

50th Anniversary of IOBC

A historical review

Celebration at the 10th General Assembly of IOBCwprs
of September 20, 2005 at Dijon, France

“From chemical pest control to Integrated Production”

by

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Table of Contents

Summary	2
Prologue: The challenge to write about the history of an extraordinary organisation	3
1948 – 1955: Preparing the ground for establishing a “Commission Internationale de Lutte Biologique” (CILB)	5
The period of 1956 until 1971	7
The importance of the period 1968 till 1971 in retrospect	14
Global IOBC and Regional Sections	15
The history of WPRS 1971 – 2005: From Biological Control to Integrated Production	15
Changing concepts	15
Personalities, visions and teamwork	16
Multi-disciplinarity and trans-disciplinarity	18
A holistic systems approach	19
Integrated Production: One of the key issues in the 1990s	20
Topics at the beginning of the millennium	21
Conclusions and outlook	21
Acknowledgments	22
Selected literature	22
Tab.1: Composition of CILB and OILB Council from 1956 till 1971	9
Tab.2: Working Groups established between 1956 and 1958	10
Tab.3: Composition of IOBCwprs Council from 1971 till 2005	16

Summary

Seven historic landmarks demonstrate the historical evolution of IOBC to a powerful global organisation. **1948 Stockholm:** First idea to create an international organisation on biological control. **1950:** IUBS (International Union of Biological Sciences) decided to support the establishment of a “Commission Internationale de Lutte Biologique” (CILB) as part of the IUBC Division of Animal Biology. A first preparatory committee (“Commission pour les recherches sur la lutte biologique”) established itself at Menton. **1955:** IUBS ratified the statutes of CILB. **1956:** First official plenary session of CILB took place at Antibes, France; **1965:** CILB changed its name from “Commission” to “Organisation” becoming OILB/IOBC “International Organisation of Biological Control of Noxious Animals and Plants”. **1969:** Under the auspices of IUBS an agreement was reached among competing organisations to merge IOBC and IACBC (“International Advisory Committee for Biological Control” active in English-speaking countries) into a single international organisation carrying the unaltered name of IOBC. It was also agreed to continue publishing “Entomophaga” as official journal of the new IOBC. **1971 Rome:** Official establishment of Global IOBC and continuation of the former IOBC as one of these sections as WPRS (West Palaearctic Regional Section).

Biological control has ever since remained the focus and field of competence of Global IOBC. Biological control and related entomological projects have also retained their important role in the activities of WPRS up to now and contributed largely to its international reputation. However, from its very early phase, WPRS developed and applied simultaneously the concepts of Integrated Pest Management (IPM), Integrated Plant Protection (IPP) and ultimately that of Integrated Production (IP). These concepts provided not only the conceptual umbrella for biological control but stimulated also the development of more holistic, multidisciplinary approaches and facilitated the knowledge transfer into practice. Since its establishment, WPRS has constantly increased its international reputation to function as trend-setting, independent, non-governmental scientific organisation that has continuously identified, addressed and developed new emerging fields. Examples of such topics dealt with by WPRS working units are, among others, “Functional Biodiversity” in the context of Conservation Biological Control and habitat management; assessment of potential negative impacts of pesticides; assessing the role of GMOs in IP; quality control of mass-reared arthropods; induced resistance in plants against pests and diseases; assessing risks of releasing exotic biocontrol agents and, last but not least, crop specific guidelines for the implementation of Integrated Production programs.

Although we can observe, after 50 years of successful history, still a certain predominance of entomological topics in Global and WPRS activities there is also an obvious tendency of increasing multi- and even trans-disciplinarity. This is essential not only for the future development and implementation of sustainable agricultural production systems, but also for the continued viability of IOBC.

Prologue:

The challenge to write about the history of an extraordinary organisation

The mandate to prepare a historical review of an extraordinary organisation, celebrating half a century of success, is both an honour and a big challenge.

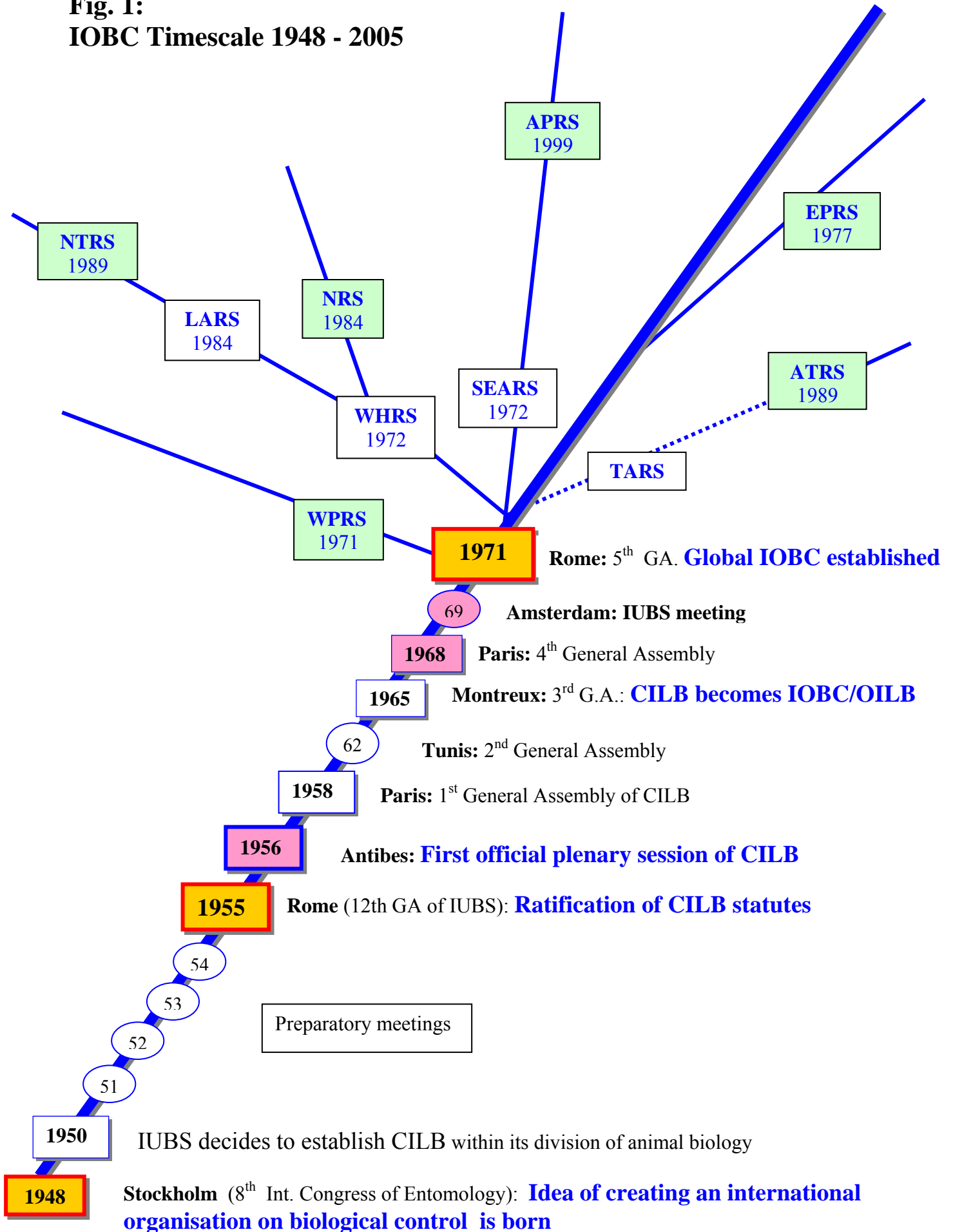
Let me start this review with the **conclusions**: Yes, the celebrating organisation, the Global IOBC, and especially its West-Palaeartic Regional Section (WPRS), is extraordinary in many respects. IOBC is an international organisation without permanent staff, without permanent headquarters, without offices and archives; it is an organisation run on a voluntary and honorary basis by a motivated community of independent scientists, university teachers and field advisers; it is an international organisation with a long tradition and reputation as trend-setter, identifying, addressing and developing emerging future fields of interest in the context of a sustainable agriculture; it is an organisation without professional public relation managers and marketing departments. In fact, IOBC is an organisation where the contents of the package were always more important than the wrapping paper.

The mandate to summarise the history of such an organisation is also a technical challenge because there is no permanent archive. In preparation of this review I have tried to collect, to read and to analyse the available published and unpublished documents, scattered all over the places. The evidence provided by this heap of facts, figures, hear-say tales, eye-witness reports and my personal experience gained by direct involvement in IOBC since 1968, this evidence indicates that we are in possession of a complex treasure of important information that would merit a deeper analysis. Since I have to restrict my presentation today to a very modest extract made from this existing information base, the WPRS Executive Committee and I have agreed to make the collected and analysed data available in appropriate form for the future WPRS archive.

The early history of IOBC from the very beginning in 1948 to the establishment of Global IOBC in 1971 at Rome has been described by various founding members, namely the first president A.S. Balachowsky (1956), P. Bovey (1961), Ch. Ferrière (1961), J. Franz (1988) and V. Delucchi (1993). Each author described, from his personal perspective, the most important events, emphasising different aspects, omitting others. The first published document dealing with the future IOBC (IUBS 1949) describes in adequate detail the tentative to establish an international organisation on biological control and gives insight into the prevailing situation at that time. Official reports of meetings and General Assemblies between 1956 and 1965 published by the Secretary General (P. Grison) in the IOBC journal *ENTOMOPHAGA* are often rather parsimonious with facts and do not reveal much information about persons and important decisions taken. These facts were obviously circulated in internal letters and documents, no longer existing. This restrictive information policy was normal procedure at that time and prevailed with many Commissions and Working Groups until the early 1980s. However, the quality of information was substantially improved from 1968 onward by the regular publication of detailed reports of the Secretary General and by the IOBCwprs Bulletins starting in 1971.

Of special interest are the **proceedings of the General Assemblies**. Whereas the presidential addresses often contain important historic information and indicate strategic changes, the reports of the Secretary General (and partly of the treasurer) allow keeping track on the developments of Commissions and Working Groups. The recommendations and rare requests to Council, formulated by the participants in the General Assemblies, reflect not only the general atmosphere prevailing in the audience but are also indicators for existing problems. The reports of convenors of Commissions and Working Groups presented to the General Assembly and the published proceedings of Working Group meetings contain a wealth of information that would highly justify a future historical in-depth analysis. For a complete list of all IOBCwprs publications (Bulletins, brochures, joint IOBCwprs-EC publications, Newsletter *PROFILE*) published between 1968 and 1993 we refer to the excellent compilation of A.K. Minks & D. Degheele "List of IOBC/WPRS Publications 1968-1993" published in IOBCwprs Bulletin Vol. 16 (6) 1993. For later compilations, see website www.iobc-wprs.org.

**Fig. 1:
IOBC Timescale 1948 - 2005**



1948 – 1955: Preparing the ground for establishing a “Commission Internationale de Lutte Biologique” (CILB).

IOBC has always been very flexible with dates of celebrations. Whereas many authors refer to the year 1948 as the starting point, two presidents mentioned the year 1950 as the real beginning. IOBC was celebrating in 1979 its 25th anniversary focussing apparently on the year 1954. Global IOBC and WPRS are celebrating the 50th anniversary in 2005, but a considerable number of authors emphasise the first official plenary session of CILB taken place on 20 November 1956 at Antibes. All of them have good reasons for picking their particular celebration date.

Four events possibly merit to be called historic landmarks of this preparatory period. They occurred in 1948, 1950, 1955 and 1956, respectively (see IOBC timescale in **Figure 1**).

1948 Stockholm:The first idea to create an international organisation on biological control emerged in 1948. At the 8th International Congress of Entomology in Stockholm 11 specialists of biological control met under the auspices of IUBS (International Union of Biological Sciences) and the financial support of UNESCO. They discussed possibilities to establish an organisation able to coordinate biological control activities on an international basis. This important meeting is well documented (IUBS 1949).

Present at this meeting were M. André (France), A.S. Balachowsky (France), Ch. Ferrière (Switzerland), J. Ghesquière (Belgium, Congo), D. Miller (New Zealand); A.J. Nicholson (Australia), S. Novicky (Austria), L.O. Parker (USA), F. Silvestri (Italy); O.H.Träcardh (Sweden) and P. Vayssière (France, Secretary General of IUBS). The persons M. Caryon (France) and Le Gall (France) shown on **Figure 2** were acting as secretaries of the meeting.

Fig.2: Participants of the Stockholm meeting 1948



After examination and analysis of the international and national situation of biological control the group formulated a resolution addressed to UNESCO and being transmitted by IUBS (International Union of Biological Sciences, affiliated to UNESCO and represented in the meeting by Vayssière). The political landscape in 1948 and the situation in Europe with respect to plant protection problems have been discussed in detail in the IUBS document of 1949 and later in personal reviews published

by Balachowsky (1956), Bovey (1961), Ferrière (1961) and Franz (1988). Whereas Europe had focussed for decades its plant protection practice on chemical pest control and made extended use of the new synthetic insecticides, entomologists of the British Commonwealth and in the United States had developed and applied biological control in parallel to chemical control for almost a century. Important institutions specialised in biological control had been established in these countries. On the other hand, post-war continental Europe with possessions in Africa and overseas, was divided politically into Eastern and Western Europe. Despite the existence of several famous taxonomists in Europe the individual countries had only inadequate resources and only very few specialists to implement effective biological control. The intention of the entomologists meeting in Stockholm was described in the resolution as follows: “*The proposed international organisation is viewed as an extension to other countries of the kind of work already being carried out by the United States of America and the British Commonwealth. (This organisation should) work in co-operation with all institutes and individuals actively carrying out biological control work*”. It can be concluded that especially the European participants of the meeting had great interest to establish a network covering the needs of continental Western Europe, the Mediterranean region and the Middle East.

The experts recommended in their resolution “*that international action can and should begin at once, by setting up an organisation providing the following services*”:

- A documentation service (for the collection of pertinent information)
- A taxonomic service dealing with the identification of natural enemies
- A survey service (to study the natural enemies existing in the major regions of interest)
- An application service (devoted to collecting, breeding, transporting, acclimatising and establishing natural enemies in regions where local institutions are unable to undertake this work themselves).

The eminent importance of an efficient taxonomic identification and documentation centre for entomophagous species in continental Europe was evident. Close collaboration with existing taxonomic institutions in London and Washington but also with other international organisations (FAO, EPPO) was identified as an essential prerequisite for the formation of European taxonomists. In this critical stage a specialist entered the scenery, who should play later an important role in the further preparations: Ch. Ferrière from Geneva, Switzerland. He had worked for many years as taxonomist at the Commonwealth Institute of Entomology in London and was now working at the Muséum d’Histoire naturelle at Geneva.

1950: IUBS decides to support the establishment of a “Commission Internationale de Lutte Biologique” (CIBC) as part of the IUBS Division of Animal Biology. Although eminent entomologists from English-speaking countries had participated in the Stockholm meeting and had made valuable technical proposals it was evident, that the institutions operating in English-speaking regions were not much interested in the European problems and that the future organisation would focus its attention on the regions falling into the sphere of influence of France. A first *ad hoc* committee (“Commission pour les recherches sur la lutte biologique”) was established at Menton/France and started the detailed planning. In retrospective, Franz (1988) referred to these early activities as the “French initiative”.

1951 – 1954: Many difficulties had to be overcome, however, before such a plan could be realised. Most European countries were reluctant to officially acknowledge a non-governmental organisation which only had modest funding for a few research programmes and special projects. Therefore, one of the first requirements was to establish an international identification service for natural enemies of pest arthropods by coordinating and subsidising the efforts of the few existing European specialists. **Preparatory meetings** were held with government representatives, experts and potential members of the future organisation at Madrid (1951), Jouy-en-Josas, Geneva and Portici (1953), Colmar (1954) and Zürich (1955). Although original reports of these meetings are not available, it can be concluded that during these years of preparation the composition and working modus of the future Commission was shaping up. It can be speculated that a triplet of countries consisting of France (Balachowsky, Vayssière, Grison), Switzerland (Ferrière, Bovey) and Germany (Franz) was acting as locomotive. It produced the final draft of statutes, formulated in legally correct form by Swiss lawyers. The Institute of Entomology of the Swiss Federal Institute of Technology (ETH), Zürich, was selected as the legal seat of the future Commission. Cooperation with other international organisations such as FAO (Food

and Agriculture Organisation), EPPO (European Plant Protection Organisation) and the European laboratories of the Commonwealth Institute of Biological Control, especially in the field of taxonomy, was approved. The future taxonomic identification centre of CILB was planned to be in Geneva.

1955: IUBS ratifies the statutes of CILB.

These statutes, written in French and reflecting the philosophy and approach of many scientific French institutions of that time, should influence the politics and activities of the new organisation until the mid 1960s, the statutes of the future Global IOBC and, in certain aspects, the management of IOBCwprs until the late 1970s. Therefore, we present here the original French text of the title and the first three of 22 articles of the statutes that read as follows:

STATUTS DE LA COMMISSION INTERNATIONALE DE LUTTE BIOLOGIQUE CONTRE LES ENNEMIES DES CULTURES (C.I.L.B.)

Art. 1er – TITRE ET SIÈGE

Dans le cadre de l'Union internationale des sciences biologiques (U.I.S.B.) il est créé une Commission internationale de lutte biologique contre les ennemis des cultures (ci-après nommée la C.I.L.B.). Son siège est à Zurich (Suisse), à l'Institut entomologique de l'Ecole polytechnique fédérale.

Art. 2 – MEMBRES

Peuvent devenir membres de la C.I.L.B.:

- a) Les services gouvernementaux;*
- b) Les institutions officielles ou privées;*
- c) Les personnes physiques ou morales que les problèmes de la lutte biologique intéressent, apportant une contribution financière et admises par l'assemblée générale à la majorité des deux tiers des votants.*

Art. 3 – TÂCHES ET BUTS

1° Les tâches et buts que se propose la C.I.L.B. sont de promouvoir, coordonner et intensifier pour un meilleur rendement les recherches et les applications de la lutte biologique contre les insectes et les plantes nuisibles à l'agriculture des pays ayant des adhérents.

2° On entend par la lutte biologique les recherches et les applications ayant pour but:

- a) La destruction des insectes et acariens nuisibles par l'utilisation rationnelle des insectes et microorganismes entomophages;*
- b) La destruction des mauvaises herbes par les insectes phytophages;*
- c) Le contrôle des facteurs qui interviennent dans la prolifération des auxiliaires indigènes afin d'en préserver ou d'en accroître l'action.*

Articles 4 – 22 deal with administrative and organisational matters. Of interest is article 13 dealing with working units called “Comités de travail”:

Art. 13 – COMITES DE TRAVAIL

1° Les Comités de travail sont nommés par le Bureau exécutif qui définit leur tâche et précise la durée de leur mandat.

2° Les Comités jouent le rôle de conseillers scientifiques ou techniques. Ils sont composés de spécialistes affiliés ou non à la C.I.L.B. dont le nombre est adapté aux besoins de la tâche à remplir. Dans la règle, ils sont présidés par un membre du Bureau exécutif.

3° Les Comités remettent leurs rapports au Bureau exécutif qui décide de la suite à donner.

The period of 1956 until 1971

The first 15 years of CILB are probably best characterised by six historic landmarks: 1956, 1959, 1965, 1968, 1969 and 1971.

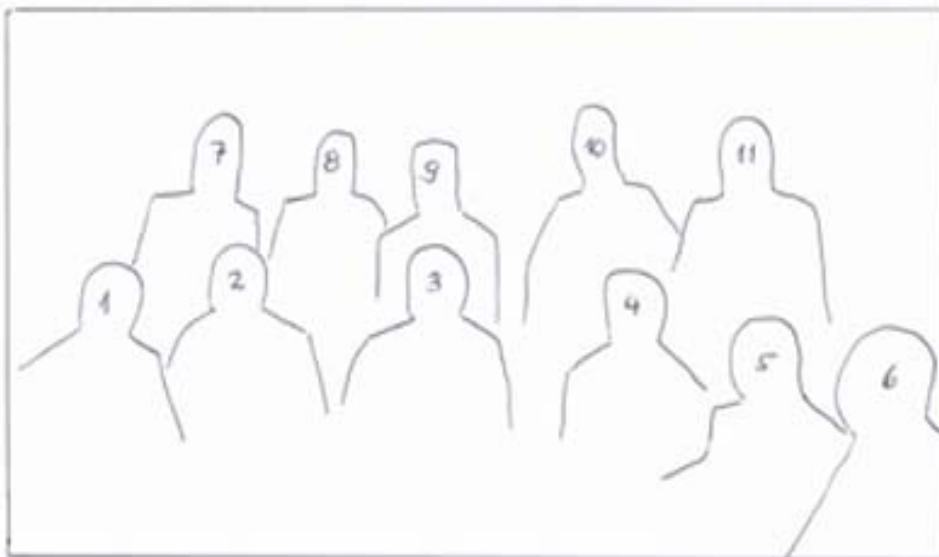
1956: The first official plenary session of CILB

took place 20 November at Antibes/France. Present at the Antibes meeting were government representatives from Algeria, Belgium, Belgium-Congo, France, French overseas territories, Germany Federal Republic, Morocco, Portugal, Spain, Switzerland and Yugoslavia. Although several countries had not yet nominated their official representatives the delegates listed here mirror the main geographic focus of the Commission at the very beginning. The delegates confirmed the “Bureau executive” of CILB as follows:

- **President:** A.S. Balachowsky, Institut Pasteur, Paris/France;
- **Three vice presidents:**
 W.E. van den Bruel, Entomology Research Station, Gembloux/Belgium;
 J. Franz, Federal Institute for Biological Control, Darmstadt/Germany;
 P. Vassière, National museum of natural history, Paris/France;
- **Secretary general:** P. Grison, INRA Versailles/France;
- **Treasurer:** P. Bovey, Institute of Entomology, ETH Zürich/Switzerland.

One of the rare historical pictures taken of important IOBC events shows in **Figure 3** the members of the “Bureau exécutif” and of the appointed coordinators of the different services. This composition of the “Bureau exécutif” remained practically the same for 12 years (see **Table 1**).

Fig. 3: First plenary session of CILB at Antibes 1956



1. P. Bovey (CH); 2. P. Grison (F); 3. A. Balachowsky (F); 4. D. Caudri (EPPO); 5. V. Delucchi (CH);
 6. W.E. van den Bruel (B); 7. Bouriquet (F); 8. Ch. Ferrière (CH); 9. E. Biliotti (F); 10. J. Franz (D);
 11. Klett (D).

Two “Services” were established with top priority as had been requested by all interested countries:

□ **Identification service for entomophagous insects**

Director: Ch. Ferrière, Museum of natural history, Geneva/Switzerland

Deputy director: L.P. Mesnil, Commonwealth Institute, European Laboratory at Feldmeilen/Zürich/Switzerland;

Secretary: V. Delucchi, Commonwealth Institute, European Laboratory at Mendrisio/ TI/ Switzerland.

□ **Documentation service** with 2 sections:

Biology and application: J. Franz, Darmstadt/Germany

Systematics: V. Delucchi, Mendrisio/Switzerland.

The **Secretariat of publications** (G. Remaudière, Institut Pasteur, Paris/France) was responsible for the journal *ENTOMOPHAGA* with the first issue published in July 1956.

One of the most efficient actions of CILB was the establishment of project-oriented “Comités de travail” (Working Groups) (see table 2). Through their activities CILB exerted its influence by channelling the individual and fragmented national efforts into joint projects. Under the guidance of well-experienced specialists, selected by the Executive Board, groups of young and active scientists were given financial support by the founding organisations to develop an international project. This cooperation was greatly facilitated by the relatively short distances to be travelled in Europe. Projects were carried out in those countries that had the best perspective of a successful outcome.

Table 1: The composition of CILB and OILB Council from 1956 till 1971

	CILB: Commission Internationale de Lutte Biologique			OILB: Organisation Internationale de Lutte Biologique		
	Antibes 1956	Paris 1958	Tunis 1962	Montreux 1965	Paris 1968	Rome 1971
	First official plenary session of CILB	1st General Assembly of CILB	2nd General Assembly of CILB	3rd GA of CILB new name OILB	4th GA of OILB	5th GA of OILB Establishment of Global IOBC
President	Balachowsky (F)	Balachowsky (F)	Balachowsky (F)	Balachowsky (F)	Biliotti (F)	DeBach (USA)
Vice Presidents	Vayssière (F) van den Bruel (B) Franz (D)	van den Bruel (B) Franz (D) Davatchi (IRAN)	Franz (D) Davatchi (IRAN) de Fluiter (NL)	J. Franz (D) Davatchi (IRAN) de Fluiter (NL)	Castel-Branco (P) de Wilde (NL) Benvenuti (I)	Biliotti (F) Wilson (AUST)
Secretary General	Grison (F)	Grison (F)	Grison (F)	Grison (F)	Delucchi (CH)	Delucchi (CH)
Treasurer	Bovey (CH)	Bovey (CH)	Bovey (CH)	Bovey (CH)	Mathys (CH)	Simmonds (Trinidad)
Members		Castel-Branco (P) Morales (E) Tadic (YU) Russo (I) Jamoussi (TUN) Schneider (CH)	Morales (E) Jamoussi (TUN) Pavan (I) Trabulsi (Libanon)	Morales (E) Jamoussi (TUN) Pavan (I)	Arroyo (E) Steiner (D) Düzgüneş (TUR)	

Table 2: Working Groups established between 1956 and 1958

1956	Application of <i>Prospaltella perniciosi</i> against <i>Quadraspidiotus perniciosus</i> (San José scale) (in collaboration with EPPO)	Klett/D
1956	Biological control of <i>Ceratitis capitata</i> and <i>Dacus oleae</i> (in collaboration with EPPO and FAO)	Sacantanis/GR (?)
1956	Biological control of <i>Leptinotarsa decemlineata</i>	Franz/D
1956	Biological control of Lepidopteran pests of Mediterranean forests (gypsy moth and processionary caterpillars)	Biliotti/F
1957	Biological control of <i>Hyphantria cunea</i> (in cooperation with FAO and EPPO)	Tadic/YU
1957	Biological control of sugar cane miners (Africa) and of <i>Earias insulana</i> ,	Frezal/F
1958	Insect pathology and microbial control	Hurpin/F
1958	Integrated pest control	de Fluiter/NL

An important milestone in the development of international biological control was the 1st International Conference for Insect Pathology and Biological Control organised in 1958 in Prague by J. Weiser. Participating scientists from both East and West met to discuss the best ways of cooperation.

1959: Integrated plant protection moving in from the north

The establishment of the “Commission” on Integrated Pest Control in 1958, followed in 1959 by the establishment of a Working Group on Integrated Pest Control in fruit orchards (both directed by H.J. de Fluiter/NL) were an early indication that CILB started to develop a wider context of plant protection. The orchard group was operating at its very beginning mainly in the Netherlands, Germany, Switzerland and France. This group was inspired by the pioneering practical work of Pickett and his team in Nova Scotia/Canada (Pickett, A.D. & Patterson, N.A. 1953; Pickett, A.D., Putman, W.L. & LeRoux, E.S. 1958) and by the conceptual ideas published in California (Stern et al. 1959). European entomologists involved in apple production can be considered in many respects as the pioneers of integrated pest management and later in the development of Integrated Production.

1965: CILB changes its name

The 3rd General Assembly held at Montreux decided to change the name of CILB to OILB. The term “Commission” was replaced by “Organisation” to symbolise its growth both in range and importance. Working groups of general interest and of permanent character became “Commissions (i.e. “Integrated Pest Control”, “Pathology and microbial control”, “Intertropical problems”, “Documentation” and “Publications”).

OILB had to establish relations and face confrontations with similar organisations operating in the field of biological control. Difficulties were experienced with the “International Advisory Committee for Biological Control (IACBC)”, established in 1964 in London and consisting mainly of experts from English speaking countries (e.g. F. Wilson/CSIRO Australia; B. Beirne, director of the Belleville institute in Canada; and F.J. Simmonds, Commonwealth Institute of Biological Control in Trinidad). The main role of IACBC was to assist institutions and countries wishing information on the possibilities of world-wide biological control. During the International Congresses of Entomology in London (1964) and Moscow (1968) IACBC presented proposals to avoid competition between organisations dealing with biological control of pests, and submitted in 1967 a request for its affiliation with IUBS. Without success, however, because that particular niche was already occupied by IOBC since 1955.

OILB changed its consultative status with FAO (Food and Agriculture Organization of the United Nations) into a liaison status. This closer cooperation between OILB and FAO was stimulated by the fact that V. Delucchi held a double function both within OILB and FAO (with responsibilities in the FAO Division of Plant Production and Protection).

1968: The turning point in IOBC history

The 4th General Assembly held 26-29 March 1968 at Paris marks an important turning point in the history of OILB. The entire Council - with several members acting without interruption since the beginning (Table 1) – was replaced by a new Council of 9 individuals with **E. Biliotti** (F, President), V. Benvenuti (I, Vice-President), A.J.F. Castel-Branco (P, Vice-President), J. de Wilde (NL; Vice-President), **V. Delucchi** (CH/FAO, Secretary General), Mathys (EPPO, Treasurer) and M. Arroyo Varela (E), Z. Düzgünez (Turkey) and H. Steiner (D) as members.

OILB counted now 5 Commissions (Documentation; Publications; Taxonomy of Entomophages; Pathology of insects and microbiological control; Integrated Control) and 10 Working Groups (Integrated control in orchards; San José scale; *Leptinotarsa*; Olive pests; Defoliators in forestry; *Hyphantria cunea*; *Formica rufa*; Insectes xylophages; Citrus scales; Tropical pests). The operational annual budget of the organisation at that time was about CHF 100'000 (ca. EURO 65'000).

Two recommendations of the GA 1968 indicate and document for the first time the potential of the General Assembly as regulating power. The first recommendation is signalling the increased importance given to the integrated control approach. Since the Commission on Integrated Control had focussed its attention since 1958 almost exclusively on the WG “Integrated control in orchards” (led up to 1968 in double function by H.J. de Fluiter /NL) the General Assembly recommended that the Commission (under new chairmanship of J. de Wilde/NL) continued the activities of the orchard group (new chairman H. Steiner/D), but expanded its range by establishing a new WG on Integrated Control in annual crops and a new WG on Integrated Control in protected crops. The second recommendation concerns the termination of one of the first WG established in 1957 (Biological control of *Leptinotarsa*).

This new Council influenced significantly the future shape of OILB. The reports of that time are suggestive that the old patterns of the organisation were somehow worn out and that the change imposed by the General Assembly did not occur without internal frictions.

The Council established a new Commission (Autocidal Control, chaired by J. Ticheler), 3 new WG (Autocidal control of *Carpocapsa* and *Adoxophyes*; Autocidal control of *Rhagoletis cerasi*; and Autocidal control of *Ceratitis capitata*) and dissolved the Commission on Documentation. The spread activities of the forestry oriented Working Groups were now coordinated by a Working Group on Biological Control in forests (chaired by P. Grison). Noteworthy is a first indication given in the annual report of the WG Integrated control in orchards about the desirability to establish rules for measuring the side-effects of pesticides on antagonists. H. Steiner as convenor of the group had been contacted by the German plant protection service proposing a cooperation with OILB to establish guidelines for testing the side-effects of pesticides that could possibly become part of the official registration process. OILB did apparently not react immediately to this request but this matter was raised again at the General Assembly 1971.

1968 was also a milestone with respect to the **quality of reports**. Delucchi, the new Secretary General, published for the first time the proceedings of a General Assembly as off-set document (and precursor of the later Bulletins) entitled “Comptes Rendus de la 4e Assemblée Générale” both in French and English. Steiner and Baggiolini published the first title in a series of remarkable OILB brochures: “Anleitung zum integrierten Pflanzenschutz im Apfelanbau” (Introduction to Integrated Plant Protection in apple orchards), followed in 1969 by the French version “Introduction à la lutte intégrée en vergers de pommiers” (by Benassi & Milaire).

1969: The year of confrontations and agreements

The confrontation between the two organisations claiming international leadership in biological control, namely IACBC and IOBC seemed to culminate. The efforts of IACBC, focussing on the English speaking world, to get the status of an IUBS-affiliated organisation were not successful. The long lasting forth and back movements between the two organisations and the final solution of this confrontation reached in 1969 can be summarised as follows:

IUBS considered the existence of two international bodies with almost identical objectives undesirable and explored the possibility of having one single organisation concerned with biological control which could satisfy the needs of the majority of biological control research workers and institutions.

OILB and IACBC representatives met three times and prepared a draft document to be discussed at a joint meeting of all parties involved. Given the importance of this negotiation we mention here the persons participating in a joint IUBS/OILB/IACBC ad hoc committee preparing the final draft of the future statutes: G.A. Beglyarov, E. Biliotti, P.S. Corbet, C. Davis, P. de Bach, V. Delucchi, G. Mathys, R. Sailer, F.J. Simmonds, F. Wilson and K. Yasumatsu.

By initiative of F. Stafleu, Secretary General of IUBS, an agreement was finally reached at a historic meeting between OILB, IACBC and IUBS held 17-19 November 1969 at Amsterdam. The meeting was attended by 34 key persons in biological control. At the end of the meeting participants did agree

- on the name (IOBC: “International Organisation for Biological Control of Noxious Animals and Plants”),
- that *ENTOMOPHAGA* would remain the journal of the organisation
- on the internal structures of the organisation with regional sections
- on the statutes
- on the financial principles
- on a first slate of candidates for the new Executive Committee to be presented at the 5th General Assembly of OILB/IOBC in 1971 (i.e. P. DeBach/President; E. Biliotti and F. Wilson/Vice-Presidents; V. Delucchi/Secretary General and F.J. Simmonds/ Treasurer).

1971: The Global IOBC

Among the many general questions discussed and resolutions passed by the 5th General Assembly in Rome (= 1st General Assembly of IOBC/WPRS) the following reflects a bit the general atmosphere:

- The Royal Society (London) joined IOBC as first institutional member from the United Kingdom, followed a few months later by the Agricultural Research Council.
- The topic of the scientific symposium held in conjunction with the General Assembly, anticipating later developments with respect to quality control concepts, was “The implication of permanent insect production” with presentations given by M. Mackauer, K.S. Hagen and E.Boller.
- In 1971 IOBC (now IOBCwprs) had

5 Commissions

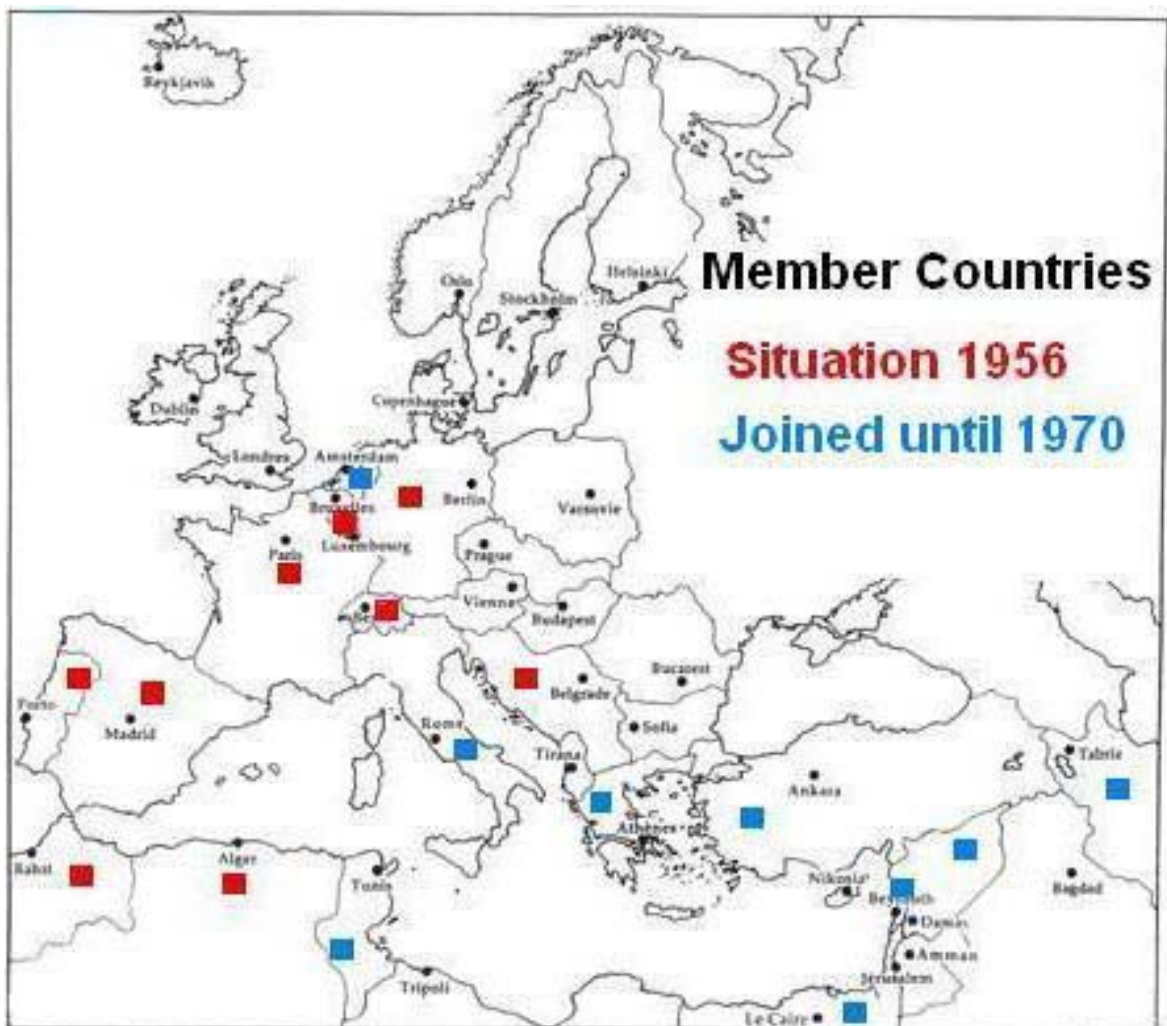
- Taxonomy of entomophagous arthropods/Cl. Besuchet & P. Bovey;
- Publication and information/B. Hurpin;
- Integrated Control/ J. de Wilde;
- Insect pathology and microbial control/C.Vago;
- Genetic control/J. Ticheler) and

18 Working and Study Groups as follows:

- Integrated Control in orchards(1959) H. Steiner;
- IC in Mediterranean pine forest (1956) C.Dafauce Ruiz;
- IC in glasshouses (1968) L.Bravenboer;
- Biological control of olive pests(1967) Y.Arambourg;
- BC of citrus scales (1962) C.Benassi;
- BC of borers of gramineous crops/sugar cane in the tropics (1957) J. van Dinther & J. Brenière;
- Genetic control of *Carpocapsa* and *Adoxophyes* (1968) Th. Wildbolz;
- Genetic control of *Rhagoletis cerasi* (1968) E.Boller;
- GC of *Ceratitis capitata* (1968) L. Mellado;
- BC of *Saperda carcharias* (1968) G.M. Arru;
- Microbial control of *Lymantria dispar* (1968) L.Vasiljevic;

- IC in Brassica crops (1970) T. Coaker;
 - BC in soil pests (1970) R. Bardner;
 - Genetic control of *Hylemia* (1970) C. Pelereyts;
 - IC in cotton growing (1970) M. Karman.
 - Study Group on Genetic manipulation (C. Curtis)
 - Study Group on IC in cereals (G. Latteur)
 - Study Group on microbial control of *Carpocapsa* (G. Benz)
- The **geographical distribution** of the 11 founding countries in 1956 and of the 32 institutional members at the end of the “old” IOBC is shown in **Figure 4**. This institutional backbone of IOBC included in March 1971, arranged in decreasing order of institutional members, France (9, including overseas institutions IRCT, IFCC, IRAT, IRHO, IFAC with partial membership; Italy (4); Spain (3); Belgium (2); Portugal (2); Egypt (1), Germany (1), Greece (1), Iran (1), Libanon (1); Marocco (1); Netherlands (1); Syria (1); Switzerland (1); Turkey (1); Tunisia (1); Yugoslavia (1).
- The report of the Secretary General mentioned that the Executive Committee had tried to get the participation of institutes in the North of Europe, without any results.
- The International Union of Biological Sciences (IUBS) gave IOBC the status of a Section instead of a Commission.

Fig. 4: Geographical distribution of the institutional members in 1956 and before the establishment of Global OBC. (Only one member per country shown to facilitate reading)



The importance of the period of 1968 till 1971 in retrospect

This period can be considered an important turning point in the history of OILB. The reports published between 1968 and 1971 describe the step-wise development of a fundamental change leading to the establishment of Global IOBC in 1971. One of the personalities which were instrumental in this transformation was V. Delucchi, the Secretary General of IOBC from 1968 till 1971 and elected new Secretary General of Global IOBC. We quote here from his report as Secretary General given at the 5th General Assembly held in 1971 in Rome:

“The fortunate development (of IOBC) is due to the dynamic efforts of those directing the IOBC from its origins till 1968. Even if this long directorship by the same people certainly has its advantages, it resulted on the other hand in a certain inflexibility and in difficulties for the opening up to other continents where the work on biological control for the protection of plants and animals is even more important than in Europe.

Starting with the 4th General Assembly held in 1968 two lines of action were taken:

1. the internal structures were redefined and re-evaluated, helped by the valuable assistance of the scientific and technical bodies, which created at the same time a current of information between these bodies and the Members of OILB;

2. the external structure of the IOBC was enlarged to satisfy research workers and institutions of other countries in other parts of the world. This had been endorsed considerably by the IACBC (International Advisory Committee for Biological Control; dissolved in 1971) and by the IUBS (International Union of Biological Sciences) of which OILB had been a member since its foundation.

The internal modifications and the external, more open policy have been met with much criticism, sometimes injudiciously, sometimes out of a conception too restricted for such a wide field as biological control. There are, however sufficient indications to suggest that these two lines of action have given very positive results in furthering the interests of the Organisation.”(...) “The list of the new Working and Study Groups established since 1968 contains only three Groups of pure biological control; the others are based on programs of integrated control, reinforced by specific Groups on genetic control. (...) This rapid internal evolution of IOBC is in accordance with the general trend in Europe and the USA, that is, the feeling that an optimal solution of phytosanitary problems can only be found if the whole environment is considered. This environment is dynamic by definition; consequently even if the present day problems will probably not be the same as the future ones, as problems they will stay, and with them the Working Groups on integrated control, enlarging their activities. The evolution of “Integrated control in orchards” can be taken as an example: after 12 years of a very successful existence, this group can now enter the phase of practical application. But the problems are at least as manifold as before, necessitating an intensive international contact. International coordination limited to a relatively small zone such as France-Germany-Holland-Switzerland (in the 1960s these were the most active countries in the orchard group; remark EB) can be financially supported. If, on the other hand, the Mediterranean Region (olive pest or of citrus pests) and the Near and Middle East (cotton pests) are to be included, the financial problems cannot be neglected.

Accordingly, the financial policy of the Organisation regarding the Working Groups was changed in 1969 in order to reactivate certain groups. The old formula of self-finance, probably useful ten years ago, was replaced by direct financial support of meetings and sometimes even of practical applications. Financial support, formerly an exception, is now (1971) standard practice.....The renewed activity of Working Groups has been detrimental to the other statutory bodies, notably to certain Commissions. But it has to be held in mind that the Working Groups constitute the most dynamic part of the Organisation, as well as the most interesting as regards international co-ordination.(...) Under these conditions the least active Groups are bound to disappear.”

Delucchi concluded his last report as Secretary General as follows: *“The paramount activity of the Secretariat, like that of the Executive Committee and Council, has been the intensification of structures charged with scientific and technical performances, especially the Working Groups, as well as the restructuration of the Organisation. At first sight, these two points appear to have nothing in common. A restructuration of the IOBC, however, will only be of value if this can stimulate and realise international co-ordination. Working groups on Trypetids, or on Carpocapsa, or on borers of*

graminaceous plants, or integrated control in citrus growing and orchards, cannot be restricted exclusively to Western Europe or the Mediterranean Region. These groups have an international vocation. Certain inter-regional activities have been started already through other organisations such as the Joint Division FAO/IAEA in Vienna, or directly with the International Biological Program (IBP), or with national groups beyond countries where IOBC is represented. But these accords are always transitory and dominated by personal interests.”

Global IOBC and regional sections

With the establishment of Global IOBC in 1971 in Rome, the common history of IOBC was terminated. The biogeographically defined IOBC Regional Sections can be considered 6 sisters, each with its individual history and different personality. There are no twins. All, except WPRS and EPRS, changed several times their names, their geographic range, their statutes (for details see Delucchi 1993). Three Regional Sections emerged almost immediately after 1971: WPRS (West Palearctic Regional Section), WHRS (Western Hemisphere Regional Section including North, Central and South America) and SEARS (South and East Asian Regional Section). In 1977 EPRS (East Palearctic Region Section) was established and (after an unsuccessful attempt in 1972) in 1989 ATRS (AfroTropical Regional Section). Unlike the rather fortunate situation within WPRS, large distances and widely diverging economic, social and political environments within most regional sections seem to have been important stumbling blocks in the early phase of Global IOBC making successful regional co-ordination and financial support of IOBC activities difficult.

The history of WPRS: From Biological Control to Integrated Production.

Changing concepts

It is interesting to read the main objective of Global IOBC as defined in 1971 in article IIa of the statutes that has not changed ever since and is binding for all regional sections:

“Art. II Functions

The Organization shall: a) promote the development of biological control and its applications in integrated control programs, and international cooperation to these ends. In these Statutes the term “biological control” means the use of living organisms or their products to prevent or reduce the losses or harm caused by pest organisms; b)....

Of interest is the link of biological control with integrated control. The personalities that had formulated the future statutes of Global IOBC in 1969 were fully aware of the importance to incorporate biological control into a larger context. They had decided to abandon the almost exclusive focus on biological control alone that had dominated the IOBC strategy before.

Whereas almost the identical wording can be found in the statutes of five regional sections, WPRS had widened the context in 1985 as follows:

“Art. II Functions

The Regional Section shall:

- a) promote the development of biological control of **pests and diseases and, in a more general way, integrated protection in the context of integrated crop production**; also to promote international cooperation to these ends;*
- b) collect, evaluate and disseminate information on biological and integrated controls;*
- c) promote national and international research, training, coordination of large-scale applications and maintain public awareness of the economic, ecological and social importance of new developments in plant protection;*
- d) arrange conferences, meetings and symposia, and take any other action to implement the general objectives of the Organization . “*

Before WPRS was ready to demonstrate this basic change of concepts in the statutes adopted by the General Assembly of 1985 at Stuttgart a chain of events had taken place that concerned personalities

and visions, the aspects of multi- and transdisciplinarity, and the development of a working modus possibly defined as “systems-approach”. All three components seem to be closely related.

➤ Personalities, their visions and teamwork

With the new statutes given in 1971 IOBC – and especially WPRS – has declared clearly the principle of voluntary cooperation. Members of the statutory bodies (i.e. Council, Commissions, Working Groups) do not receive payment for services and the Regional Section cannot recruit permanent personnel. The paramount importance of individual personalities devoted to common goals has been described already in 1971 by Delucchi in his last report as Secretary General as follows:

” This (coordination of efforts) asks for the help of everybody, for – even if an international non-governmental organisation is very little hampered by politics and does not know the administrative heaviness of big governmental organisations – she has been built almost exclusively on the goodwill of those people who will collaborate, and these are generally very few and consequently always the same.”

Indeed, major developments and changes within IOBC have always been triggered and driven by individual personalities rather than by institutional structures and procedures. The examination of the composition of WPRS Council from 1971 till 2005 shown in **Table 3** provides some explanations with respect to the development of WPRS.

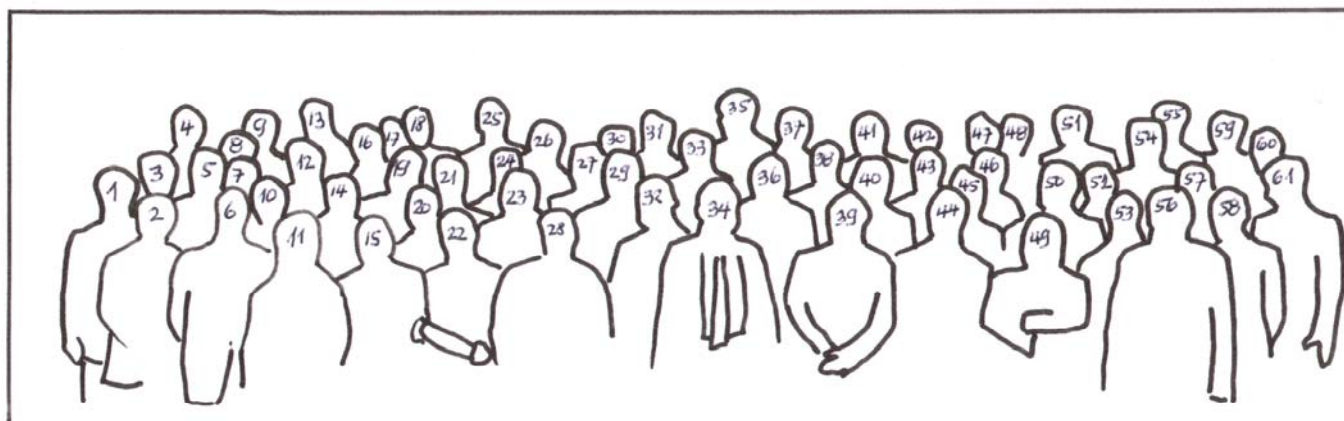
Table 3: The composition of IOBCwprs Council from 1971 till 2005

	Rome 1971 1st General Assembly of IOBCwprs	Madrid 1974 2nd General Assembly	Athens 1977 3rd General Assembly	Antibes 1981 4th General Assembly	Stuttgart 1985 5th General Assembly	Florence 1989 6th General Assembly	Lisbon 1993 7th General Assembly	Vienna 1997 8th General Assembly	Ascona 2001 9th General Assembly
President	Biliotti (F)	Biliotti (F)	Mathys (CH)	Way (UK)	Pelerents (B)	Cavalloro (I)	Royle (UK)	Esbjerg (DK)	Esbjerg (DK)
Vice Presidents	Mathys (CH) Pavan (I) Steiner (D)	Mathys (CH) Way (UK) Steiner (D)	Brader (NL) Way (UK) Jourdeuil (F)	Jourdeuil (F) Mellado (E) Pelerents (B)	Cavalloro (I) Klingauf (D) Russ (A)	Minks (NL) Royle (UK) Castañera (E)	Castañera (E) Degheele (B) Minks (NL)	Huber (D) Lavadinho (P)	Huber (D) Tirry (B) Albajes (E)
Secretary General	Brader (NL)	Brader (NL)	Ferron (F)	Ferron (F) Bassino (F)	Bassino (F)	Poitout (F)	Poitout (F)	Alabouvette (F)	Alabouvette (F)
Treasurer	v. d. Bruel (B)	Pelerents (B)	Pelerents (B)	Freuler (CH)	Freuler (CH)	Huber (D)	Huber (D)	Gessler (CH)	Gessler (CH)
Members	Bergerard (F) Dafauce-Ruiz (E) Mostafa Hafez (Eg) Kennedy (UK) Mourikis (GR)	Bergerard (F) Morales (E) Mostafa Hafez (Eg) Pavan (I) Sipahi (TUR)	Franz (D) Chodjai (Iran) Mahmoud Hafez (Eg) Pavan (I) Morales (E) Mourikis (GR)	Boller (CH) Mahmoud Hafez (Eg) Klingauf (D) Martelli (I) von Rosen (S) Russ (A)	Castañera (E) Poitout (F) Royle (UK) Zocchi (I) Minks (NL) von Rosen (S) Arroyo (E) Vasiljevic (YU)	Freuler (CH) Jarraid (TUR) Höbaus (A) Dickler (D) Degheele (B) Yamvriasis (GR) Esbjerg (DK) Frazao (P)	Afella (Maroc) Esbjerg (DK) Frazao (P) Gessler (CH) Kozar (H) Masutti (I) Pettersson (S) Yamvriasis (GR)	Afella (Maroc) Albajes (E) Baayen (NL) Bathon (D) Bigler (CH) Blümel (A) Buchelos (GR) Kerry (UK) L. Tirry (B)	Bathon (D) Besri (Maroc) Bigler (CH) Blümel (A) Kerry (UK) Maliathrakis (GR) Malavolta (I) van Lenteren (NL)

The transition of WPRS from a top-down, strongly centralised management (that had characterised IOBC up to 1968) to a bottom-up, participatory system was slow. At the 3rd General Assembly of 1977 at Athens a group of convenors requested from the Executive Committee that convenors of Commissions and Working Groups should have more access to the closed decision making system of Council. A strong recommendation in this sense was formulated by the General Assembly. Council followed this recommendation reluctantly.

A first meeting of convenors was organised prior to the 4th General Assembly of 1981 at Antibes (**Figure 5** shows the last picture taken of an IOBC General Assembly). The status of convenors was substantially improved by Council between 1981 and 1985 by designating Council members as liaison

Fig. 5: Participants in the 4th General Assembly of 12-14 October 1981 at Antibes



Names in **bold** face indicate persons having held the position of IOBCwprs president or secretary general; those given in *italics* indicate chairmen of IOBCwprs Commissions or Working Groups.

1. Miliare (F); 2. *Baggiolini (CH)*; 3. *Thiault (F)*; 4. Audemar (F); 5. Zocchi (I); 6. **Bassino** (F); 10. *Lairichi (Maroc)*; 12. Figiani (I); 13. Onillon (F); 15. Pal (WHO); 18. *Rabbinge (NL)*; 20. *Franz (D)*; 21. *Boller (CH)*; 22. *Pavan (I)*; 23. **Cavalloro** (I/CCE); 24. *Schmid (CH)*; 25. Vasiljevic (YU); 26. *Hurpin (F)*; 27. Russ (A); 28. Mamoud Hafez (Eg); 29. Salama (Eg); 32. **Ferron** (F); 34. **Mathys** (CH/EPPO); 35. **Brader** (NL/FAO); 36. *de Wilde (NL)*; 37. Feron (F); 38. *Hassan (D)*; 39. *Edwards (UK)*; 40. Arroyo (E); 41. Touzeau (F); 42. Morales; 44. *Ellis (UK)*; 45. Piedade Guerriero (P); 46. Garrido Vives (E); 48. **Grison** (F); 49. *Hussey (UK)*; 50. Labeyrie (F); 51. **Way** (UK); 54. Jourdeuil (F); 56. *Coaker (UK)*; 57. Iperti (F); 58. *Benassy (F)*; 59. Klingauf (D); 61. Blaisinger (F). Not present on picture: *Minks, Pelereents, Steiner,*

officers to the working units. The internal information flow was improved by the creation of *PROFILE* in 1984.

In fact, it is a peculiarity of IOBC as international organisation that the most important work is done in the Working Groups and Commissions, where specialists collaborate on a voluntary basis and can participate in the development of visions and projects without being limited by political and scientific institutions. This unique situation and team work is probably the key to the success of WPRS as J.P. Bassino described in his report as Secretary General addressed the the 5th General Assembly at Stuttgart:

“Our organisation, exerting without doubt a stimulating effect, has as most important characteristic the function of transporting ideas. The basic element is the promotion of integrated plant protection systems by a true team work that allows a highly efficient use of resources by pooling individual contributions”.

➤ **Multi-disciplinarity**

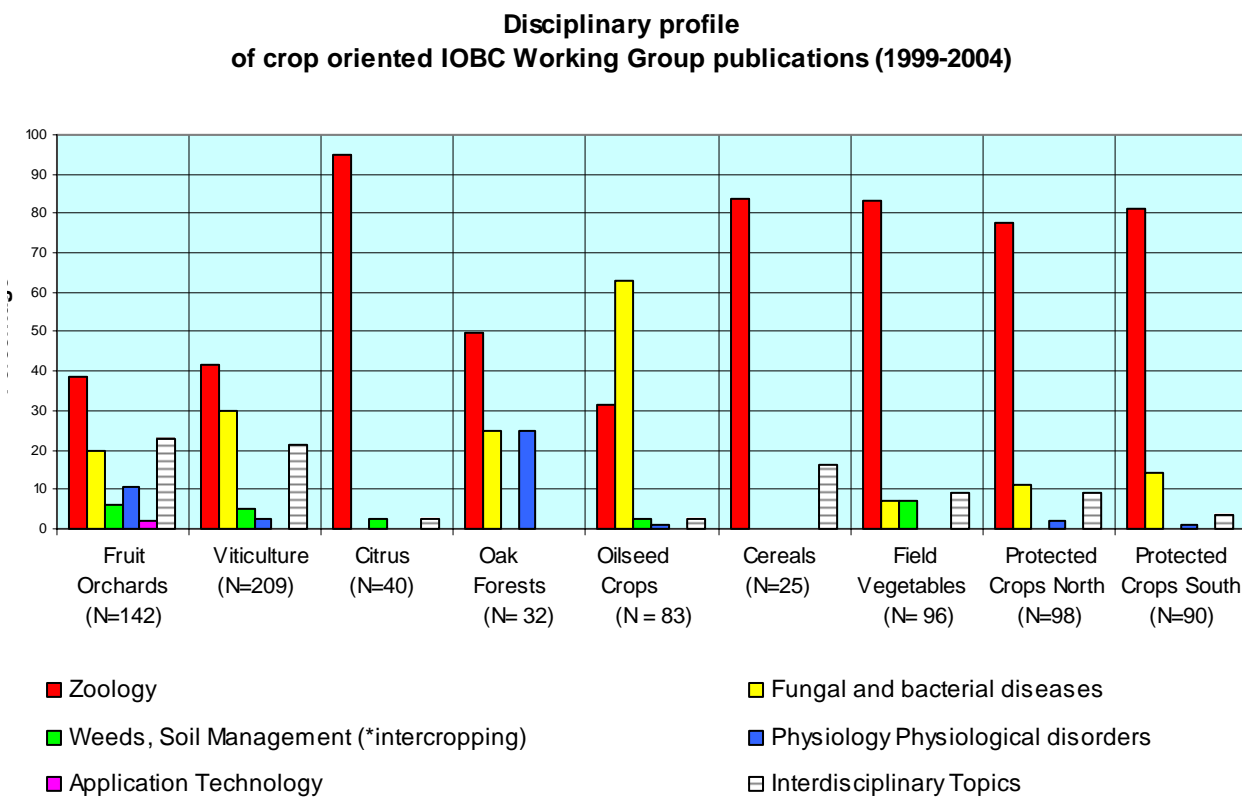
No doubt, the early period of IOBC focussed entirely on biological control of arthropod pests and was hence dominated by entomologists. This phenomenon was addressed in 1985 by Delucchi as President of Global IOBC as follows:

“The IOBC remains basically an organisation of entomologists. The 6 Global Working Groups address exclusively entomological problems. However, the topics of biological (and integrated) control in plant pathology and weed science are numerous. This unilateral focus is one of the major weaknesses I see here that need to be solved at the level of the regional sections and then followed-up by IOBC Global. Presently we identify a lack of equilibrium between the different disciplines in plant protection. Also, we should try to start discussions with representatives of plant pathology and weed science to find a common language that can be understood by everybody”. Whereas this situation has not changed much within the Global IOBC, it can be concluded in retrospect that early elements of multidisciplinary in WPRS working units are documented since the late 1960s. There is no doubt that the fruit orchard entomologists around Steiner, Baggiolini and Milaire (to name a few), followed in 1974 by entomologists active in viticulture, have been and still are the pioneers in promoting multidisciplinary and even transdisciplinary teamwork. It seems that at the European scale transdisciplinary activities in plant protection started to emerge only in the early 1980s under the label of phytomedicine. It did generate active information flow, team work and field projects more visibly and efficiently within national professional associations rather than at most scientific institutions (universities, national research centres). In 1985 David Royle was the first phytopathologist to be elected as Council member, to become Vice President in 1989 and President in 1993.

An examination of the Working Groups established, maintained and dissolved between 1956 and 2004 reveals that IOBC always has retained biological control as its central field of competence and therefore a strong entomological focus of its activities. An analysis of the papers published in the last 5 years in the proceedings of crop oriented WPRS Working Groups (**Figure 6**) seems to confirm this situation. It is evident that the working groups dealing with perennial agro-ecosystems (i.e. fruit orchards and vineyards) operate at a promising level of multi-, sometimes even transdisciplinarity, whereas entomological topics still prevail in annual crops.

However, it should be emphasised that since 1977 the development of topics is reflected in the increasing number of new “vertical” working groups addressing specific topics such as breeding for resistance, the use of models in plant protection, side effects of pesticides, functional biodiversity, GMOs etc.

Fig. 6: Interdisciplinary profile of crop specific WPRS working groups (1999-2004)



Most impressive is the coverage of modern IOBC topics by the “Proceedings of the International Symposium of IOBC/WPRS on Integrated Control in Agriculture and Forestry”, Vienna, 8-12 October 1979. This book, published 25 years ago, provides on 650 pages not only surprisingly modern and still valid wisdom, but is also the most complete overview and testimony of successful IOBCwprs activities. Another review of the state of the art including a set of recommendations concerning the practical implementation of integrated crop protection was presented in 1991 at the IOBCwprs conference held at Veldhoven/Netherlands (van Lenteren, Minks & de Ponti, eds. 1992).

A holistic systems approach complements the former taxonomic finesse of biological control and opens the door for a modern plant protection concept

The starting evolution of modern concepts of plant protection and first notions of sustainability in agricultural production can probably not be defined by a given event or by a specific date. It seems that in the early 1960s until the early 1970s the situation became ripe for pioneers to step forward with new ideas, concepts and even first field experiments to that end. FAO expert panels, the International Biological Programme (IBP) and visionary discussions in IOBC Working Groups had provided a fertile melting pot of new ideas. For IOBC the year 1976 is an important historic landmark as the visions about the place of integrated plant protection in the context of the entire farm operations found their precipitation in the historic “Message of Ovronnaz”. A group of 5 entomologists met in the village of Ovronnaz in the Swiss Alps, discussed and reviewed the situation, sorted out the important elements and produced a document that can still be considered as one of the corner stones of modern Integrated Production (Steiner, H., ed. 1977. *Vers la production agricole intégrée*. IOBCwprs Bull. 1977/ 4, 153 pp). We are grateful to Mario Baggiolini, promoter and participant in that meeting, for providing the historic picture taken at that occasion (Figure 7).

Key element of their conclusion was the necessity to remove the isolated view of chemical, biological and even integrated plant protection and to place all plant protection aspects into the context of the entire farm operations. The history of the normative IOBC Commission on Integrated Production is long and volatile.

Fig.7: Participants in the meeting of Ovronnaz, July 9-11, 1976



Participants of the meeting at Ovronnaz, July 9 – 11, 1976

(from left to right): G. Altner, H.Steiner, G. Celli, F. Schneider, M. Baggiolini

In 1977 IOBC Council was not yet ready to comprehend the importance of the emerging field of sustainable agriculture and of Integrated Production at the farm level as new comprehensive dimension. Starting with a first informal “Commission on Guidelines” established in 1974 as sub-unit of the orchard group, the Commission on Integrated Production remained focussed on apple production, changed its name several times, created an IOBC label for endorsed organisations in 1979. It died a silent death in 1987 because the situation was apparently not yet ready for a major change. How wrong! The development of commercial labels for agricultural products referring to Integrated Production was picking up speed. The multitude of self-declared standards and brands, the mixture of good quality and worthless labels started to irritate the customers. This was the situation when a group of IOBC specialists submitted in 1989 an urgent request to reactivate the IOBC Commission on IP guidelines. The newly elected Council decided to do so in 1990.

Integrated Production one of the key issues in the 1990s

The recommendations of the IOBC conference held in 1991 at Veldhoven (van Lenteren, Minks & de Ponti, eds. 1992) still focussed on the implementation of integrated crop protection. However, the developments in the early 1990s indicated clearly that on the market more comprehensive labels were shaping up and showed that Integrated Production was not only a vision of scientists or a commercial gimmick of the fresh produce sector. Sustainable production systems (such as IP and organic) were becoming an important component of the agricultural policy of many European countries. IOBC could regain its traditional leadership in Integrated Production by formulating and publishing in 1993 (El Titi, Boller & Gendrier 1993) the modern conceptual umbrella of Integrated Production and, as important part of it, of Integrated Plant Protection. Several IOBC products of the 1990s, among others, have received international interest and acceptance:

- In plant protection the chronological triade of prevention (indirect plant protection), monitoring and control (direct plant protection) (Boller et al. 1998);
- The IOBC standards for Integrated Production guidelines (Boller et al. 2004);
- The preparation of crop specific IP guidelines in close collaboration between the Commission of IP Guidelines and Endorsement and the respective IOBC Working Groups;
- The establishment of an international endorsement service for regional farmers' organisations operating according to IOBC standards.

Orchard specialists were again the first specialists within IOBC to prepare in 1990 a modern version of an IP guideline for pome fruits that incorporated in its 2nd edition of 1994 the new IOBC concept and standards. These crop specific guidelines III were followed by viticulture and the arable crops in 1996. By end 2004 WPRS has published crop specific guidelines for all major crop sectors in the WPRS region, i.e. pome fruits, stone fruits, grapes, arable crops, soft fruits, olives, citrus and field grown vegetables.

Topics at the beginning of the new millennium

The focus of WPRS activities after 50 years of successful history can probably best be identified by examination of the existing working units. At the 10th General Assembly of 2005 there are 4 Commissions ("Publication & Information"; "Identification of entomophagous insects"; "IP Guidelines and Endorsement"; "Harmonisation of Regulation of Biological Control Agents") and 19 working groups. Ten of them are "horizontal" groups dealing with integrated protection of specific crops, forest or stored products. The majority of them look back to a long history; they are the backbone of WPRS and continue more or less the traditional and effective IOBC working pattern (see **Figure 6**). Five Working Groups address specific aspects in support of Integrated Plant Protection (Pesticides and beneficial organisms; Breeding for plant resistance; Pheromones and other semiochemicals; Induced resistance in plants; GMO's in IPP) and 4 cover multidisciplinary or transdisciplinary topics (Multitrophic interactions in soil; Insect pathogens and entomoparasitic nematodes; Integrated control of fungal and bacterial plant pathogens; Landscape management for functional biodiversity).

One of the most recent adaptation of IOBC concepts is the new definition of the Integrated Production standard as published in 2004 (Boller et al. 2004). It does not only specify the IOBC position on total food quality but introduces also an IOBC tool box for the practical application of IP and IPP at the level of regional farmers' organisations and the individual farm.

The situation described by Delucchi in 1971 at the 1st General Assembly of WPRS is strikingly similar to the present one:

"The list of the new Working and Study Groups established since 1968 contains only three Groups of pure biological control; the others are based on programs of integrated control, reinforced by specific Groups (...). This internal evolution of IOBC is in accordance with the general trend in Europe, that is the feeling that an optimal solution of phytosanitary problems can only be found if the whole environment is considered. This environment is dynamic by definition. Consequently, even if the present day problems will probably not be the same as the future ones, as problems they will stay, and with them the Working Groups on integrated control, enlarging their activities".

Conclusions and outlook

Reviewing the history in regular intervals allows to draw certain conclusions as to the past and the future. As mentioned in the introductory chapter, it is evident that IOBC is extraordinary in many respects. IOBC is an international organisation without permanent staff, without permanent headquarters, without offices and archives. It is financed by official institutional members, individual and supporting memberships whilst maintaining full independence. It is an organisation with high international reputation and low budget, operated on a voluntary and honorary basis by a motivated community of independent scientists and extension specialists. It is an international organisation with a long tradition and reputation as trend-setter, identifying, addressing and developing emerging future

fields of interest in the context of a sustainable agriculture. It has certain characteristics of a migrating circus with frequently changing artists.

What has been the impact of IOBC on important developments in agriculture ? Significant contributions of IOBC activities can be documented; the overall impact on political developments is less easy to assess. General or theoretical recommendations of an NGO (not only IOBC) addressed to politicians and decision makers have very rarely produced measurable precipitations in governmental documents, but IOBC has certainly been crucial to get biological control and IPM on the agenda of many national and several international agricultural organisations. More successful was the potential of IOBC to provide at the appropriate time practical, science based and field proven solutions for important and urgent problems and technology gaps in crop protection and production.

Therefore, it can be speculated that the successful history of IOBC will continue if the activities are not only limited to the organisation of conferences and symposia focussing on the internal exchange of information. Working Groups are essential to discuss often unpublished progress in biological control and IPM, and to establish collaborative projects which are essential to develop efficient IPM and IP programs. These traditional and important activities should, however, be supported and complemented substantially by the development and publication of an IOBC toolbox with simple, scientifically sound and field tested tools for the successful application of sustainable plant protection and production processes and procedures at the farm level.

In addition, the general public, policy makers and actors on the market need to be made aware of the many excellent successes achieved in biological control and of the possibilities to use this control method on a much larger scale while at the same time supporting and increasing biodiversity.

Acknowledgments

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