration and share resources.

Quality Control (Franz Bigler)

At present, there are no government regulations for quality of natural enemies. However, quality is addressed by the FAO Code of Conduct. Guidelines on product

control of mass-reared and marketed beneficial arthropods are being developed by an IOBC Global working group in which all important producers of natural enemies in Europe and north America are represented and cooperating. Common test methods which are reliable, cheap and quick are developed in close collaboration with research institutes and universities, examined by producers and built into the guidelines. The European Community (EC) is interested in common principles of product control of mass-reared natural enemies and will (probably) fund an European project with the objectives to establish principles and guidelines of quality control which might be adopted by the EC members. The problem of how to supervise and check quality standards of marketed natural enemies is not yet solved. Canada has strong consumer

protection laws that apply to biological control and Sweden currently checks for specified numbers of natural enemies in shipments.

Regulation (Del Delfosse)

Regulations should be determined scientifically, rather than bureaucratically. They also should be based on a stated philosophy, not just a "corporate culture," and they should be reviewed frequently.

Documentation is improving, along with pre- and post-release evaluations. This is needed for every project.

Additional information can be obtained from N. C. Leppla, USDA, 6505 Belcrest Road, Hyattsville, Maryland 20782 and J. R. Coulson, USDA, Building 004, BARCWest, Beltsville, Maryland 20705.

REQUESTS & OFFERS

Discussion List on Biological Control

A discussion list on biological control started to operate a few months ago and until now, has over 50 subscribers. This discussion list can be used to receive and send messages on biological control matters by anyone having access to an e-mail. To subscribe, those interested should just send a message to listserv@ftpt.br. The message should only say: SUBSCRIBE BIOCONTROL-L your full name. There is no need to indicate anything in "Subject".

Gilberto J. Moraes
CNPMA/EMBRAPA
Fax: 192672202

Macintosh Tracking & Analysis of Insect Movement in Real-Time

Analysis of parasitoid or predator searching behavior in response to odors or live hosts can provide insight into the success or failure of a biological control agent. However, most methods of analysis are tedious and/or expensive.

We have developed a Macintosh-video camera system that tracks animals as small as 3 pixels long. No digitizing board is needed. The system uses a Macintosh Quadra 660AV to produce real-time readout of speed and rotation rate at up to 7.5 frames/sec. Run time is limited only by hard disk size. Files hold frame, time, X, Y, compass heading, speed & rotation rate. Replay gives mean speed and rotation and the

standard deviation of each, as well as a graphic trace of the path. Files may be exported for further analysis in StatView or other statistical packages.

The copyrighted software is available as donationware through the University of Florida, Department of Entomology & Nematology.

Reply to:

Dr. James B. Hoy
USDA-ARS-MAVERL, P.O. Box
14565, Gainesville
FL 32604, USA.
Fax: 904 / 374 5818.

Bio-control for Purple Loose Strife *Lythrum salicaria* L.

Do you have any available information on the 3 species of beetles to control Purple Loose Strife? Is there anyone rearing these beetles *Galerucella californiensis*, *G. pusilla* (Chrysomelidae) & *Hylobius transversovittatus* (Curculionidae)? Please let me know their availability.

A.W. Racette
ARBICO
P.O. Box 4247 CRB
Tucson, AZ 85738-1247 / USA
Fax 602 825 2038

Vol. 17(2) 1994.

Groupe de Travail "Lutte Intégrée en Vergers", Sous-groupe "Poirier". Comptes-rendus du 5e Colloque International sur Poirier, tenu à Cesena (Italie), 11-15 Octobre 1993. Edité par G. Briolini, T.X. Ngyuen & D. Verzone. 158 pp. ISBN 92-9067-060-9.

Vol. 17(3) 1994.

Working Group "Insect Pathogens and Insect Parasitic Nematodes". Proceedings of the 4th European Meeting "Microbial Control of Pests". Edited by P.H. Smits. 307 pp. ISBN 92-9067-061-4.

Vol. 17(4) 1994.

Working Group "Integrated Control in Cereal Crops". Proceedings of the Meeting at le Rheu (France), 30 November - 2 December 1992. Edited by C.A. Dedryver. 257 pp. ISBN 92-9067-0620-2.

Information source:
Profile 18, May 1994

PERIODICALS - PROCEEDINGS

The IOBC/WPRS Publication Commission has issued the following Bulletins:

Vol. 16(8) 1993.

Working Group "Integrated Control in Glasshouses". Proceedings of the Workshop "IPM in Greenhouse Ornamentals" held at Cambridge (UK), 8-11 September 1992. Edited by L.R. Wardlow & J.C. van Lenteren. 166 pp. ISBN 92-9067-055-X.

Vol. 16(9) 1993.

Working Group "Integrated Control in Oilseed Crops". Proceedings of the meeting at Le Rheu (France), 27-28 February 1992. Edited by V.H. Paul, I.H. Williams & P. Gladders. 234 pp. ISBN 92-9067-056-8.

Vol. 16(10) 1993.

Working Group "Use of Pheromones and Other Semiochemicals in Integrated Control". Proceedings of the Working Group meeting at Chatham (UK), 11-14 May 1993.

Edited by L.J. McVeigh, D.R. Hall & P.S. Beevor. 372 pp. ISBN 92-9067-057-6.

Vol. 16(11) 1993.

Study Group "Biological Control of Fungal and Bacterial Pathogens" (together with the EFPP). Proceedings of a Workshop "Biological Control of Foliar and Post-harvest Diseases", held at Wageningen (The Netherlands), 29 November - 4 December 1992. Edited by N.J. Fokkema, J. Köhl & Y. Elad. 246 pp. ISBN 92-9067-058-4.

Vol. 17(1) 1994.

Working Groups "Integrated Control of Cereal Crops" and "Integrated Control in Oilseed Crops". Proceedings of the International Conference on Harmful and Beneficial Microorganisms in Grassland, Pastures and Turf. Edited by K. Krohn, V.H. Paul & J. Thomas. 279 pp. ISBN 92-9067-059-2.

IOBC Global Working Group "Quality Control of Mass Reared Arthropods". Proceedings of 7th Workshop held in Rimini, Italy, September 13-16, 1993, 237 pp. Edited by G. Nicoli, M. Benuzzi & N.C. Leppla (send orders to M. Benuzzi, Co-chairman of WG Quality control of mass reared Arthropods).

4th SICONBIOL. Simposio de Controle Biológico. The proceedings consist of: 1 vol. of abstracts of poster sessions, 358 pp., 1 vol. of abstracts of conference papers, 213 pp. and 1 vol. of papers presenting the situation of biocontrol in countries of south America, 149 pp; The Symposium was held at Gramado, RS, Brasil. It was organized by EMBRAPA/CPACT, May 15-20, 1994. (Send orders to EMBRAPA-CPACT,

Caixa postal 403, 96001-970 Pelotas-RS, Brasil).

Beek T.A. van & Breteler H., 1994. *Phytochemistry and agriculture. Proceedings of the Phytochemical Society of Europe*, Nr. 34), 304 pp. Clarendon, Oxford. ISBN 0-19-857762-1.

Chadwick D.J. & Marsh J., 1993. *Crop protection and sustainable agriculture (Proc. Symp. on World Food Protection by means of sustainable agriculture: the role of crop protection, Madras, India, 30 Nov. - 2 Dec. 1992)*, 285 pp. Wiley, Chichester. ISBN 0-471-93944-7.

BOOKS

Aluja M., Liedo, P. (eds.), 1993. *Fruit Flies: Biology & Management*. 492 pp. Springer-Verlag NY. ISBN: 0-387-97905-5.

Altieri M.A., 1994. *Biodiversity and Pest Management in Agroecosystems*. 185 pp. Food Products Press, Binghamton, New York 13904-1580. ISBN 1-56022-037-6.

Beckage N.E., Thompson S.N. & Federici B.A., 1993. *Parasites and pathogens of insects*. Vol. 1: Parasites, 364 pp. & Vol. 2: Pathogens, 294 pp. Academic Press, San Diego. ISBN 0-12-804441-9 and ISBN 0-12-804442-7.

Bernays E.A. & Chapman R.F., 1994. *Host-plant selection by phytophagous insects*. 312 pp. Chapman & Hall, New York, ISBN 0-412-03131-9.

Calkins C.O., Klassen W., Liedo P., (eds.), 1994. *Fruit Flies and the Sterile Insect Technique*. 272

pp. CRC Press, Boca Raton, Florida. ISBN 0-8493-4854-4.

Corey S.A., Dall D.J. & Milne W.M., 1993. *Pest control and sustainable agriculture*. 514 pp. CSIRO, East Melbourne. ISBN 0-643-05426-X.

Foote R.H., Blanc F.L., Norrbom A.L., 1993. *Handbook of the Fruit Flies (Diptera: Tephritidae) of America North of Mexico*. 552 pp. Cornell University Press, Ithaca NY. ISBN: 2623-5.

Gaston K.J., Samways M.J., New T.R., 1994. *Perspectives on Insect Conservation*. 250 pp. Intercept Ltd., Andover, Hants SP10 1YG, UK. ISBN 0-946707-65-0.

Godfray H.C.J., 1993. *Parasitoids - Behavioral and Evolutionary Ecology*. 520 pp. Princeton University Press. c/o John Wiley and Sons, Bognor Regis, West Sussex PO22 9SA, England. ISBN 0-691-00047-6.

Goel S.C. (ed.), 1992. *Bioecology and Control of Insect Pests 1992*. 279 pp. The Uttar Pradesh Zoological Society c/o PG - Dep. of Zoology, Sanatan Dharm College, Muzaffarnagar - 251 001, India. ISBN 81-900101-3-1.

Goel S.C. (ed.), 1994. *Biological Control of Insect Pests 1994*. 288 pp. The Uttar Pradesh Zoological Society c/o PG - Dep. of Zoology, Sanatan Dharm College, Muzaffarnagar - 251 001, India. ISBN 81-900101-4-X.

Jackson T.A., Glare T.R., 1992. *Use of Pathogens in Scarab Pest Management*. 298 pp. Intercept Ltd., Andover, Hants SP10 1YG, UK. ISBN 0-946707-35-9.

Kovacs M., Podani J., Tuba Z. & Turcsanyi G., 1992. *Biological*

indicators in environmental protection, 207 pp. Horwood New York. ISBN 0-13-084989-8.

Leather S., Walters K., Mills N. & Watt A., 1994. *Individuals, Populations and Patterns in Ecology*. 500 pp. Intercept Ltd., Andover, Hants SP10 1YG, UK. ISBN 0-946707-64-2.

Matthews G.A. & Hislop E., 1993. *Application technology for plant protection*. 359 pp. CAB International, Wallingford, UK. ISBN 0-85198-722-9.

Nguyen R., Sailer R.I. & Hamon A.B., 1993. *Catalog of Aleyrodidae (Homoptera: Aleyrodidae) on Citrus and their Natural Enemies*. 57 pp. Occasional Papers of the Florida State Collection of Arthropods. Florida Dep. of Agriculture and Consumer Services. Volume 8, P.O. Box 147100, Gainesville, FL 32614-7100.

Norton G.A. & Mumford J.D., 1993. *Decision tools for pest management*; 279 pp. CAB International, Wallingford, UK. ISBN 0-85198-783-4.

Pimentel D. & Lehman H., 1993. *The pesticide question: environment, economics and ethics*. 441 pp. Chapman & Hall, New York. ISBN 0-412-03581-2.

Rosen D., 1994. *Advances in the Study of Aphytis (Hymenoptera: Aphelinidae)*. 350 pp. Intercept Ltd., Andover, Hants SP10 1YG, UK. ISBN 0-946707-47-2.

Rosen D., Bennett F.D., Capinera J.L., 1994. *Pest Management in the Subtropics: Biological Control - a Florida Perspective*. 520 pp. Intercept Ltd., Andover, Hants SP10 1YG, UK. ISBN 0-946707-46-4.

Rosen D., F. Bennett F.D., Capinera J.L., 1994. *Pest Management in the Subtropics: Integrated Pest Management - a Florida Per-*

spective. 510 pp. Intercept Ltd., Andover, Hants SP10 1YG, UK. ISBN 0-946707-63-4.

Schulze E.D., Mooney H.A., (eds.), 1993. Biodiversity and Ecosystem Function. Ecological Studies (Analysis and Synthesis), 525 pp. Springer, Berlin. ISBN 3-540-55804-7.

Taborsky V., 1992. Small-scale processing of microbial pesticides. (FAO agricultural services Bulletin Nr. 96), 90 pp. FAO, Rome. ISBN 92-5-103119-3.

Tanada Y. & Kaya H.N., 1993. Insect Pathology. 666 pp. Academic Press, New York.

Thomas M.C., 1993. Arthropods of Florida. The Flat Bark Beetles of Florida (Coleoptera: Silvanidae, Passandridae, Laemophloeidae). 93 pp. Florida Dep. of Agriculture & Consumer Services Division of Plant Industry, Gainesville, Florida 32614-7100. ISSN 0066-8036.

White I.M., Elson-Harris M., 1992. Fruit Flies of Economic Significance: Their Identification and Bionomics. 600 pp. CAB International, Wallingford, Oxon, UK. ISBN: 0-85198-790-7.

Yair B.D., 1994. A Systematic Catalogue of the Mealybugs of the World. 686 pp. The Volcani Center, Bet Dagen, Isreal. ISBN 1-898298-07-6.

Wajnberg E. & Hassan S.A. (eds.), 1994. Biological Control with Egg Parasitoids. 304 pp. CAB International, Wallingford, UK.

Contents:

- Systematics of the Trichogrammatidae with emphasis on *Trichogramma*, J D Pinto and R Stouthamer
- World-wide use of *Trichogramma* for biological control on different crops: a survey, Li-Ying Li
- Strategies to select *Trichogramma* species for use in biological control, S A Hassan
- Rearing of *Trichogramma* and other egg parasitoids on artificial diets, S Grenier
- Quality control in *Trichogramma* production, F Bigler
- Methods and timing of releases of *Trichogramma* to control lepidopterous pests, S M Smith
- Biological control with egg parasitoids other than *Trichogramma*, F Bin
- Habitat location by *Trichogramma*, D A Nordlund
- Host recognition and acceptance by *Trichogramma*, J M Schmidt
- Physiological interactions between egg parasitoids and their hosts, S B Vinson
- Overwintering strategies of egg parasitoids, G. Boivin
- Intra-population genetic variation in *Trichogramma*, E Wajnberg

Send orders to CABI, Wallingford, Oxon OX10 8DE, UK.

CALENDAR

February 12-17, 1995

Global Conference on Advances in Research on Plant Diseases and their Management. Rajasthan College of Agriculture, Udaipur Campus, Udaipur 313 001, India. Contact: S.L. Choudhary, Fax 91 294 524259.

May 9, 1995

47th International Symposium on Crop Protection. Faculty of Agricultural and Applied Biological Sciences, University of Gent, Coupure links 653, 9000 Gent. Contact: R. Bulcke, Fax 9 264 62 39/49.

May 15-18, 1995

5th European Conference on Chemistry and the Environment. "Pesticide Chemistry for sustainable Agriculture" - Outlook for the 21st Century. Contact: Conference Secretariat, Hungarian Chemical Society, 1027

Budapest, F u. 68, Hungary. Fax 36-1 201 8056.

July 2-7, 1995

13th International Plant Protection Congress, The Hague, The Netherlands. Contact the XIII International Plant Protection Congress, c/o Holland Organizing Centre, Lange Voorhout 16, 2514 EE The Hague, The Netherlands. Tel. 37-70 365 780 50; Fax 31-70 361 48 46

September 23-29, 1995

1st International Symposium of Biological Control in European Islands. Ponta Delgada - Azores (Portugal). Contact: Universidade dos Açores, Dep. de Biologia, Centro de Luta Biológica, Rua Mãe de Deus, 58, Apart. 1422, 9502 Ponta Delgada Codex. Fax 351-96 65 34 55.

November 6-10, 1995

XVIII Congreso Nacional de Control Biologica. Contact: P. Liedo-Fernández, Centro de Investigaciones Ecológicas del Sureste, Unidad Tapachula,

Carretera Antiguo Aeropuerto
Km 2.5, Apartado Postal No. 36,
30700 Tapchula, Chiapas Méxi-
co. Fax 962 6 08 15.

December 1995

Third International Workshop on
Plutella, Japan. Contact: N.S.
Talekar, AVRDC, P.O. Box 42,
Shanhua, Taiwan 74199, Tai-
wan. Fax 06 583 0009.

January 21-26, 1996

IX International Symposium on
Biological Control of Weeds -
Stellenbosch, South Africa.
Contact: J.H. Hoffmann, Zoology
Department, University of Cape
Town, Rondebosch 7700, South
Africa, Fax 27 21 650 3726.

August 25-31, 1996

XX International Congress of
Entomology, Florence, Italy.
Contact the Organizing Secre-
tariat O.I.C., Via A. La Marmora,
24, 50121 Florence, Italy. Tel.
39/55'500'06'31; Fax 39 55 500
19 12.

24 April - 19 May 1995
Ascot, UK

Biological Control of Arthropod Pests & Weeds

A practical training course on
how to use natural enemies,
organized jointly by the Interna-
tional Institute of Biological
Control and Imperial College.
Participants will learn how to:
conserve native predators &
parasites; introduce new ones
from the native habitat of exotic
pests; mass-produce natural
enemies (including disease
organisms) for field release;
design biocontrol projects &
funding proposals. The course
is aimed at agricultural resear-
chers and extensionists and
field staff from farming, forestry
and conservation NGOs.

Contact:
Stephanie Williamson, IIBC,
Silwood Park, Ascot, Berks. SL5
7TA, UK. Fax 44 344 875007.

8. - 11. September 1996, Montpellier, France

IOBC Conference on Technology Transfer in Biological Control: from Research to Practice

Contact person for local organizing committee: J.P. Aeschlimann
CSIRO Biological Control Unit, F-34982 Montferrier-s.-Lez Cedex,
Fax 33 67 59 90 40.

Contact person for scientific committee: F. Bigler (address page 1).

**Chairmen of IOBC Working Groups and other persons interested
in organizing a special meeting or workshop before, during or
after the IOBC Conference are asked to contact F. Bigler.**

Membership fees 1995

Invoices for IOBC membership will be mailed to each member
during the next few months. Please pay your fee promptly. Budgets
of IOBC depend on your subscription. Delayed payments cause a
lot of unnecessary administration and costs. Moreover,
ENTOMOPHAGA subscribers are notified on the mailing list of the
journal only if their fees are payed. A new ENTOMOPHAGA mailing
list is compiled every year by the Secretary-General of IOBC Global
and sent to the editorial house (Lavoisier, Paris). In order to keep
labour minimal, the final list must be received by Lavoisier by mid-
March every year. Thus, **your subscription should be payed by
the end of January, 1995** to the Treasurer of your IOBC Regional
Section. Subscribers of ENTOMOPHAGA belonging to the
Afrotropical Section (ATRS), the Neotropical (Latin American) Section
(NTRS), Australia and New Zealand will receive their invoices from
the Treasurer of IOBC Global as usual.

REQUESTED: NEWSLETTER CONTRIBUTIONS

I would like to thank all those members who are taking time to send
items for the Newsletter. If you have not previously sent anything,
please consider doing so. Remember, this is **your** opportunity to let
others know what is going on in biocontrol. Take a few minutes and
mail or fax items of biological control to the Newsletter editor, so they
can be included in the next issue. Deadline for submitting items for
the March 1995 issue of IOBC Newsletter is **February 1, 1995**. Send
items to F. Bigler (address on page 1).

Editor:

F. Bigler, Secretary-General IOBC Global

with assistance of A. Guignard and E. Weibel, Swiss Federal Research
Station for Agronomy, 8046 Zürich