IRAC
Insecticide Resistance Action Committee
eConnection

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www.irac-online.org

About This Issue

In this issue we report on the latest companies joining the IRAC Executive as well as feedback on various meetings organized or attended by members of IRAC International during the last few months. This includes the IRAC Public Health Team meeting with the Liverpool School of Tropical Medicine, attendance at the 3rd European Whitefly Symposium where a poster on Whitefly Resistance Guidelines with the Neonicotinoids was presented and highlights from the IRAC-US sponsored symposium at the 56th Annual Meeting of the Entomological Society of America. There is a report on various meetings attended by the IRAC Codling Moth Working Group with screenshots showing the new Neonicotinoid whitefly poster and Codling Moth poster. Finally there is brief update on the current position regarding the revision of Directive 91/414.

IRAC Membership News

Vestergaard Frandsen is the latest company to join the IRAC Executive which means that we now have a total of 14 member companies supporting the activities of IRAC International. Vestergaard Frandsen was founded in Denmark in 1957 and specializes in disease control textiles with a focus on water-borne and vector-borne diseases. They come to IRAC through the Public Health Team but are also participating in the MOA, Methods and Resistance Database WGs. We welcome Vestergaard Frandsen to the IRAC Network and look forward to their contributions to global IRM.

IRAC Public Health Team Meets Up With The Liverpool School of Tropical Medicine

In late November, the IRAC Public Health team held a two day meeting at the Liverpool School of Tropical Medicine. The Public Health team has grown in recent months, with representatives of Vestergaard Frandsen and Chemtura joining us. Unfortunately our new colleagues were unable to meet with us in person; however, we look forward to working with them during 2009.

The first day saw a lively meeting where it was agreed that a greater emphasis should be placed on educational material. The first edition of the "Vector Manual" was seen as a success with approximately 3000 hard copies distributed. It was agreed that during 2009, we should work on an updated edition to include developments in vector control. It was also highlighted that there would be great value in translating the document into Spanish, French and Portuguese. Among other items, the concept of Resistance Risk Assessments, RRAs, was raised. This is a fairly novel approach in vector control and it was agreed it could be a valuable tool for the introduction of new vector control measures. The day was rounded off with a tour of the highly impressive new wing of the LSTM.

From left to right: Mark Hoppé, Janet Hemighway, Bob Wirtz, Mark Rowland, John Invest, Karin Horn, Ralf Nauen.

The second day was a workshop designed to look at the issue of Discriminating Doses used to identify "resistant" mosquitoes. The WHO undertook a large exercise during the 1990s, culminating in published recommended DDs. However, it has been felt for a while that the chosen doses do not provide sufficient information on which to base a resistance management strategy. To help the team grapple with these issues, Prof. Janet Hemingway from the LSTM and Mark Rowland from the LSTHM kindly agreed to add their considerable experience and expertise to our discussions. Again, a very lively discussion ensued, looking at all aspects of the generation and interpretation of DDs in the laboratory, and field. This will be an ongoing discussion, however, the Liverpool meeting was an excellent start.

3rd European Whitefly Symposium

In March 1999 the European Whitefly Study Network (EWSN) was established as an EU funded concerted action project due to increasing whitefly problems in many agricultural and horticultural cropping systems and in particular because of an increased tendency of virus spread many European experts gathered to exchange information and follow a concerted approach on communication and education.

In October (20-24) 2008 the 3rd European Whitefly Symposium was held in Aguadulce, Spain – a region known to be one of the Mediterranean hotspots for whitefly infestations. The meeting was attended by more then 100 participants from the public and private sector, including university scientists, advisors, researchers from the agrochemical industry and biological control companies.

The Organizing Committee led by Dirk Jansen (Crop Protection Area, IFAPA) did an excellent job and five different sessions were offered to the participants, covering “Faunistics, Systematics & Ecology”, “Whitefly Transmitted Viruses”, “Genomics, Proteomics & Metabolics”, “Host Plant Interactions” and “Natural Enemies, Control and IPM”. Each session was started with a keynote lecture and in total more than 45 oral presentations were given and ca. 60 posters displayed. The IRAC Neonicotinoid Team displayed its brand-new poster on whitefly neonicotinoid resistance management (see the screenshot later in the newsletter). A few presentations were given on whitefly resistance to insecticides, for example covering the age-specific expression of neonicotinoid resistance in *Bemisia tabaci* (see also *Pest Management Science* 64 (2008) 1106) or the status of insecticide resistance of *B. tabaci* Q-biotypes in Spain and Crete. Many presentations in the “Control Session” dealt with biological control of whiteflies and it was interesting that in Almeria pepper production, chemical control was to a greater or lesser extent replaced by biological control, particularly due to the introduction of a new predatory mite, *Ambylseius swirskii*. Further information is available at www.ews3.org.

IRAC Codling Moth Working Group

The Codling Moth WG was very busy during the last couple of moths attending and presenting posters at the IOBC International Conference on Integrated Fruit Production in Avignon, the International Symposium on Codling Moth Control in Neustadt, and at the Western Orchard Pest & Disease Management Conference in Portland, Oregon. The opportunity was taken to distribute a questionnaire to experts so that an up to-date survey of codling moth resistance could be assessed. Results from the survey will follow in future issues of the eConnection. A screenshot of the codling moth poster is included at the end of the newsletter and the file can be downloaded from the IRAC website.

IRAC’s 25th Birthday & The Next IRAC Intl. Meeting

The next major meeting of IRAC International will be in Barcelona March 31st to April 3rd, 2009. This will be an opportunity for the IRAC Executive, IRAC International Working Groups and the IRAC Country Groups to get together and review progress on global resistance management strategies and develop plans for the coming year. There will also be a joint session with IRAC Spain with presentations from guest speakers outlining some of the particular resistance problems in Spain. 2009 is also the 25th Anniversary of the formation of IRAC so an opportunity for celebration and all IRAC members are invited.

Highlights of the IRAC-US sponsored symposium "Entomology without Borders - The Next Stage in Resistance Management"

The IRAC-US sponsored symposium "Entomology without Borders - The Next Stage in Resistance Management" was held at the 56th Annual Meeting of the Entomological Society of America in Reno, Nevada, U.S.A. As a global community with free trade around the world, there are more opportunities for invasive insects to be transported across borders. One of the challenges is to find ways to manage insects that are either non-native or have developed insecticide resistance prior to border crossing. The objective of this symposium was to discuss how to manage resistance of invasive insect species.

Ron Stinner and Karl Suiter, NSF Center for Integrated Pest Management gave the first talk of the symposium which was titled "Information Systems and Intelligence Analysis Critical to APHIS Agricultural Safeguarding. APHIS (Animal and Plant Health Inspection Service) is concerned about pests that will enter the U.S. There are many databases with lots of information about pests that have entered the U.S. and the challenge is to find ways to share this information in a timely manner. A good resource is www.safeguarding.org.

Tony Shelton, Cornell University gave a talk titled "The Resistance - A Never Ending Story". There are many potential opportunities for *Plutella xylostella* outbreaks in the U.S. and the question is how does the grower or consultant learn about these outbreaks and act upon this information. Local newsletters and monitoring at the point of introduction are two good ways to disperse information. It is also important that the grower is spraying the population when it has reached an economic threshold level rather than on a calendar approach.

Shelby Fleischer, Penn State University and Bill Hutchison, University of Minnesota gave a talk titled "*Helicoverpa zea*: tracking movement and addressing resistance of an annually re-invasive migrant". A number of cooperators across the U.S. track the movement and susceptibility to pyrethroids of *H.zea*. Penn State gives this information via Pest Watch which allows the growers and consultants to know the movement over a large area. This can be accessed via www.pestwatch.psu.edu

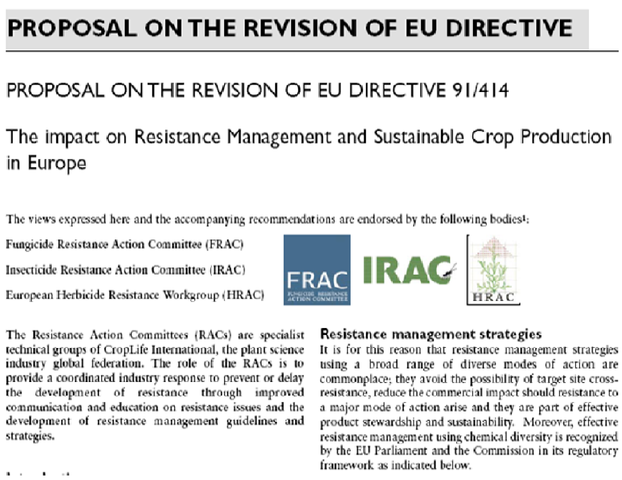
Scott Ludwig, Texas A&M University spoke about "Ornamental pest management on a global perspective". One of the biggest challenges in working with ornamental growers is to have them admit they have a problem that needs to be addressed. With the concern of inspection and shipping their plants around the world, the growers do not want to bring negative attention to them. This is challenging when it comes to invasive species such as the Chilli thrips and the Q variant of *Bemisia tabaci*.

Peter Ellsworth, John Palumbo, Al Fournier and Yves Carrière, University of Arizona gave a talk titled "Beyond Field Borders: Cross-commodity Resistance Management of Bemisia tabaci - Spatial Evaluation of Group Adoption of Neonicotinoid Guidelines". A survey was conducted that measured how well the resistance management programs in Arizona were followed by growers for *Bemisia tabaci*. In many instances, the growers did an excellent job in adopting the program. There have been fewer problems with Bemisia since the guidelines were initiated.

Revision of Directive 91/414

As part of a wider lobbying activity, IRAC along with the other RACs produced a consultative document stressing the importance of maintaining a sufficient toolbox of actives for good resistance management and highlighting the potential implications resulting from the proposed introduction of cut-off criteria under the revision of Directive 91/414.

The directive revision process continues but the recent Parliament Plenary vote in 2nd reading resulted in an improvement on the Commission's initial proposal and the Parliament's first reading. While cut-off criteria remains a key concern there now appears to be some scope that the process will be based on risk assessment with very few substances likely to be removed directly from the market. Clear definitions will need to be put in place, in particular for endocrine disruption but a number of initiatives are ongoing particularly through ECPA and the situation continues to be monitored.



PROPOSAL ON THE REVISION OF EU DIRECTIVE

PROPOSAL ON THE REVISION OF EU DIRECTIVE 91/414

The impact on Resistance Management and Sustainable Crop Production in Europe

The views expressed here and the accompanying recommendations are endorsed by the following bodies[1]:

Fungicide Resistance Action Committee (FRAC)

Insecticide Resistance Action Committee (IRAC)

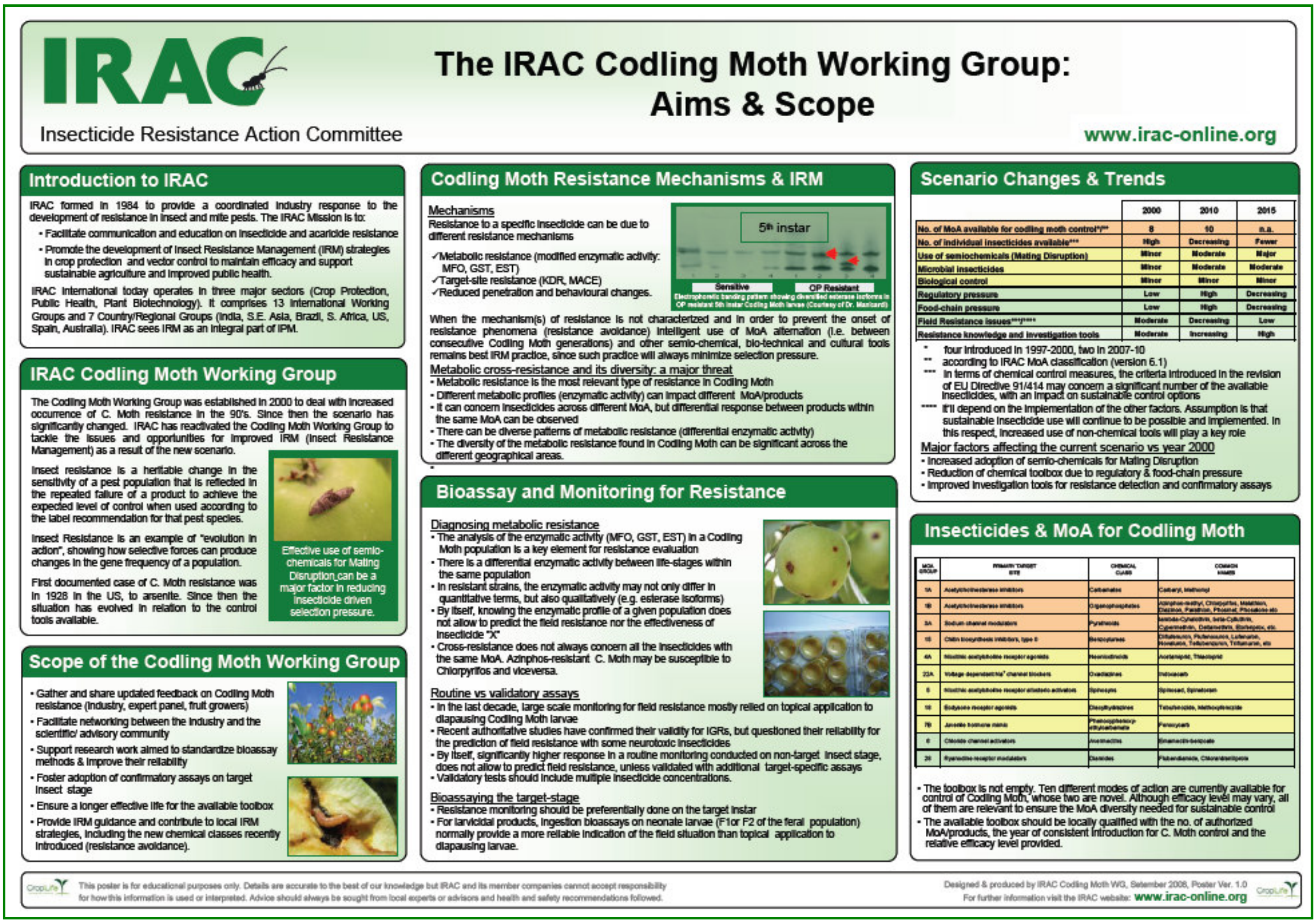
European Herbicide Resistance Workgroup (HRAC)

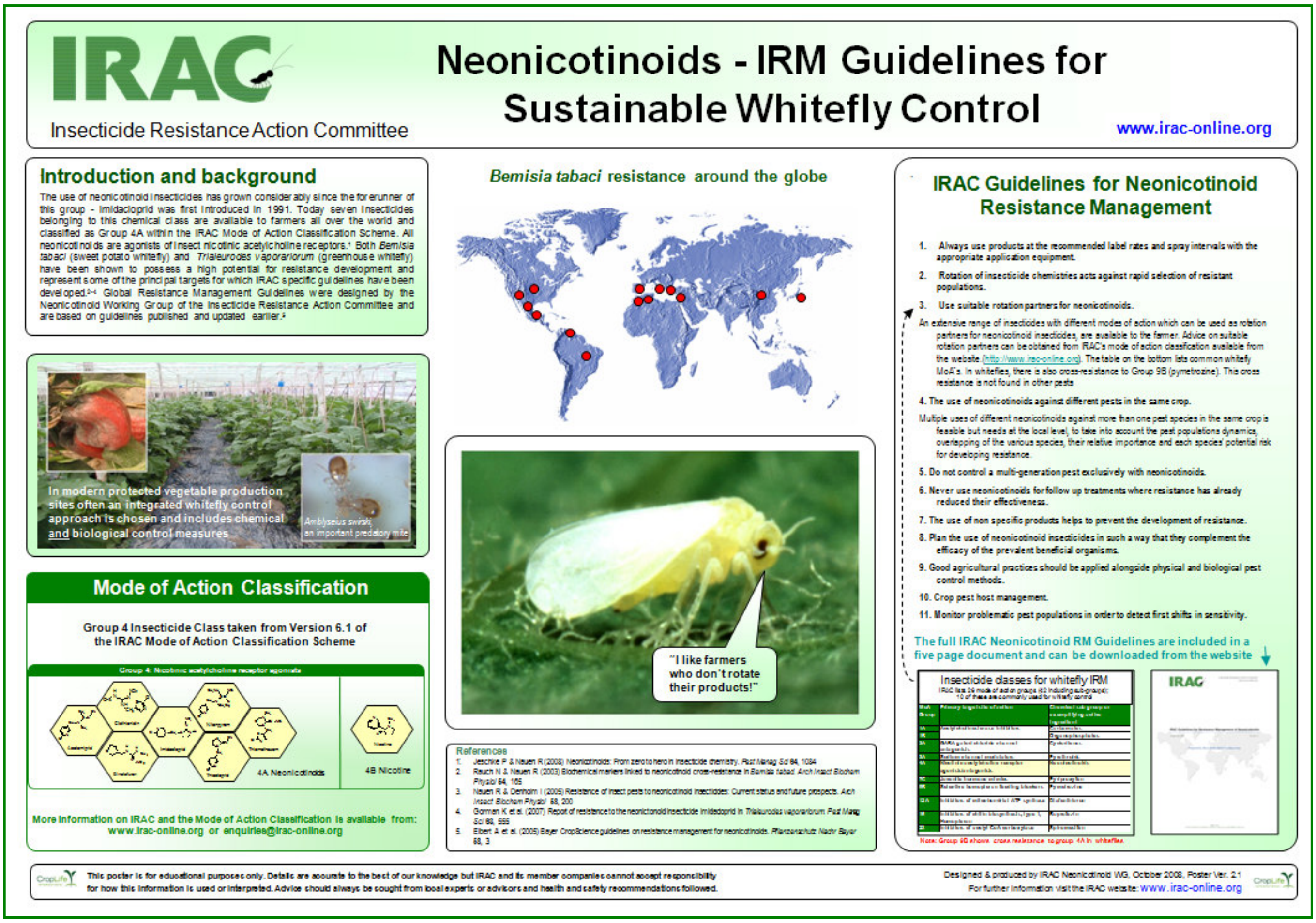
The Resistance Action Committees (RACs) are specialist technical groups of CropLife International, the plant science industry global federation. The role of the RACs is to provide a coordinated industry response to prevent or delay the development of resistance through improved communication and education on resistance issues and the development of resistance management guidelines and strategies.

Resistance management strategies

It is for this reason that resistance management strategies using a broad range of diverse modes of action are commonplace; they avoid the possibility of target site cross-resistance, reduce the commercial impact should resistance to a major mode of action arise and they are part of effective product stewardship and sustainability. Moreover, effective resistance management using chemical diversity is recognized by the EU Parliament and the Commission in its regulatory framework as indicated below.

Recent IRAC Posters (pdf files of the posters are available for download from the IRAC website)





Conferences & Symposia

- 3rd Intl. Symposium on Biological Control of Arthropods, Christchurch, NZ, February 8-13, 2009
- Crop Protection in Southern Britain, Peterborough, UK, February 10-11, 2009
- 5th European Mosquito Control Association Workshop, Turin, Italy March 9-13, 2009
- 2nd IOBC WG, Integrated Control of Plant Feeding Mites, Firenze, Italy, March 9-12, 2009
- German Entomological Society, Göttingen, Germany, March 16-19, 2009
- The Future of Crop Protection China, Shanghai, China, March 20-21, 2009
- 6th Intl. IPM Symposium, "Transcending Boundaries," Portland, OR, March 24-26, 2009
- 61st Intl. Symposium on Crop Protection, Gent, Belgium, May 19, 2009
- 8th International Symposium on Aphids, Catania, Italy, June 8-12, 2009
- NPMA, PestWorld, Las Vegas, USA, October 26-29th, 2009
- 5th International Bemisia Workshop, Guangzhou, China, November 9-12, 2009
- Entomological Society of America, Indianapolis, USA, December 13-17, 2009

Links to the conference websites can be found on the Events Page of the IRAC website www.irac-online.org/Events.asp

The eConnection is prepared and supported by the 14 member companies of the IRAC Executive

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