IOBC Newsletter

n° 16, 1980

July

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

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News from the Secretariat

1. IOBC General Assembly
   This will be held, as already announced, during the XVI International Congress of Entomology in Kyoto U-9 August, 1980 on the 5 August 1980 at Kyoto Traditional Industry Hall, Okanuki Park, Kyoto 17:00-9:30 p.m. The following agenda is proposed:
   1. Opening - Past President
   2. Report of the Secretary-General
   3. Report of the Treasurer
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3. Establishment of new Sections
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9. Address by the President
2. Postal Ballot for Election of Members of the IOBC Executive Committee

The following Members have been elected to the governing board of IOBC:

President
K.S. HAGEN Division of Biological Control, University of California, 1650 San Pablo Ave., Albany, Calif 94706 (USA)

Vice-President
G. PAREY Ministry of Agriculture, Goriou Pereviuk 1/11, Moscow 107119 (USSR)

Secretary-General
H. MORI Dep. of Applied Zoology, Hokkaido University, 606 Sapporo (Japan)

Treasurer
G. MATHYS EPPO, 1 rue Le Nôtre, FR - 75016 Paris (France)

Secretary-General: G. MATHYS, 1 rue Le Nôtre, FR-75016 Paris (France).
various parts of the world. A proposal was made to establish an IBGC-sponsored presidential task force which should define middle- and long-range programmatic priorities for the alleviation of the chronic disease crop losses. This group would be coordinated by Professor Labbe of the University de la Federation - Rabat in Tunis.


This conference was convened by IOBC with the support of the Rockefeller Foundation and was held at the Rockefeller Conference Center, Villa Serbelloni, Bellagio, Italy.

IOBC which is a Section of the International Union of Biological Sciences, unite scientists throughout the world and has similar status within IAPD, in aim to promote the implementation of IPM. However, in spite of the considerable successes registered with the introduction of the technique in different countries in several crops and on extensive areas, its general acceptance in agricultural practice is slow. This situation is depressing, especially if one considers that there are many additional benefits to be gained from the implementation of such systems, in particular in the developing worlds where the physical environment is generally conducive to the development of pests throughout the year. A balanced protection system would avoid disruption of the biological balance through excessive pesticide usage and accordingly prevent losses at the small holder and subsistence farming levels.

These considerations led IOBC to call on 14 highly experienced scientists from various parts of the world to review the current situation, to identify remaining problems and to study ways of resolving them.

The following twelve themes were studied:

1. Achievements and promise for the future.
2. Research and development opportunities: technical, organizational, educational, industrial, economic, sociological.
3. Special problems encountered in the introduction of IPM in developing countries.

4. Conclusions:

Fifteen papers provided the background for these discussions. Each paper, excluding the background papers, an account of the debates and the conclusions will be published before the end of 1980; it will be free of charge, as an IOBC service.

Please consult the IOBC Secretariat if you are interested in receiving the Report.

5. IOBC/MPRB Working Group on Integrated Control in Vineyards


This meeting was attended by participants from 7 countries. The report summarizes discussions on the following topics: method for identifying vine's vineyards, damage to vineyards, disease, natural parasitoids, biological control, growth regulators, nuclear genetic, phytophthora, sex relatives, pest status and relationship with grape mould. Treatment by helicopter, research to Bulgaria and establishment of a bibliography. The main resolutions made were the following:

1. Population estimation. Negative forecasts depend on regional conditions and it is not possible to generalize. But

phases after the first flight are important and study of the different stage of development must be increased.

2. Life cycles as a function of environmental conditions, especially temperature sums. The simulation model of HUNTER and/or studying Variation of growth rate, production and resistance of vines should be developed by the Netherlands. To be developed in different climates. According to the climate other factors may be important.


4. Times of treatment. Insect study in present practices. At what time (usually 1 week after blooming) temperature sums, fly data, herding, records, etc.

5. Control methods. For Daphnoidea, to concentrate efforts on determining data of intervention. For growth regulators, their use to increase productive soil, for toxic substances, to study studies depending on the availability of components.

6. Bibliography. A complete bibliography on grape pests was printed, with individual cataloguing papers published in their respective countries.

6. IOBC/MPRB Working Group on Integrated Control in Orchards

Summary, by P. Blassaeger, D. Martorell & H. Muller (1979), Note Int. Laboratoire Spécial H. Dec. 1979, step 7

This meeting was held on 10-11 April 1979, in Colmar, France, with 23 participants from France, West Germany, Switzerland and Spain. The report, which is mainly in French, includes a bibliography of some papers and the following seven papers:

1. Assessing the Effects of Insecticides on Beneficial Arthropods at the Tree Level in Orchards, by H. Muller,

2. Pests in a 7-year-old peach orchard were sprayed with four different insecticides and nursery stocked with 5, 24, and 48 hours after spraying. To obtain a reasonable count of the tree fauna, dissections were applied for 28 hours and a count made 1 hour later. Each population and density of a marked effect on beneficial insects. The advantages of the dichlorvos treatment are discussed.

3. Comparison of Two Application Techniques for Orchard Pesticides, by P. Blassaeger (FR).

The nature and use of two types of insect (trap and spray) are contrasted. In a trial to compare two application techniques of four insecticides in a peach orchard, treated (spray) and untreated trees were measured beneficial arthropods. The effects of the products on insect counts were classified into four groups, according to Stenstorp. The results of insecticides obtained for the spray method. The apparent variation found with the spray proved not be statistically significant.

4. Views on Methods for Assessing the Effects of Pesticides on Ecologicalots, by J. N. Robes. (FR). The experiment, carried out in an apple orchard, was intended firstly to investigate the dichlorvos' cleaning treatment recommended by the Working Group, and secondly to develop insects suitable for fruit trees and part thereof. Results of counts made 48 hours after two
dichlorvos treatments suggested either that the trees had been reinfested in this time or that the application rate of 250 g/ha was inadequate. Diagrams are given of two plastic tray traps, for the upper and lower branches. Further research objectives are discussed.

- Comparison of Two Experimental Methods to Test the Selectivity of Pesticides against Beneficial Insects in Orchards, by A.M. Bush & B. Secker (CH)

Insect counts obtained using funnel and tray traps were compared in two apple orchards after application of a broad-spectrum and a selective insecticide, followed 24 hours later by a "cleaning" dichlorvos treatment. Three to four times as many arthropods were collected in the traps compared with the funnel traps. The advantages and disadvantages of the two trap types are discussed.

- Calculations of the Effect of Different Pesticides on Beneficial Insects, by A.M. Bush (CH)

The effect of a pesticide is defined as the ratio of the number of arthropods killed to the total number counted. The paper describes the way in which the effects of different pesticides can be compared using a graphical adaptation of the Knudt-Walls test.

- The Plant Protection Service-Pesticide Industry "Working Group on the Side-effects of Insecticides, Acaricides and Fungicides Used in Agriculture, by J. Tusseau (GR)

The composition and terms of reference of this Working Group are outlined, together with a set of guidelines for analyzing the side-effects of pesticides. The author then describes how these data are summarized and filed. The different types of side-effects (e.g., effect on beneficial insects, rusting, phytotoxicity, etc.) are listed. Examples of standard recording forms are appended.

- Information Centre, by P. Hassinger (GR)

The Working Group is to establish an Information Centre at the Colmar Zoology Station. To date, little progress has been made, but a possible procedure for information collection and dissemination is described.

The Report ends with a summary of discussion on the various topics and a conclusion. A broad protocol to be followed when assessing the effects of pesticides on beneficial arthropods is outlined, together with a provisional minimum list of beneficial arthropod species and stages which should be monitored. Only short-term effects (48-72 h) are considered. It was decided that a "cleaning treatment" should be carried out at the end of the trial to return the target fauna in trial plots, and that dichlorvos, at 0.1 l/ha, may be used for this purpose.

7. Integrated Control in Brassica Crops, IOBC/WPRS Bulletin (1968) 11 (1)

This issue of the Bulletin, edited by T. Coaker, gives results of experiments carried out since 1972 by different members of the IOBC/WPRS Working Group on Integrated Control in Brassica Crops, and covers pests on the cabbage root fly, Hylomysia (Delia) brassicae, in cauliflowers. There are 16 papers in all, with contributors from 9 countries. Brief summaries of the papers (which are in English, with some French summaries) are given below.


This paper describes the experimental design and techniques currently available for sampling and estimating the abundance of H. brassicae, and emphasizes the importance of such data for determining when insecticidal treatments are needed.

Pp. 11-17. Spraying Hylomysia brassicae adults, by S. Frech, J. Freuler & E. Stalder (GB, CH)

Yellow sticky rectangular traps and water-traps filled with an attractant (ANCS dispenser) were used for monitoring populations of H. brassicae. The latter type was more effective, and by placing the dispenser directly into the water of the trap, only 1/5 as much attractant was required. The efficiency of the presently used ANCS trap seems to be increased before such traps can be used economically to assist in directly controlling this pest.

Pp. 19-26. The assessment of damage caused to cruciferous crops by larvae of Hylomysia brassicae (L.)

This paper assesses methods of classifying cabbage root fly damage. Type I: direct death of seedlings or transplants. Type II: damage to unmarketable part of plant. Type III: direct effect on marketable plant parts. Methods of estimating the various types of damage are then discussed.

Pp. 27-34. Using an economic threshold to reduce the amounts of insecticide applied to control H. brassicae, by G. Crumpton & G. Mack (DE)

To prevent a reduction in cauliflower yield quality or more than 5% of cabbage being destroyed by cabbage root fly, crops should not exceed 5/ha or 10/plant, respectively. A spraying schedule is suggested, taking into account the fact that fewer eggs are laid/plant as the season progresses.

Pp. 35-41. A contribution towards the economic threshold of Hylomysia brassicae, by A. El Tir (DE)

Number of eggs, as a measure of population density, was found to be the most suitable parameter for establishing an economic threshold for H. brassicae. Up to 60 eggs/plant, or 9-10 weeks after transplanting, did not result in marketable yield. However, 10 to 20 eggs/plant within 14 days of transplanting is detrimental to cabbage varieties.

Pp. 43-49. Crop loss assessment methods for Hylomysia brassicae on cauliflowers, by J. Freuler (CH)

Damage to plants by H. brassicae is greatest at the edges than in the centre of fields. A visual method of estimating crop loss was less reliable than it is based on counting the numbers of marketable/non-marketable cabbages within a certain number of each crop variety.

Pp. 49-62. Investigations on the biological control of the cabbage root fly (Hylomysia brassicae) with Acrochora bilineata by B. Enger (DE)

In various localities in Denmark, 0.9-89% of H. brassicae pupae were parasitized by Acrochora bilineata and 6.9% by Trichopoda nevius. A trap method for mass rearing A. bilineata on H. annigosa is described.


A mass rearing technique, based on raising larvae as larval food, is discussed. Determination of the timing and dosage of the irradiation treatment of pupae and adults is described, as well as the effects on fertility and longevity. Three SPR field experiments are reported and discussed, while conclusions on the applicability and feasibility of SIP against H. brassicae are formulated.

Pp. 89-95. Behavioural and host traits for the use of host plant volatiles in brassica pest control, by C. Hawkes (GB)

The potential and limitations of pheromone plant substances in monitoring and control of brassica pests are discussed. Observations using ANCS-induced traps suggest
that current trap design may not be utilizing the full potential of attractants.


Information is urgently required on the distances over which host plant chemicals attract Hylobius abietis to crops. Without such information, trap-releasing host plant chemicals could attract more insects into a crop than would arrive naturally and, hence, unwittingly increase crop damage.


The various types and heuristics of brassica crops in Germany are enumerated. Growing practices for white cabbage are outlined, with cabbage pests, both in the nursery and field, are listed. The relative importance of these pests and means for their control are discussed.

Pp. 112-115. Some aspects of the bioeconomics of Hylobius abietis in Western Switzerland, by J. Freuler (CH).

The pest incidence of H. abietis is analyzed in 3 regions of western Switzerland. Soil type and soil temperature are the main factors influencing the emergence of H. abietis adults and the subsequent build-up of damaging pest populations.


Mixed cropping brassicas can reduce insect pests in the crop. With the appropriate level of ground cover provided by an inter-crop, infestations of H. abietis were reduced by over 70% compared with brassica monocultures. This reduction was mostly due to a disturbance in the behaviour of the female flies on entering the mixed crop causing fewer eggs to be laid.


Fumon-ribbon cloths can be an effective as insecticides in protecting brassica plants from damage by H. barberitana. Such cloths must be placed in position immediately after transplanting and firmly around the plant stem. Costs are comparable in price to the standard insecticide treatments available to gardeners.

Pp. 131-136. Controlled release of naphthalene as a repellent against the cabbage root fly (Hylomea barberitana), by H. Duft Unidel (NL).

Experiments on the effect of various chemical barriers against oviposition of the cabbage root fly and larval penetration are described.


The log-dose experiment provided considerably more information than the fixed-dose trial on the relationship between the dose of insecticide applied and the protection of cabbages grown against cabbage root fly larvae. The experiment demonstrated the suitability of the log-dose principle for the primary evaluation of insecticides against cabbage root fly.
that an investigation of the performance of purified NPV becomes an essential part of a modern development programme. The staff of the UK Natural Environment Research Council's Institute of Virology conducted fully replicated field trials during 1977-78 to inspect the efficiency of highly purified NPV in conjunction with an up-to-date application system. All the work was done on infestations in lodenpole pine (Pinus contorta) in Scotland as in the rest of Europe, pine in the UK are chronically subject to severe attack by N. serifer. In the first year's work, a comparison was made between rates of 3 x 10^4, 3 x 10^5 and 3 x 10^6 smallpox-like bodies of NPV ha applied in water from the ground using a hand held calibrated droplet applicator. The spray droplets varied 50 μm in diameter and delivery was in approximately 6 litres/ha. Very good control and foliage protection were obtained with the intermediate dosage rate. In 1978, the formulation included 20 % anti-evaporant oil with emulsifiers, thus delaying droplet driftage by evaporation and making practical the drifing of spray over crop swaths 4 rows wide. By this means, the total spray volume was reduced to just over one litre/ha. Five individual dosages were compared (5 x 10^4 - 5 x 10^6 smallpox-like bodies/ha) and good control was obtained with 5 x 10^5 smallpox-like bodies/ha. Similar results were obtained in 1978 by applying NPV in 11 litres of water/ha by helicopter, based with conventional boom and nozzle spray equipment. Controlled spray application at ultra low volume of highly purified NPV was thus shown to be a feasible method of N. serifer control. The successful association of potentiality good coverage consequent on small droplet size and very low delivery volumes should be of interest in the application of baculoviruses to other crops.

However, foliage protection was poorer in 1978 (data in 1979) and the top growth of the crops in the 1979 trials and highlighted an important difference between the action of chemical and microbial pesticides. These differences, and should be considered in the future, preliminary data usually gives a rapid kill and so swiftly prevents further damage to the crop. However, pathogens undergo an incubation period during which the host may continue to feed and so to inflict damage; the effects of the are especially noticeable when growing conditions are high. Therefore, when it is necessary to obtain the best foliage protection in the season of treatment, account must be taken of pest population and the type of pests selected for application. There is, however, a limit to the degree of foliage protection that can be achieved and this is determined by the minimum time to which the inoculation period can be reduced by increasing dosage. For N. serifer, this limit appears to be reached at a dose of about 5 x 10^6 smallpox-like bodies/ha. Such limits in crop systems in general represent the logical upper level of application which it will never be profitable to exceed. An answer, therefore, to the economic question «what dose of pathogen should be applied and given particular production demands and damage exceeding the economic threshold?» is in understanding the interaction of three variables: pest density, pathogen dosage and level of crop damage. Though identified in the study of N. serifer control, it is a question especially germane to agricultural crops in which insect attack is of most immediate concern and tolerable thresholds of damage are lower than in forests.

Additional Studies on the Variation of Pathogenicity of Verticillium lecanii in Oregano to Larvae of Trialeurodes vaporariorum (Westw.) an I.C.P.P., Brasov, vol. 15: 244-248.

The species V. lecanii is pathogenic to larvae of the white fly, Trialeurodes vaporariorum, which occurs on a variety of greenhouse crops. Pathogenicity was tested in...
glazidcm on cucumbers heavily infested with white fly. The experimental data showed that viability of F. benesi varies according to the production system used. Thus, the control strategies obtained from studies in liquid media are more variable than those obtained from fermented cultures. It was also found that the viability of occlusa obtained in fermented cultures can be enhanced by the addition of metal ions such as Mn, Mg, Fe, and K. The possibility of increasing the viability of fermented cultures with added metal ions will provide means for better standardization of the biological preparation containing Fistidamia benesi.


In practice, the attack of some diseases is often overlooked even though the economic threshold has been exceeded. Based on the principle of integrated control, it may be appropriate to use curative methods and to apply growth stimulators to secure rapid recovery of the diseased plant parts. In greenhouse experiments, tomato plants artificially infected with Dianoea buesofae var. recovered after curative treatments with Myxocystid 0.2%, and Foladoz at 0.1%. New tools developed above the lesions after finishing, watering, and the application of 3% borax acetic acid at 1 ppm. Nitrogen fertilizers were also applied to accelerate growth.


Data are given on the rate-rearing of Beauveria bassiana (Bals.) Vuill. cultures. Rearing on sugar media yielded about 2 g of conidia per 100 mL of culture medium. Rearing on saccharose media yielded about 3 g of conidia per 100 mL of culture medium. Biocurations were performed containing 20-25 x 10^7 and 45-50 x 10^7 conidia/g from surface cultures, and preparations with 20-25 x 10^7 (85% blastsonean). These products were tested on Colorado beetles and the sugar-beet weevil under laboratory and field conditions. The biocurations with a higher concentration of conidia were effective against the Colorado beetle. With 100% mortality after 12 days: the biocurations 35-23 x 10^7 conidia or blastsonean led to 90-72% mortality after 12 days, and the preparation containing blastsonean mixed with bifodium 0.01% or ethano 0.05% caused mortality of 92-94%, respectively, after 5 days.

The effects of the fungi on the sugar-beet weevil were checked using the biocurations with a high content of blastsonean. Five preparations obtained with 5 strains of B. bassiana were tested and the mortality recorded under greenhouse conditions was 92-100% after 12 days and 74% in the field.


Outbreaks of rice hoppers have often threatened rice production in Asia and the fact that they transmit viral diseases has meant that even low densities of these insects can cause great alarm among farmers. The natural enemy complex of these pests in the Philippines is not well understood but in view of the high economic potential of the pests it is conceivable to assume that the population growth is at most (until curtailed by natural enemies.


Biological control of sclerotinia plant pathogens by the addition of antagonistic microorganisms to the soil is a potential non-chemical method of plant disease control. Trichoderma spp. can be of particular pathogenic fungi are highly efficient antagonists. e.g. Trichoderma lagerstromii (Voss) Hart. on Sclerotinia rolfsii Stue. and Rhizoctonia solani Kuhn.


In greenhouse experiments, biological control of S. rolfsii (up to 97% reduction of disease incidence in bean seedings) and R. solani 65% reduction of disease incidence in bean seedlings) was achieved in soil artificially infected with both pathogens (wheat bran culture of T. harzianum).

Under field conditions, T. harzianum significantly increased yield of decreased disease incidence although less efficiently than under greenhouse conditions. Improved methods for applying T. harzianum in the field may produce better results.

G. Abstracts from Entomophaga (Prepared by Courtesy of M. H. Harn, INRA)

ENTOMOPHAGA, volume 25 (1), IFCRO

T.L. Wegner & D.E. Leonard, Department of Entomology, University of California, Davis, California, USA. More than six species of entomophaga are found in aspen forests in Maine.

Natural control agents of the sawfly, Monochamus sutor, was examined in 2. Psporria fraxinifolia stands between fall 1974 and summer 1979. The objectives were to record the mortality factors, determine the amount of mortality caused by each and to evaluate the effectiveness of nature and introduced parasites.

S. Grieser, Laboratoire de Biologie, INSA, Villenar, France. Endoparasitism and endoparasitic larval growth of Lithographa danaeae (Dipt., Tachinae) in a substitution host - Galerita melonella (Lep., Pyralidae).

Endoparasitic development of Lithographa danaeae reared in a substitution host Galerita melonella was studied by dissections of hosts containing parasitoids of known age. Larval weight increase is exponential and exhibits a doubling time of 3.6 days for the first and second stages and around 0.8 days for the third stage. Mean complete larval development time is 7.5 days.
Two entomophthoraceous species, found at different localities in Israel, caused epidemics on *Hyponima variabilis* larvae during the springs of 1976 and 1977. Zophora phytonemoides only produced conidia in the field, whereas *Candidoides* spores formed only dark, rough-walled resting spores that had been erroneously thought in the past to belong to *Z. phytonema*.

Girish Chandran, *The International Rice Institute, Manila, Philippines. Dryield perennials of rice building depress and plant breeders in the Philippines, II. Breeding techniques.*

New three techniques for rearing dryield parasitic belonging to the species were developed, namely, a laboratory culture technique for detailed observations, a device for transporting and rearing field-collected hopper to estimate percentage parasitism and a breeding technique.

M. B. Johnston, E.R. Osmany & J.A. Wyman, *Kansas State University, Garden City, University of California, Riverside, University of Wisconsin, Madison, USA. Natural control of *Lycocorona wasica* (Nip. aplycosidii) in piste rotation in Southern California.*

The objective of this study was to determine the populations trends of *L. wasica and its primary parasitoids in fresh market tomatoes in southern California in the absence of masticidal treatments. In that situation, *L. wasica* populations were regulated by its natural enemies. *Chrysoperla carnea* and *Chrysoperla carnea.*

J. S. Belfort & N. Bellemore, *Institut Armand Frappier, Quebec, University of Quebec, Canada. Polyhedra of *CPV* from *Lycocorona wasica* produced in vivo and in vitro. Comparative studies.*

Cytosporic polyhedra isolated from larvae of *Eremonia scudderii* are distinctive in shape. The non-occluded or occluded viruses extracted from infected and uninfected cells by *Lycocorona wasica* cells cultivated in vitro. This shape is maintained after passage of the virus in these cells. Infection of larvae by the polyhedra produced in vitro, however, is characterized by reappearance of the heterogeneous polyhedra shape.

B. D. Federici, *University of California, Riverside, USA. Production of the entomopathogenic fungus *B. ryceae dodges*, through synchronized infection and growth of the intermediate copped host. Cyclic viruses.*

In the study, it was determined that yields of crops infected with *B. dodes could be improved significantly over those possible with other fungi. This led to the large populations of synchronously developing muspil.*

G. Crobizer & Lélline Crobizer, *Station de Pathologie Comparée, Sainte Corneli, France. A study of the plasmodesm of induction of a bacteriolytic factor in the Leptoplophora. Inhibition of protease synthesis by Actinomycin D and Cycloheximide in *Galleria mellonella* larvae.*

The effect was studied of Actinomycin D and Cycloheximide introduced into *Galleria mellonella* larvae which had been stimulated to produce hemolymph by injection of natural or *Eremonia scudderii* larvae. The action of these antibacterial inhibitors on the quantity of hemolymph in the hemetocyte, 24 h after injection of the larvae, showed that variations in the amount of hemolymph are under the control of only one mechanism which is not affected by the nature of the inoculum.

MATYIS and Elizabeth A. BAKER.