DRIVE FOR MEMBERSHIPS

Membership in the International Organization for Biological Control offers individuals and organizations the opportunity to make a contribution towards one of the most important problems of our time: the development of chemical methods for pest control. A strong, vital IOBC is essential in this development. IOBC needs the support of all those who would sponsor this development.

ENTOMOPHAGA

To meet the increasing demand for publications in Entomophaga, the Editorial Board and the Publisher have decided to utilize free of charge only those articles not exceeding 15 printed pages. For all additional pages authors will be required to pay an extra charge of 100 SFr per page (about US$50/page). If the printing costs of the article are entirely supported by individuals or institutions, the article will receive priority to early publication.

IOBC DOCUMENTS

Several IOBC documents of interest have been produced:

(a) A bulletin on the status, structures and activities of IOBC. Copies available from the Secretary-General of the Organisation.

(b) The report of the 6th General Assembly of IOBC, held in Christchurch (New Zealand) in 1979. Copies available from the Secretary-General of the Organization.

(c) A report on the meeting of the World Plant Protection Organization (WPRS), held in Brussels, November 21-22. The report is available from Dr. L. Brader, Wageningen.


NEW WORKING GROUP

The informal worldwide working group on biological control of weeds operated in Markham to accept the invitation from the IOBC to become a Working Group of IOBC. Dr. Peter Harris, Canada Department of Agriculture, Regina, Saskatchewan, Canada is the group leader.

THIRD INTERNATIONAL SYMPOSIUM ON BIOLOGICAL CONTROL OF WEEDS

The symposium was hosted by A. J. Woodworth and the USDA Biological control unit at Marianna, 14-15 September, 1979. Two basic approaches were evident in the rapidly increasing expertise in the biological control of aquatic weeds. J. C. Van Zan reasserted the case made by many monographs for the control of weeds in Dutch irrigation canals. The control of one species leads to its replacement by another. In favor of the hypothesis polypogonoidus, the white snapper, also being used in the United States test is regarded as undesirable in the many areas where aquatic weeds are an essential resource for wild life. Thus the epilacidus (N. B. Spencer) was on the use of monophagous agents to control particular aquatic species such as alligator weed and water hyacinth. Other extensive studies are being made in South America (B. D. Perkins) and on Hydrilla in Pakistan (G. M. Balech). A general overview of alligator weed has already been obtained in the United States, although a part has been impaired by water hyacinth. The use of pathogens has been explored by the specific control of Chondrilla in Europe with Monochaete chondrillae (Cort). One of the difficulties was finding a way to reach against the strain of the weed involved. As Chondrilla is attacked a single gene product comprised most of the information in Australia which may have made it possible to conduct further studies on the use against aquatic weeds in the United States (T. E. Frentress).

W. E. F. Jones reported on the relative field survey of aquatic weeds, feeding insects. Grassland weeds are difficult biological control subjects as the family contains many economic plants and there is a dearth of insects restricted to single species or genera; however, the family has reduced weed prospects. Another weed weeding research project is examining monophagous insects on Sesbania (D. Schröder). This was used in cannola research at Laramie, where 10 agents already released against it in Australia and New Zealand. A new project is the development of weed control, probably from a biological viewpoint, (H. L. Warner).

The Japanese program has been largely concerned with developing heat treatment procedures to satisfy their plant protection authorities. For this purpose several weeds from China have been employed (M. Miyakawa).

W. E. F. Jones presented an overview of the current United States program, A. J. Woodworth reviewed the progress achieved in biological control of weeds and summarized the necessity of moving from a rather ad hoc to a more scientific basis. This was also the case of P. S. Stewart in the introduction of agents likely to provide effective biological control.

TRICHOGRAAMMA CULTURES AVAILABLE

CICL Indus Station, Bangalore, has over the past 5 years been studying a number of species of Trichogramma, and has identified a large number of species originating from different parts of the world and surviving on different hosts. Cultures of most of these and others have been established. Stocks are still available and will probably remain so for another year or so. Since many lepidopteron pest species appear to be suitable targets for biological control using Trichogramma, it might be worthwhile for interested persons to take advantage of the present availability of these cultures. Financially less favorable persons could be supplied with relatively small numbers at a low cost. In addition to several Trichogramma species, a few entomogenous wasps from the bee family (Vespidae) and a few thrips (Phlebotomus) are also available. However, the cost of the Trichogramma cultures might well be too high for Heliothis, Sandosters, Acanthos, Pappus, Coccinellidae, coccinellid (Diatraea spp.), Hypoderus, etc., and a certain amount of information could be supplied.
NEWS AND REPORTS
FROM THE REGIONAL SECTIONS
Pacific Regional Sections (PRES)
(b) Biological control of Oryctes rhinoceros
(b) Biological control of Oryctes rhinoceros
on coconuts confined in Samoa, Wallis Island, Fiji, Tonga and New Britain, with the Rhinoceros beetles.
(b) The introduction in American Samoa (Pago Pago) at Biological control
Rhodnius prolixus. Stained from Fiji was
followed by a survey performed by the American Samoa government through the
South Pacific Commission, Nauru and
conducted by P. Chabooes and the intro-
duction and mass rearing in Pago Pago
(S. Bauer) of Tribolium confusum. The
work is now in promoting progress.
(b) T. confusum was used in Tahiti, New
Caledonia, Solomon Islands and New
Holland against Tribolium confusum with
good results. The strele for Pago Pago
was collected in Santa (New Holland).
(b) Ascaris fulica (the Glance Agal) is
spreading in Tahiti, New Caledonia and
Solomon Islands. The study is being
controlled with predation effects (introduced in Mollusca, Provo, Astrotia, coronofrenia, etc.)
(b) Work on the population ecology of fruit
sucking moths and scale insect species (Legislation held) continues in New
Caledonia.
Western Hemisphere Regional Section (WHERS)
((c) Governing Board of WHERS for 1973
The Governing Board consists of the
Ex. President and the three Chairs.Chairman for 1973 and 1974 these are:
Past President
President
First Vice-President
Second Vice-President
Secretary-Treasurer
Corresponding Secretary
Members-at-Large

F.D. Barnett
J. Bilger
J. M. Brummel
G. W. Hooper
H.L. Bush
R. Kalliber Canada

Trinidad
Peru
USA
Brazil
USA
USA
USA
USA

(b) Voucher specimens from biological
control investigations.
Dr. Paul Brown (WHERS Newsletter No. 3)
has commented on the need for a better
documentation of experimental work for the
regions of vitch species in institu-
tional collections where they will
be available for future study. The value of
this information has been supported by Dr. Henry Tennyson (WHERS Newsletter No. 4) who has also
pointed out the importance of these
basics in the release and follow-up studies
when attempts are made to introduce para-
tohippes and predators. Dr. Towers has sugges-
ted further, that government agencies who
may be interested in the evaluation of
biological control organisms should ensure
that voucher specimens are kept and pro-
properly curated, and that IODC could take
the initiative in seeing that this is done.
(c) Entomophagous species under culture
A preliminary list of entomophagous species
under culture in WHERS was presented in
December 1972. This consisted of 164 species
held by 11 cooperators. An additional giving
23 additional species was issued with WHERS
Newsletters No. 5 and 6 in June 1973. These
are available from J. S. Kalliber, Research
Program, Research Institute, Agricul-
tural Canada, Ottawa, Canada, Ottawa, Canada

(d) EEP Project on pest management
The International Biological Program
(IBP) has initiated a project on which US$5
million may be expanded over a 5-year
period. Dr. C. D. Hoffmann of the Interna-
tional Center for Biological Control, University
of California at the direction of this project,
which has been funded through the Center by
the National Sciences Foundation of the US.
We also have an indication of the
and the Environmental Protection Agency.
The activity envisaged consists of pest
management studies on pests of alfalfa, aubergine, rice, cotton, soybean and beans (bark beetle).
Systemic analysis, importance and improved
use of natural enemies (including pathogens), crop
breeding, for resistance, studies on economic
thresholds, ways to obtain pesticide selectivity,
the use of cultural methods, pesticides, hormonoids, etc. are included. The project
sponsored by the US., the UK. and various USDA units is participating.
(e) Working Groups in WHERS
The governing board will set up a number of committees to identify areas
where the board is interested in and where
collaboration is needed. The chairman of these
committees are:
Citrus disease — M. W. Dwyer
Disease vectors — F. D. Barnett
Integrated control — P. A. Kat molding
Forest insects — A. T. Dprivation
Bacterial insects — R. J. Walker
Seed pests — L. D. Newman
Weeds — P. Morris
New USDA beneficial insects laboratory
The Lewis A. Stearns Laboratory, University of
Delaware, Newark, Delaware, was officially
dedicated on October 30, 1973. It was
built by the University and licensed to USDA
as a new insect laboratory, studied by
personally former stationed at Mcleanesville, New
Jersey. The lab is equipped with 1567
square foot and it is equipped with quarantine
facilities, controlled environmental rooms
and other laboratory features to carry out
the function of insect importing, disease
research in biological control. A Symposium
will be held on the 8th and 9th May, 1974, and
following speakers: D. F. Bray, W. M. Day,
J. E. G. H. Lander, R. L. G. Geller and R. van Boxer

(f) Proposed study on biological control
of injurious insects under study
Walden, who has responded to an invitation by the Pan American Health
Organization to carry out a study on biological control of the intermediate
host pests of fascioliasis and related snail-dwelling clams in Puerto Rico
by use of snails. Fascioliasis is a disease
and snail-dwelling clams are used in only limited circumstances, drainage is effective but
often too costly.

The spirulae have been selected for use
in this project because this is one of the
most thoroughly studied groups of natural
enemies. This is not to say there is still
need for basic studies on biology and dispersal
with the addition of the spiral plan. The
will be done first on exotic species
and later on imported species. At the same
time the rearing techniques must be developed.
The effect of the risk on the snail population will be
done by sampling and comparison with untreated
terrestrial areas. The variation in the animal infection level with F. hepatitis
due to the nature of the animals involved has already been worked out.

West Pacific Area Regional Section (WPAS)
(ii) Integrated control in rice pests
— Working Group.
The first session at Workshop discussions on the effects of Integrated
control of rice pests was presented
on these crops. The Discussion was
drawn to current and new rice pests are
control of brown rice pests are controlled with
on the use of a number of insects, mainly
of plant material. A number of the new crops are
attacking the crop, a necessity for the use of direct control
pests, including various the role of the pests in the
rice pests is being made regarding
Brisseas research:
(iii) Short-term research: investigation of insects suitable to control Brinnaea
infestation; determination of their local applicability or ways that may be used to
make them more selective to avoid interaction with natural enemies; and studies to avoid
to control treatments to be applied to
rice to remain effective over the period of
rice pest management. 

Biological control: Effect of cultural practices and cropping
diversity on pest incidence; determination of what environmental
factors influence this situation.

Ecological - Population dynamics, multiplica-
tion factors, soil dispersal and flight range.

Host plant resistance and insect pathogens - Work is continuing.

Genetic control of Hymenala - Working Group.
A new pest is being held in combination with that of the
Brisseas working group.
The first Workshop on the control of 
Hymenala antiqua and H. brasiliana, The
new pest is the more serious than the
industrial pests, but material is still
necessary for the use of the new pest.
H. antiqua can be used at 100% at a

dose of 3000, for H. brasiliana 15,000

Dr. L. Grader reports the following general developments:

Dr. L. Grader reports the following general developments:

Dr. L. Grader reports the following general developments:

Dr. L. Grader reports the following general developments:

Dr. L. Grader reports the following general developments:
Marking of the flies can be well done with fluorescent poisons and also with radio-isotopes (EP 32 and 24 65). For immigration traps are used for H. antennata and yellow traps for H. betacampestris. Dipnematidae are always placed over shorter distances.

For the different types of species mentioned at the meeting the following general remarks concerning genetic control of these insects could be drawn:

(a) Biological control of olive pests

A meeting was held at Portici (Italy). The results have not as yet been received by ICOR.

(b) General meeting with Industry

H. betacampestris was held in Paris where the following main topics were discussed and conclusions drawn. The industries considered primarily are these producing pesticides, although it seems impossible to be too restrictive. For the application of integrated control there is a need for the development of physiological and biological informations. A close cooperation between WPIS and industry might furnish a better understanding of these aids and give better information about the marketing possibilities of a product.

(c) Conservation

Integration of control

A number of industries have recently published a booklet on integrated control showing industry's interests here. WPIS is prepared to issue a booklet reflecting the Organization's position on the relationship between official research and industry. This document will give some basis for further discussions between WPIS and industry.

Applying for small species: A normal sewage scheme seems to increase the susceptibility of traps to mould, in which case some evidence that herbicides stimulate mould infestation on the site in question is added. Thereafter small intensive medical control: development of diseases, the non-adaptation to the local fauna, and finally major interest in newly formed cultures.

Borreli disease (Cleopomonella, Leptospira). Dams: Cultural practices and treatment of the sites can be adjusted to reduce the risk of storage diseases. Side-effects of fungicides: The main points discussed are the influence on the physiology of the trees and on the development of epiphytic fungi, and persistence of systemic fungicides and on the development of microorganisms and the processes.

Another meeting was held at Montfort (Austria) to discuss problems created by the increasing registration of fungicides and to analyse the possibilities of the introduction of integrated control, especially in the case of leaf mould (Phytophthora). Research on biological control has furnished a number of suitable situations. The technical restrictions for the introduction of these products can be envisaged in conditions where selective methods are used for the control of other pests.

Observations of the use of the pesticides permit a better staging of control measures and as such a considerable reduction in the use of the products. Further details of these meeting will be published in the 1972 Annual Report available from the Secretary of the WPIS.

(d) General meeting with Industry

H. betacampestris was held in Paris where the following main topics were discussed and conclusions drawn. The industries considered primarily are these producing pesticides, although it seems impossible to be too restrictive. For the application of integrated control there is a need for the development of physiological and biological informations. A close cooperation between WPIS and industry might furnish a better understanding of these aids and give better information about the marketing possibilities of a product. A detailed market survey is necessary. Official research has on several occasions cultivated programs for the introduction of biological control measures, but there has been a lack of technical assistance to ensure that theses programs can be carried out. WPIS and WPIS (Italy) might help to solve these difficulties and uncertainties. For some period of integration controlled experiments like a class collaboration between research and industry are necessary.

The agricultural industries have recently published a booklet on integrated control showing industry's interests here. WPIS is prepared to issue a booklet reflecting the Organization's position on the relationship between official research and industry. This document will give some basis for further discussions between WPIS and industry. WPIS is aware that the integrated control movement now includes a wide range of biologists, particularly economists, and therefore other scientists in academic and official research, and in administrative and industrial integration industry itself. The participants stressed the important role industry has to play in this framework. It is expected that the meetings of a kind WPIS/industry nature will open the way for a fruitful cooperation.

CIBC ANNUAL REPORT 1972

This record of CIBC work during 1972 is not exhaustive but from the Director, CIBC or from the Pakistan States, P.O. Box 88, Rawalpindi, Pakistan. During 1972 CIBC made 1284 inspections of 182 species containing 4,558,901 beetles to 46 countries.

The practical successes reported include (a) the management of a small scale insect population in Pakistan against Leptinotarsa in two areas of the country. The population has been reduced and there has been no evidence of further activity. (b) the reduction in the population of Leptinotarsa in France and in other areas.

The results of the survey in the period March 1972 to December 1972 and the species of insect that were detected are given in the following table:

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Insects</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>1284</td>
</tr>
<tr>
<td>Pakistan</td>
<td>182</td>
</tr>
<tr>
<td>Total</td>
<td>1466</td>
</tr>
</tbody>
</table>

The survey was conducted by the Director, Systematic Entomology Laboratory, USDA, Washington, D.C.

(c) Biocentric of potato tuber mites

Additional work is being progressing in several areas: notably in Zambia in South Africa, but also in other areas. Further information about the existence of these pests, in the area available from the Director, Systematic Entomology Laboratory, USDA, Washington, D.C.
C.J. DAVIS RETIRES
Mr. C.J. Davis, State Entomologist for Hawaii, retired at the end of 1972. He served on the WPRRS Policy Guidance Committee. Despite the geographical isolation of Hawaii, Mr. Davis has been a very active supporter of WPRRS and a good correspondent. We regret that he had decided not to continue to serve on this Committee as he is moving from the island of Hawaii. His new address is P.O. Box 205, Vientiane, Lao PDR.
We wish him many happy years of retirement.

WANTED
(a) Candidate egg parasites for Glossina blakesi (D.T. Brown, Entomology Sciences Laboratory, U.S. Forest Service, P.O. Box 1254, Research Triangle Park, N.C. 27709).
In cooperation with government authorities in Colombia, we have tried to establish Teleogamus aequo and Gavena obscurus (this one on eggs of the geometer, Glaenora, and 2,5 and 10,000 eggs of the geometer, Rhagades, on eggs of T. aequo). We would like to see eggs which they attack; T. aequo adults fed only 1-2 eggs after emergence. We believe the hosts were not attacked. We offer 50 or 100 eggs at a time with a small fee.
(b) Request for parasites of Acilidius N.E. White, National Laboratory, U.S.A. (ARS Western Region, Montana State University, Bozeman, Montana 59715), would like to include parasites of Acilidius from outside the North American continent to test on native grasshoppers in Montana. If anyone can supply such parasites, they should contact him first, for parasites and information related to shipping live insects into the USA.

(c) Exchange of Hymenoptera specimens: A small reference collection of selected species of parasitic wasps (Hymenoptera) used in biological control programs is offered to overseas establishments. In exchange for equivalent gift of unstudied specimens (in 95% alcohol) of miscellaneous parasitic microhymenoptera (Pteromalidae, Chalcidoidea, Braconidae). For further information, please contact Dr. U. M. Meier, Ecosystems Research Institute, Agriculture Canada, Ottawa, Ontario, Canada K1A 0C6.

RECENT PUBLICATIONS OF INTEREST
Strains of entomopathogenic microorganisms
The World Pesticide Regional Station has compiled a list of entomopathogenic microorganisms held in laboratories in several countries. A catalog of the uses of these pathogens is available from Dr. C. S. Cox, General Secretary of IOBC/WPRS.
Conference on the safety of biological agents for biological control
The proceedings of this conference held at the Center for Disease Control, Atlanta, Georgia 16-18 April 1974 has been published by World Health Organization (WHO/ICRC/73.443). Papers are presented on the present status of biological control agents, regulatory aspects, possible hazards from bacteria, protozoa, fungi, nematodes, and invertebrates, fish, and the requirements for future research.

CIBC PUBLICATIONS
A Catalogue of Pesticides and Predators of Terrestrial Arthropods
Section A, Hosts or Prey (U.S.)/Volume 1, Arachnida to Heteroptera (Price €41)/Volume 2, Homoptera (Price €35)/Section C, Bibliography Vols. 1 and 2 (Price €5 each)

A review of the Biological Control of Insects and other Pests in Southeast Asia and the Pacific Region. Tidsskrift for Biologiske Forbundet, Copenhagen. No. 6 (Price €3)

Studies on Predators of Adelges spp. in the Himalayas. Miscellaneous Publication No. 3 (Price €3)

Biology, Ecology and Behaviour of Principal Natural Enemies of Major Insect Pests of Forest Trees in Pakistan. Miscellaneous Publication No. 4 (Price €2)

CIBC Technical Bulletin No. 15 (Price €1.50)
Copies of these publications may be ordered from C.A.B., Central Sales, Farnham House, Farnham Royal, Slough, SL2 3BQ, England.

APPEAL FOR NEWS
We may repeat the plea to members made in Newsletter No. 2 for more information. The regular response to the previous plea was virtually nil, and quite obviously, Newsletter cannot continue without news. Until the present issue, WPRRS and CIBC have provided the majority of items. It would appear to be up to members to redress this imbalance, as this issue does, in part.

April 1974.