



IOBC

Global

International Organization
for Biological Control



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IOBC is affiliated with 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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Message from the President:

Just a short message from me this time. Most of the news from the last six months has been covered in detail elsewhere in this newsletter. For example, our workshop in Engelberg was very successful and worthwhile, and the main points to emerge will be presented and available for discussion at our International Congress of Entomology (ICE) Symposium in September this year. In addition, many of the presentations will be published in a special issue of *BioControl*.



A new Global Working Group on Invasive Cacti has been proposed and supported by the Executive Committee and Executive Council. This will be coordinated by Dr. Ana Novoa from Stellenbosch University, South Africa. Ana and her colleagues are working on a website for this WG, so that should be available with more information soon.

The new Asia-Pacific Regional Section Working Group on Predatory Mites as Biological Control Agents will be holding

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holding its first meeting in May this year in Beijing, organized by Prof. Xuenong Xu, CAAS, Beijing and colleagues.

We are now starting to make plans for the IOBC General Assembly to be held on 26 September, 2016 in Orlando, Florida during the International Congress of Entomology (ICE). We are planning for the election of officers to take place before the General Assembly, so please give some thought to nominations for the Global Executive Committee, and send these through via your Regional Sections.

If you are planning to attend the ICE in Orlando, please take the time to attend the IOBC General Assembly. The exact venue will be confirmed nearer the time, and we look forward to catching up with you there.

Best wishes to you all for 2016.

Barbara



Don't forget to register for the International Congress of Entomology in Orlando, Florida, USA taking place September 25-30, 2015. There will be four IOBC-sponsored symposia, plus a host of additional talks related to biological control and IPM.

You can see the full list of all symposia here:

<http://ice2016orlando.org/scientific-program/symposia/>

and registration information here:

<http://ice2016orlando.org/registration/>

Biocontrol 2016: 3rd International Symposium on Biological Control of Plant Bacterial Diseases, Belgrade, Serbia

Contact: Dr Petra Markovića, biocontrol2016@gmail.com

Website: <http://biocontrol2016.org>



For more information on upcoming biocontrol meetings and symposia, see:

www.iobc-wprs.org/events/index.html

www.iobcnrs.com/index.php/events-calendar

IOBC Workshop in Engelburg, Switzerland:

There are a number of scientific, economic, social and cultural impediments to wider implementation of biological control worldwide. These include the political and marketing power of chemical industries, the emergence of genetically-modified plants, the downsizing of national research facilities devoted to biological control, and recent national and international legislation regarding the export, import and release of biocontrol agents across national boundaries. The demand for alternatives to chemical pesticides is rapidly increasing throughout the world, due to human and livestock health problems, environmental concerns, and increases in pesticide resistance. This is now creating a window of opportunity for greater adoption of biological control.

This context is thereby ideal to reassess biological control and identify options to take advantage of a rapidly evolving situation. Accordingly, IOBC organized a workshop in Engelberg, Switzerland, from October 11-15, 2015 and brought together 19 participants from around the world and from different disciplines to:

- 1) evaluate the current issues, constraints and needs for modern biological control worldwide;
- 2) identify tangible options for streamlining and facilitating biological control, for consideration by national and international entities, as well as researchers and practitioners involved in pest management;
- 3) promote the practice of biological control through the publication of original documents that provide credible, well-documented ways to understand scientific and societal issues that link biological control to human well-being and sustainable pest management;
- 4) identify scientific research advances that may help to increase biological control success rates, economic returns, and adoption.

The outcomes of the Conference will be reported to the international community of researchers and practitioners in pest management. A report will be disseminated in 2016 to all IOBC members through the Global Newsletter and Website. We have also reached an agreement with *BioControl* to edit a special issue on concepts and opportunities in biological control. IOBC is also organizing a symposium for the next International Congress of Entomology in 2016 that will summarize some of the outcomes of the Engelberg workshop. Furthermore, IOBC will develop an action plan based on the conclusions of the workshop.

This workshop would not have been possible without the generous financial contributions of the International Union of Biological Sciences (IUBS) and Koppert Biological Systems.





Participants in the IOBC workshop in Engelberg, Switzerland; October 11 - 15, 2015.

Pictured from left to right [bottom row]: Matthew Thomas; Kris Wyckhuys, Alberto Urbaneja, Jianqing Ding, Barbara Barratt, Franz Bigler; [row 2]: Joop van Lenteren, Jacques Brodeur, Roy van Driesche, George Heimpel, Cliff Moran, Richard Stouthamer; [top row]: Karel Bolckmans, Urs Schaffner, Peter McEvoy, Ulrich Kuhlmann, Jürgen Köhl; [not pictured]: Russell Messing, Matthew Cock.

BioControl, the official journal of IOBC, is very pleased to inform you that the FIRST VIRTUAL ISSUE of the journal is now available.

Virtual Issues are compiled in close collaboration with the Editor-in-Chief, Eric Wajnberg, as well as Associate Editors Patrick De Clercq and Arne Janssen, to focus on cutting-edge topics. They present key articles that have been published in the journal over the course of recent years.

VIRTUAL ISSUE No 1: Predator behaviour and life-history traits important for biological control.

For Table of Contents and accompanying editorial, see:

<http://www.springer.com/life+sciences/entomology/journal/10526>



<http://link.springer.com/journal/10526>

It is time to begin the process for electing a new Executive Committee for IOBC Global.

By this announcement, we are opening the call for nominations for a new IOBC Global Executive Committee. As a reminder, the positions open for nomination include President, Secretary General, Treasurer, and two Vice-Presidents. The position of Past President will automatically be filled by Barbara Barratt (for institutional memory and continuity). The term of office for all positions is four years.

For information about our organizational structure, and IOBC Statutes and By-laws, see:

<http://www.iobc-global.org/org.html>

Nominations should be supported by 10 regular IOBC members, and sent with the written consent of the nominee to the Secretary General at least 1 month before the dispatch of the voting documents (i.e., by March 1, 2016). Nominations should include a short biography, and an explanation of why the person qualifies for a specific function on the Executive Committee.



Candidate lists: All nominations received by the Secretary General will be sent to the Executive Council. The Council will draft candidate lists, possibly with alternatives for each function, and propose a list of candidates to the Executive Committee. All qualified nominations shall be submitted for a ballot to all regular members of IOBC by the Secretary-General at least 3 months before the closing date, (i.e., approximately April 1, 2016). Voting documents should be sent by regular post or email to the Election Committee. If sent by email, the document should bear the signature of the person who voted.

Election procedure: Two IOBC members who are not on the Executive Committee or Council will be asked by the Executive Committee, after consultation with the Council, to form the Election Committee. The Election Committee will count the votes at the end of the voting period (i.e., approximately July 1, 2016) and report to the Council at least 3 weeks before the General Assembly.

IOBC Global thrives only in relation to the energy and commitment brought on board by the entire membership (the General Assembly), and especially by the Executive Committee and the Executive Council. If you are dedicated to biological control, and have the time and organizational ability to make a contribution to the field and to your peers - please step forward and offer to serve.

The IOBC Green & Yellow List approach goes global with Plantwise

by Erica Chernoh and Ulli Kuhlmann, CABI



Green and yellow lists, a concept first developed by the Commission on 'Guidelines for Integrated Production' of the International Organization for Biological Control's (IOBC) West Palearctic Regional Section (WPRS) (www.iobc-wprs.org/ip_ipm/IOBC_IP_Tool_Box.html) to provide indirect and direct control options to growers for crop pests, has been adopted and expanded through the CABI led Plantwise programme. Based on a traffic light system, green and yellow lists are comprehensive selections of the most appropriate preventive and curative control methods for specific pest-crop combinations. Plantwise is a global programme which works in over 30 countries to help farmers lose less of what they grow. Working closely with national agricultural advisory services, Plantwise establishes and supports networks of plant clinics, run by trained plant doctors, where farmers can receive a diagnosis for a plant health problem and get practical science-based recommendations on how to manage it.

The Plantwise programme started training national partners to develop country specific green and yellow lists in 2012 to support the practical implementation of IPM at plant clinics. Plantwise adapted the green and yellow lists by making them pest specific and renaming them Pest Management Decision Guides (PMDGs), but otherwise follow the IOBC structure and concept.

Plant doctors have been enthusiastic about the green and yellow lists, which act as step-by-step guides for plant doctors to make recommendations to farmers based on IPM principles.

The green and yellow lists provide plant doctors with a quick easy-to-use reference to the best cultural, physical and chemical control options, as well as monitoring advice. The green and yellow lists have also supported plant doctors to make safer recommendations by excluding from the lists all WHO class 1a and 1b pesticides as well as those that are internationally restricted or banned (see Plantwise policy on the use of pesticides:

<http://www.plantwise.org/strategy/plantwise-policies/>)

Plant doctors are supported by the Plantwise Knowledge Bank, a free online resource for plant health advisors. Over 500 green and yellow lists have been developed in Plantwise countries and are published on the Knowledge Bank, and more are being produced every year. The green and yellow lists, as well as other factsheets and extension materials, can be found on the Plantwise Knowledge Bank at www.plantwise.org/KnowledgeBank.

The United States Agency for International Development (USAID) through the Feed the Future Innovation Lab for Integrated Pest Management program housed at Virginia Tech has awarded Virginia State University (VSU) a competitive grant of \$748,465 for the project entitled “**Biological Control of the Invasive Weed *Parthenium hysterophorus* in East Africa**”. The project will be implemented in four eastern African countries: Ethiopia, Kenya, Tanzania and Uganda with partners from South Africa and a gender specialist from Virginia Tech, through November 2019. Project objectives in Kenya, Tanzania and Uganda will be carried out in collaboration with CABI and partners in the four countries.



The partner institutions in the six countries are Virginia Tech in the U.S.; Ambo University, Ethiopian Institute of Agricultural Research, Haramaya University and Oromia Bureau of Agriculture in Ethiopia; Kenya Agricultural & Livestock Research Organization in Kenya; Agricultural Research Council-Plant Protection Research Institute (ARC-PPRI) in South Africa, Ministry of Agriculture and Food Security in Tanzania and the National Agricultural Research Organization in Uganda.

A total of 15 scientists from six countries will collaborate in implementing the project. This team is composed of entomologists, weed scientists, agronomists, a plant pathologist, an agricultural economist, a botanist, a plant ecologist, a land use management specialist a crop protection specialist and a gender specialist.

Dr. Wondi Mersie, director of research at VSU’s Agricultural Research Station and the project’s principal investigator, said the aim of the research project is to reduce the adverse impact of the weed parthenium on humans, crops, livestock and plants. Parthenium is an invasive weed that releases toxic chemicals harmful to other plants, some of which could be sources of valuable medicinal or industrial compounds.

The goal of this project is to build on the accomplishments of two previous USAID-IPM IL-funded parthenium projects to abate the spread and impact of the weed in east Africa. Specific objectives of the proposed project are to: (1) scale-up the rearing and release of two approved biocontrol agents, the leaf-feeding beetle *Zygogramma bicolorata* and the stem-boring weevil *Listronotus setosipennis* in parthenium infested areas of Ethiopia; (2) evaluate the establishment and impact of these released agents on parthenium, crops and biodiversity; (3) evaluate new parthenium biocontrol agents for their safety to non-target plant species under quarantine and, if suitable, seek a permit for their release; and (4) scale-up the release and monitoring of *Zygogramma bicolorata* in Tanzania, obtain the necessary permits for field release of *Zygogramma* in Kenya and Uganda; and release *Listronotus* and other natural enemies (evaluated in Ethiopia) in Kenya, Tanzania and Uganda.

Wondi Mersie, Ph.D., Associate Dean and Director of Research
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Feed the Future Innovation Lab for IPM

A Decade of Innovation

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IPM Innovation Lab
Feed the Future Innovation Lab for
Integrated Pest Management

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You might be interested to have a look at a report sent in by Muni Rangaswamy, Director of the IPM Innovation Lab based in Virginia, USA (and co-convenor of the IOBC Global Working Group on **Biological Control and Management of Parthenium Weeds**).

The report has some good information, and several examples of successful biological control. It summarizes 10 years of work in a style suited for a general audience. The Lab runs a program for IPM techniques for farming communities in developing countries.

see: <http://www.oired.vt.edu/ipmil/wp-content/uploads/2015/11/IPM-Innovation-Lab-10-Year-Special-Report.pdf>

PhD-student position available from April 2016:

University of Innsbruck, Austria

“Trophic assessment of ecosystem services provided by carabid beetles in agricultural land”.

see: <http://www.esc-sec.ca/jobs/PhD-student-position-Granivory.pdf>



Mass production of *Trichogramma dendrolimi* using eggs of *Antheraea pernyi*, and field application in the suppression of *Ostrinia furnacalis* in Jilin Province, China

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Communicated by Patrick De Clercq

The Asian corn borer, *Ostrinia furnacalis* (Guenee) (Lepidoptera: Pyralidae), is the most important agricultural insect pest in corn crops in northeastern China. Without any control measures, this pest can cause 10% grain damage in this region. *Trichogramma dendrolimi* Matsumura (Hymenoptera: Trichogrammatidae), one of the dominant native egg parasitoids in the locality, exhibits good biocontrol potential against corn borers. Since the 1980s, *T. dendrolimi* has been mass-produced using the large eggs of the Chinese oak silkworm, *Antheraea pernyi* Guérin-Méneville (Lepidoptera: Saturniidae) as a factitious host - and released on a large scale in Jilin Province, China.

In the last decade, the production process of *Trichogramma* using the large silkworm eggs has been greatly improved in terms of mechanization. Several devices have been developed for harvesting host eggs from female abdomens, drying the host eggs, and packaging parasitized eggs. Also, a diapause technique has been developed to facilitate the mass production of *T. dendrolimi*. It allows us to extend storage time to 90 days (from the original 30 days), while maintaining the quality of the stored *Trichogramma* with >95% diapause, diapause termination and emergence rate of parasitized eggs.

The cumulative area covered by releases of the diapaused *T. dendrolimi* from 2011-2014 was approximately 730,000 hectares. Since 2004, the total release area for *Trichogramma* for the control of corn borer has increased to 13.5 million hectares. The total financial contribution towards this program so far (including 2014) is about US\$ 73.2 million, which is almost entirely provided by the government. Since 2012, the release area with *Trichogramma* reared on *A. pernyi* eggs has comprised 2.3 million hectares annually, covering approximately 60% of the cultivation area of corn in Jilin Province.

The total number of parasitoids released per hectare is approximately 450,000, split into two batches of 225,000 wasps. The approximate cost per hectare is US\$ 5.8. With the inundative release of *T. dendrolimi*, the percentage parasitism of *O. furnacalis* egg masses in the field exceeded 70% for each year of 2004-2014.

Overall, it can be concluded that good success has been achieved in the biological control of corn borers in China using *T. dendrolimi*, based on what is probably one of the largest mass production and release programs worldwide.



cocoons of *Antheraea pernyi*



newly-emerged female adult



machine for packaging parasitized eggs

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Ecology of Aphidophaga

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www.aphidophaga.org



Biological Control and Management of Eupatorieae Weeds

Contact: Michael Day, Australia: michael.day@daff.qld.gov.au
<http://www.arc.agric.za/home.asp?pid=5229>



Biological Control of Diamondback Moth & other Crucifer Insects

Contact: Dr. Tony Shelton, USA: ams5@cornell.edu
<http://web.entomology.cornell.edu/shelton/diamondback-moth/>



Benefits and Risks Associated with Exotic Biological Control Agents

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 Dr. George Heimpel, USA: heimp001@umn.edu



Biocontrol of *Ostrinia* and Other Maize Pests

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Biological Control and Management of Parthenium Weed

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Commission on Biological Control and Access and Benefit Sharing

Contact: Prof. dr. Jacques Brodeur, CANADA: jacques.brodeur@umontreal.ca
www.iobc-global.org/download/659ABSinBiCoAddMat2009.pdf



Join an IOBC International Working Group.... or propose a new one!

Working groups can operate on the global level, or within a regional section...

Join IOBC...

Membership in IOBC is open to all individuals and all organizations, public or private, who desire to promote the objectives of biological control. There are four categories of membership:

- Individual Membership is open to all individuals engaged or interested in biological control.
- Institutional Membership is open to any institution, including government departments, academies of science, universities, institutes and societies participating in biocontrol activities.
- Supporting Membership is open to any person or institution interested in promoting the objectives of the Organization.
- Honorary Membership may be conferred by the Council to anyone who has made outstanding contributions to biological control.

For more information and application forms:

<http://www.iobc-global.org/member.html>



International Organization for Biological Control

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