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

INTERNATIONAL ORGANIZATION FOR BIOLOGICAL CONTROL OF NOXIOUS ANIMALS AND PLANTS (IOBC)

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Contents

News from the IOBC Secretariat

By G. Mathys, Secretary-General, Paris.

IWGO (Working Group)

The IOBC Council which met in August 1979 during the 9th International Plant Protection Congress in Washington agreed to grant the IOBC sponsorship to the International Working Group on Ostrinia (IWGO). This dynamic world-wide working group which links researchers from 15 countries is chaired by Dr Anglade from the French Research Institute (INRA) at Pont-de-la-Maye/Bordeaux ; it has the following objectives :

i) to exchange inbreds of maize to test their response to the European corn borer *Ostrinia nubilalis* and other maize insects (frit fly in Europe ; corn rootworm in North America) and *Helminthosporium* spp. ;

ii) to select resistant inbreds with local adaptability and to produce hybrids and/or sychetic families which are resistant to pests and have good local adaptability.

International Course on Quality Control in *Ceratitis capitata*, Castellon, Spain, 18-27 September, 1979.

It has been a major concern of all entomologists involved in rearing and utilizing fruit flies or other insects that the final products of rearing operations under stress conditions need to be adequate for their intended purposes.

This course organized by the Working Group on Fruit Flies of Economic Importance (WPRS : Dr Boller) allowed internationally acceptable standards to be proposed on behavioral profile, pupal calibration, flight ability, startle, olfactometry, mating propensity and dispersal.

The International Atomic Energy Agency (Vienna) and the United States Department of Agriculture as well as delegates from Central America also participated in this workshop.

News from the IOBC Sections

Western Hemisphere Regional Section (WHRS)

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Information on the Current Work of the East Palaearctic Regional Section of IOBC.

By V.A. Lebedev, Ministry of Agriculture, Moscow (USSR)

A first meeting took place in April 1978 in Moscow of the chairmen of the Standing Committees of the East Palaearctic section.

The programmes of activity of the Standing Committees were considered and approved, and a technical paper was presented on « The use of insect pheromones in plant protection ». In the period since this first meeting, work has started on the implementation of the measures envisaged in the activity programmes.

1. Standing Committee on Publications

The first meeting of the Committee on Publications was held in March 1979 in Leningrad, under the chairmanship of Dr Beglyarov. The following points were considered and approved :

- order of printing of the Information Bulletin
- title list of the Information Bulletin
- instructions for authors
- number of copies and distribution list for the Bulletin and other printed material of EPRS
- content of Bulletin N° 2 of IOBC/EPRS.

2. Standing Committee on Entomophages and Weed Phytophages

The first meeting of this Committee was held on 4-9 June 1979 in Bulgaria, under the chairmanship of Dr Kaitazov, together with a symposium on the theme « Use of Trichogramma in integrated systems of plant protection ». Concrete proposals on the execution of the work programme of the Committee were considered and approved. During the symposium, results were presented on research and practical use of Trichogramma in member countries of IOBC/EPRS, for example :

- « Methods of increasing the effectiveness of Trichogramma and of utilizing it in integrated plant protection systems » (G.N. Tsybul'skaya, Ukrainian Institute of Plant Protection ; A.M. Grinberg, All-Union Research Institute for Biological Methods of Plant Protection) ;
- « Use of protein hydrolyzate for the mass rearing of Trichogramma » (R. Ivanova, Plant Protection Institute, Bulgaria) ;
- « Achievements of scientific and applied research on the use of Trichogramma in integrated pest control in several Bulgarian crops » (Karazhdov, Plant Protection Institute, Bulgaria) ;
- « Research on Trichogramma in Czechoslovakia » (E. Birova, Applied Phytopathology and Entomology Institute, Czechoslovakia) ;
- « Main principles for the identification of Trichogramma spp. and biological features of the species present in USSR »
  (A.P. Sorokina, All-Union Institute of Plant Protection) ;
- « Relation between the efficiency of Trichogramma and host egg density » (J. Kot, Ecology Institute, Polish Academy of Sciences) ;
- « Principles for the selection of species and forms of Trichogramma for practical use in plant protection » (V.A. Shchepetil'nikova and Z.S. Murashevskaya, All-Union Institute of Plant Protection) ;
- « Taxonomy of the Trichogramma species found in forests in Poland » (Prof. Kadlubowski, Plant Protection Institute, Poznan) ;

and a number of other papers. The entire proceedings have been duplicated and distributed.

The Committee's programme continues with a symposium planned for November 1979 in Kiev on the theme « Review of the introduction and acclimatization of promising entomophages, acariphages and phytophages of the most important pests and weeds ». Three main questions will be considered :

- Principal results and future prospects on the introduction and acclimatization of useful organisms in member countries of IOBC/EPRS ;
- Introduction and practical utilization of beneficial organisms in the control of quarantine pests ;
- Present situation and prospects for the introduction and acclimatization of predators and parasites for the control of pests under glass.

The programme of the Committee also includes the preparation of an annotated list of the available parasites and predators of the main crop plant pests of member countries. This list could be used as a basis for organizing the exchange of useful entomophages and phytophages with the aim of developing biological methods suitable for the particular conditions in member countries.

3. Standing Committee on Microbiological Methods of Plant Protection

This Committee met for the first time in September 1978 in Prague (Czechoslovakia), under the chairmanship of Dr J. Weiser. It established concrete plans for the execution of its programme of activity. A list is currently being prepared of the available strains of entomopathogenic microorganisms in the Institutes of member countries, with the aim of subsequently using the most promising strains from

ndividual institutes for the development of microbiological preparations. The Committee is also making plans for a symposium on « Virus diseases of insects and prospects for their use in crop pest control », to be held in 1980 in the USSR.

Material is also being collected on the technology of the use of microbiological preparations in plant protection, with the aim of achieving a general improvement.

4. Standing Committee on Genetic Methods of Plant Protection

This committee will meet in October 1979 in Hungary, in conjunction with a symposium on the theme « Use of pheromones in the control of apple, oriental and plum fruit moths ».

5. Second Meeting of the Chairmen of the Standing Committees

This second meeting will be held in November 1979 and will review the progress achieved by the Standing Committees and consider proposals for further work. It is also planned to discuss proposals on :

- the organization of temporary working groups under the Standing Committees ;
- specification and extension of the membership of the Standing Committees.

Proceedings of the First Joint US/USSR Conference on Production, Selection and Standardization of Entomopathogenic Fungi Project V (01.0705) Microbiological Control of Insect Pests.

By C.M. Ignoffo

The joint US/USSR conference was held in Jurmula (Riga), Latvia, SSR, from May 21 to May 26, 1978. The conference was part of the continuing activities of Project V, Microbiological Control of Insect Pests, of the US/USSR Joint Working Group on the Production of Substances by Microbiological Means. The Working Group is under the US/USSR Agreement on Cooperation in Science and Technology. The American Society for Microbiology, through a contract from the NSF, provided financial and administrative support for the conference. The conference dealt with the production, selection, and standardization of entomopathogenic fungi. The objectives of the conference were : (1) review past work and determine the current status of use of entomopathogenic fungi for controlling insect pests in both the USA and USSR ; (2) define specific research objectives and scientists who will engage in collaborative research ; and (3) develop a formal working document to assist in implementing research objectives. Presentations covered both basic and applied research on the feasibility of developing fungi for control of insect pests. Research in the USA and USSR has concentrated on species of *Aschersonia, Beauveria, Entomophthora, Hirsutella, Metarhizium* and *Nomuraea*. The foundation for a cooperative program on entomopathogenic fungi with the USSR under Project V (01.0705) Microbiological Control of Agricultural Pests, has now been established.

Available from the National Technical Information Service, Springfield, VA 22161

Memorandum from the White House, Washington, August 2, 1979

The following memorandum has been addressed by President Carter to 11 agencies including Agriculture, Commerce, Health, Education and Welfare, Environmental Protection Agency, Council on Environmental Quality, etc. :

In my Environmental Message of August 2, 1979, I recognized that integrated pest management (IPM) has both economic and environmental benefits and should be encouraged in both research and operational programs of federal agencies. Therefore, I am directing that each of your agencies :

- Modify as soon as possible your existing pest management, research, control, education, and assistance programs to support and adopt IPM strategies wherever practicable within the limits of existing resources.
- Review your pest management research, control, education, and assistance programs to assess the potential for increased emphasis on integrated pest management.
- Report actions taken to implement IPM strategies and the results of this review and assessment to the IPM coordinating committee in six months.

I am establishing an interagency IPM Coordinating Committee to assure implementation of this directive and to oversee further development and implementation of integrated pest management practices. The Committee shall be chaired by the Council on Environmental Quality. Your agency should appoint one representative to serve on this Committee who is an Assistant Secretary, Assistant Administrator, or the equivalent. The Committee is to report to me by June 30, 1980 on progress made by federal agencies in the advancement of IPM and on any institutional barriers thereto.

The Committee may request any Executive agency to furnish such information, advice, and service as may be useful for the fulfillment of the Committee's functions. Each of your agencies shall cooperate with and furnish support to the Committee as needed to carry out its functions.

Please give these assignments your immediate attention.

The Environmental Message of August 2 to which reference is made in the above memorandum reads as follows as far as IPM is concerned :

Integrated Pest Management

For all their benefits, chemical pesticides can cause unintended damage to human health and the environment. Many pests have developed resistance to chemical pesticides, escalating the cost of pest control by conventional methods. This resistance to pesticides has also decreased our ability to control some pests, which has reduced agricultural yields from that they would otherwise be.

Integrated pest management (IPM) has evolved in recent years as a comprehensive pest control strategy which has important health, economic, and environmental benefits. IPM uses a systems approach to reduce pest damage to tolerable levels through a variety of techniques, including natural predators and parasites, genetically resistant hosts, environmental modifications and, when necessary and appropriate, chemical pesticides. IPM strategies generally rely first upon biological defenses against pests before chemically altering the environment.

The Federal governement – which spends more than $ 200 million a year on pest control research and implementation programs – should encourage the development and

use of integrated pest management in agriculture, forestry, public health, and urban pest control. As a result of a government-wide review initiated by my 1977 Environmental Message, I am now directing the appropriate federal agencies to modify as soon as possible their existing pest management research, control, education, and assistance programs and to support and adopt IPM strategies wherever practicable. I am also directing federal agencies to report on actions taken or underway to implement IPM programs, and to coordinate their efforts through an interagency group.

Biological Control in the People's Republic of China

By Prof. J.M. Franz, BBA, Darmstadt (Fed. Rep. of Germany)

Following an invitation from the Academia Sinica (Chinese Academy of Sciences) through the Max-Planck-Society in Germany, I had an opportunity to visit China for three weeks in July, 1979.

The purpose was to get an impression of the present status of research and particularly of application of biological control of agricultural pests. Special emphasis was given to the actual work of field stations for mass production of beneficial insect pathogens, predators and parasites. Due to the great hospitality of my Chinese colleagues, I was able to see relevant institutions and field laboratories in and around Peking, Wuhan, Shanghai, Hangzhou, and Canton. Details will be reported elsewhere. Here, only some highlights will be mentioned :

Integrated Pest Management is nowadays the generally accepted and widely applied policy in pest control. In this framework, biological control – usually by utilization of native beneficial organisms – plays an important role. Drawbacks of the one-sided use of broad spectrum pesticides are well known in China from former experiences. The dominating intention is now to be able to tackle pest problems by locally available methods. In biological control, two methods are widely used : Intentional *protection* of beneficial arthropods, e.g. by interplanting of corn in cotton fields or by enriching the flora of citrus orchards, and *mass production* of pathogens as well as other natural enemies of pest arthropods. The latter method combined with proper cultural and forecasting techniques is favoured by the availability of man power and by an highly developed spirit of cooperation within groups. I hesitate to speak of « cheap man power », because all wages are low if compared with Western scales. However, what counts in this huge and overpopulated country is the ability to produce food for the people and to improve their living conditions in comparison to the former uncertainty of survival.

Examples of decentralized mass production of beneficials visited were that of nuclear polyhedrosis viruses (NPV) of *Heliothis armigera (in vivo)* to control this cotton pest, of *Beauveria bassiana* and *Trichogramma dendrolimi* to control the pine forest defoliator *Dendrolimus punctatus*, of *Trichogramma dendrolimi* and *T.ostriniae* to control the corn borer *(Ostrinia nubilalis)*, of predatory mites of the genus *Amblyseius* to control the citrus red mite *(Panonychus citri)* and of the eupelmid *Anastatus* sp. to control the lichee stink bug *(Tessaratoma papillosa)*. Motion pictures have been taken of these production methods under rural conditions and a film is expected to be completed in spring 1980.

In addition, *Bacillus thuringiensis* is being produced widely, and a production unit in Shanghai was similar in fermenter technology to that used in Western countries. Exact figures as to the acreage of crop protected by bio-ecological means were only available on a regional scale.

However, my experience, in common with that of recent visitors 1) and of a US American delegation, headed by Prof. H.C. Chiang of Minnesota, which I happened to meet twice during my visit and which had quite a different program, warrants the following conclusion : China is a country in which integrated pest management and biological control, mostly of pest insects, have been developed and are being applied to an astonishingly high degree. Transfer of simple methods to the farmers as well as continuous research for improvements guarantee further development as part of a tremendous effort of the government to increase agricultural production. Discussions with many of the leading researchers may have initiated interest in setting up a national organization for biological control and, eventually, in joining IOBC.

Abstracts from Entomophaga

(Prepared by Courtesy of B. Hurpin, INRA)

ENTOMOPHAGA, volume 24 (2), 1979

T.W. Fuchs, F.R. Huffman & J.W. Smith Jr, Texas Agricultural Experiment Station, Weslaco, & Entomology Department, Texas A & M University, College Station, USA. Introduction and establishment of *Apanteles flavipes* (Hym. : Braconidae) on *Diatraea saccharalis* (Lep. : Pyralidae) in Texas.

The braconid parasite, *Apanteless flavipes*, was introduced into the Lower Rio Grande Valley of Texas in 1977 and has become established on *Diatraea saccharalis* attacking 4 species of host plants. Recoveries indicate dispersal of at least 4 km from release sites.

V.T. Sundaramurthy & K. Santhanakrishnan, Research Centre for Biological Control of Coconut Caterpillar, Tamil Nadu, India. The effect of population density of the parasite *Perisierola nephantidis* (Hym. : Bethylidae) on mortality of the coconut caterpillar, *Nephantis serinopa* (Lep. : Cryptophagidae).

Mortality of *Nephantis serinopa* was directly proportional to density of the parasite *Perisierola nephantidis* with a maximum of 96 % at a host : parasite ratio of 1:8, at constant populations of the host.

P.F. Galichet, INRA, Station de Zoologie, Montfavet, France. Hibernation of *Apanteles chilonis* (Hym. : Braconidae) in a Mediterranean climate.

An attempt has recently been made to introduce *Apanteles chilonis* into France to control *Chilo suppressalis* (Lep. : Pyralidae) in rice fields. Large-scale breeding of the parasite is described. The parasite can develop in the field in summer, but in winter its life cycle is affected by adverse conditions. Synchronisation of parasite attack with the development of *C. suppressalis* is doubtful. The possibility of the parasite adopting a transient host within the same environment is discussed.

P. DeBach, Division of Biological Control, University of California, Riverside, USA. *Aphytis riyadhi* n. sp. (Hym. : Aphelinidae), a parasite of *Aonidiella* spp. (Hom. : Diaspididae).

A new species of *Aphytis*, reared from *Aonidiella orientalis* collected from citrus in Saudi Arabia, is described and compared morphologically with four other closely related *Aphytis* species.

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1) RISHBETH, J. (ed.). The Royal Society Delegation on Biological Control to China. The Royal Society, London, 38 pp., 1977.
BRADER, L. Integrated pest control in the developing world. *A. Rev. Ent. 24* : 225-254, 1979.

P. Barbosa & E.A. Frongillo, Jr, Amherst, University of Massachusetts, USA. Host parasitoid interactions affecting reproduction and oviposition by *Brachymeria intermedia* (Hym. : Chalcididae).

The results of this study suggest that *B. intermedia* adults are active and oviposit under specific conditions : i.e., high temperatures and high light intensity. The likelihood of numerical increase may be limited by host size, maximal reproductive potential of *B. intermedia* and possibly by an increase in males with increasing maternal age.

E.F. Legner, Division of Biological Control, University of California, Riverside, USA. The relationship between host destruction and parasite reproductive potential in *Muscidifurax raptor, M. zaraptor* and *Spalangia endius* (Chalcidoidea : Pteromalidae).

Highly significant correlations existed between parasite reproduction and host destruction for 3 hymenopterous parasites of muscoid flies, *Muscidifurax raptor, M. zaraptor* and *Spalangia endius*, ovipositing under varied environmentally controlled conditions. The observation of such highly significant correlations with reproductive potential indicates a means for more accurate evaluation of field performance (hosts destroyed both reproductively and incidentally) in 3 useful species.

A. Burgerjon, R. Bues & S. Poitout, INRA, Stations de La Minière et Montfavet, France. Assay of nuclear polyhedrosis virus against *Mamestra brassicae* (Lep. : Noctuidae) on cauliflower.

An experimental preparation of nuclear polyhedrosis virus (NPV) of *Mamestra brassicae* was applied under routine conditions to a field of cauliflower for control of this noctuid. The infection of newly hatched larvae was attempted, to take advantage of their susceptibility compared with later instars. The application period was determined by the flight of males into traps baited with virgin females reared in the laboratory. Six applications of virus were made. The results of the treatment were quite satisfactory with regard to insect mortality and crop protection.

F. Herard, USDA, European Parasite Laboratory, Sèvres, France. Action of oophagous natural enemies of *Lymantria dispar* (Lep. : Lymantriidae) in the Mamora forest (Morocco).

The natural enemies attacking eggs of *Lymantria dispar* in Morocco are larvae of the predaceous coleoptera *Trogoderma versicolor, Anthrenus verbasci, Tenebroides maroccanus* and *Gryon* sp.

H.J. Montesinos & J.E. Rabinovich, Oficina Nacional de Pesca & Centro de Ecologia, Caracas, Venezuela. Population dynamics of *Telenomus fariai* (Hym. : Scelionidae), a parasite of Chagas'disease vectors. VIII. Morphological and ecological comparison between two allopatric populations under laboratory conditions.

Some ecological parameters and morphological characters were compared between tropical (Costa Rica) and temperate (Argentina) populations of *Telenomus fariai* reared on tropical and temperate hosts. The results of the 4 combinations between the 2 parasite populations and the 2 *Triatoma* species showed the existence of geographically distinct populations of *T. fariai*. Future evaluation of this species as an agent for biological control should take account of these differences.

P.A. Godwin & T.M. Odell, USDA, Northeastern Forest Experiment Station, Hamden, Connecticut, USA. A laboratory study of the interaction of two parasites of *Lymantria dispar* (Lep. : Lymantriidae) : *Blepharipa pratensis* (Dipt. : Tachinidae) and *Brachymeria intermedia* (Hym. : Chalcididae).

In the laboratory, pupae of *Lymantria dispar* parasitized by *Blepharipa pratensis* were exposed to female *Brachymeria intermedia*. *B. intermedia* attacked parasitized pupae, and *B. pratensis* survived these attacks about 78 % of the time. Field observations also support the conclusion that *B. intermedia* is not a significant mortality factor of *B. pratensis*.

R.A. Hall, Glasshouse Crops Research Institute, Littlehampton, UK. Pathogenicity of *Verticillium lecanii* conidia and blastospores against the aphid *Macrosiphoniella sanborni*.

Under conditions of laboratory bioassay in which aphids were infected by total immersion in spore suspensions, blastospores of the entomopathogenic fungus, *Verticillium lecanii*, were twice as pathogenic as conidia for the aphid, *Macrosiphoniella sanborni*, on a numerical basis. In glasshouses, the 2 spore-types achieved similar levels of control of *M. sanborni*.

M. Benoit & J. Voegelé, INRA, Station d'Antibes, France. Host selection and trophic behaviour of *Trichogramma evanescens* larvae (Hym. : Trichogrammatidae) related to the embryonic development of *Ephestia kuehniella* and *Ostrinia nubilalis* (Lep. : Pyralidae).

The capacity of *Trichogramma evanescens* to choose and exploit the eggs of *Ostrinia nubilalis* and *Ephestia kuehniella* during the embryonic development of these hosts was examined. *T. evanescens* prefers vitellous eggs of *Ostrinia* and the germ band stage of *Ephestia*.

ENTOMOPHAGA, volume 24 (3), 1979

J.M. Gourreau, Claude Kaiser, Marcelle Lahellec, L. Chevrier & P. Monsarrat, Laboratoire Central de Recherches Vétérinaires, Maisons Alfort, France. Pathogenicity tests of *Oryctes* baculovirus on swine.

Pathogenicity tests with *Oryctes* baculovirus in adult pigs were carried out using different routes of inoculation including single and repeated gastric intubations and repeated intraperitoneal injections. The results confirm previous studies on the safety of this virus toward different vertebrate cell lines, including pig kidney cells.

R.V. Dowell, Agricultural Research Center, Ft. Lauderdale, Florida, USA. Synchrony and impact of *Amitus hesperidum* (Hym. : Platygasteridae) on its host, *Aleurocanthus woglumi* (Hym. : Aleyrodidae) in southern Florida.

The synchrony of the citrus blackfly *Aleurocanthus woglumi* and its parasitoid *Amitus hesperidum* was studied in southern Florida. There was an excellent temporal synchronization between the parasitoids and the early host instars they prefer. *A. hesperidum* was the factor responsible for the observed decline in the citrus blackfly population level in southern Florida.

Wei Hsuang Ghu & R.P. Jaques, Research Station, Agriculture Canada, Harrow, Ontario, Canada. Pathology of microsporidiosis of Cabbage looper larvae *Trichoplusia ni* (Lep. : Noctuidae) by *Vairimorpha necatrix*.

Infection of larvae of *Trichoplusia ni* by *Vairimorpha* (= *Nosema*) *necatrix* was classified as chronic, semi-chronic and acute depending on the quantity of spores ingested per larva. *V. necatrix* is found mainly in the fat body and certain muscle tissue of larvae with chronic symptoms and mainly in the midgut tissue of larvae with acute symptoms.

Nicole Hawlitzky, INRA, Station de Zoologie, Versailles, France. Egg development and larval behaviour of *Phanerotoma flavitestacea* (Hym. : Braconidae).

When lepidopterous eggs of various ages were offered to parasitic females of *Phanerotoma flavitestacea*, the place where the parasitic egg was deposited depended on the developmental stage of the host egg at the time of oviposition. It seems that penetration of the parasitic egg or larva is only passive, caused by migration of the yolk into the midgut of the host embryo.

Nicole Hawlitzky & Ginette Lauge, INRA, Station de Zoologie, Versailles & Laboratoire d'Entomologie, Université d'Orsay, France. Possible roles of the embryonic membrane in an ovo-larval parasitic Hymenopteran, *Phanerotoma flavitestacea* (Hym. : Braconidae).

After hatching, the embryonic membrane of the parasitic larva *Phanerotoma flavitestacea* persists for 3.5 days. The possible roles of this membrane are alimentary and protective for the parasite and action on host physiology.

R.H. Pelley, Le Mont Ardaine, St. Peter's, Guernsey. Some scelionid egg parasites reared from coffee bugs (*Antestiopsis* spp.) and from some unusual pentatomid hosts.

Six species of scelionid egg parasites of several species of pentatomids, including the major coffee pests *Antestiopsis* spp., were used for rearing experiments in eggs of species other than their normal host. The results show that 4 species of these scelionids can be reared in species that are not normally hosts.

Augusta Amargier, C. Vago, J.L. Duthoit & G. Meynadier, INRA-CNRS, Station de Pathologie Comparée, St Christol, France. Tumor-like formation of parvoviral origin in *Sibine fusca* (Lep. : Limacodidae).

A pathological state involving tumor-like masses was observed and studied in larvae of *Sibine fusca*, a pest of palm trees in Colombia.

Ultrastructural study revealed nuclear viral lesions, abnormal cell multiplication and the formation of an often lethal, tumor-like mass from the virus infected cells.

A. Uma Narasimham & T. Sankaran, CIBC, Indian Station, Bangalore, India. Domiciliary cockroaches and their oothecal parasites in India.

In a survey for oothecal parasites of cockroaches in India, 6 species of cockroach and 8 species of parasites were recorded. The low levels of field parasitism suggest there is scope for introducing more promising parasite species into India for biological control of cockroaches.

R.E. Mc Fadyen, CIBC, South American Sub-Station, Tucuman, Argentina. The cactus mealybug, *Hypogeococcus festerianus* (Hem. : Pseudococcidae), an agent for the biological control of *Eriocereus martinii* (Cactaceae) in Australia.

The mealybug *Hypogeococcus festerianus* infests cacti in Northern Argentina and Paraguay ; it only infests plants in the sub-family Cereanae of the Cactaceae. Its liberation in Queensland, Australia, for the control of *Eriocereus* spp. was approved in October 1974, and it has since established widely.

T.B. Sinha & Rajendra Singh, Entomological laboratory, University of Gorakhpur, India. Studies on the bionomics of *Trioxys (Binodoxys) indicus* (Hym. : Aphidiidae) : Effect of population densities on sex ratio.

The effect of different population densities of *Trioxys indicus* and its host *Aphis craccivora* on the sex ratio (female : male) of the parasitoid was observed. Results indicated that fewer parasitoid releases might be better at any immediate release site for the production of maximum female progeny in this species.

J. Chazeau, Centre ORSTOM, Nouméa, Nouvelle-Calédonie. A reappraisal of the genus *Stethorus* in Oceania with the description of two new species from Melanesia (Col. : Coccinellidae).

Ten species of *Stethorus* are known from Oceania. This work is a reappraisal of their identity and their prey.

C. Stenseth, Norwegian Plant Protection Institute, As, Norway. Effect of temperature and humidity on the development of *Phytoseiulus persimilis* and its ability to regulate populations of *Tetranychus urticae* (Acarina : Phytoseiidae, Tetranychidae).

The development of *Phytoseiulus persimilis* and the effectiveness of it as a predator of *Tetranychus urticae* was studied at different constant temperatures and humidities. The predator gave control of *T. urticae* at temperatures from 15 to 27°C (humidity fluctuation from 60 - 90 % R.H.) and the most rapid and efficient control was obtained at 27°C (60 - 85 % R.H.). It did not give sufficient control of *T. urticae* at 27°C and 40 % R.H.

J.J. Drea, Jr & R.W. Fuester, European Parasite Laboratory, USDA, Sèvres, France. Larval and pupal parasites of *Lymantria dispar* and notes on parasites of other Lymantriidae (Lep.) in Poland 1975.

Larvae and pupae of *Lymantria dispar* were collected periodically from infestations on linden trees in Poland during May-July 1975. The basic purpose of this study was to obtain living parasite specimens for use in the biological control program directed against the gypsy moth in the United States. A total of 14 species of primary insect parasites was reared from *L. dispar* in Poland. In general, the parasite complex observed did not differ greatly from that at the other localities studied although the importance of different species varied among localities.

R. Reardon, W. Metterhouse & R. Balaam, Gypsy moth program, Hamden, USA. Impact of aerially applied *Bacillus thuringiensis* and carbaryl on gypsy moth (Lep. : Lymantriidae) and adult parasites.

In 1973, Dipel (*Bacillus thuringiensis*) and Sevin 4 oil (carbaryl) were applied aerially on a dense population of gypsy moths, *Lymantria dispar*, to evaluate the effect of these biological and chemical insecticides on gypsy moth larvae and adult parasites. Both insecticides provided excellent protection of foliage and gypsy moth population reduction. Significantly fewer adult parasites were captured in the blocks treated with Sevin 4 oil or Dipel than in the control block.

Membership Fees for 1980

As a Member of IOBC (global), you will receive the scientific journal « Entomophaga », periodically issued « Newsletters » and other relevant documents.

Membership fee : Swiss F 65.

Alternatively, you can become an IOBC (global) Member without receiving « Entomophaga » but the abstracts of the papers it contains in the Newsletters.

Membership fee : Swiss F 24

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G. MATHYS

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