

prevention and control); economics of IAS; evaluation and assessment; and law and policy.

New initiatives launched include:

- A new website at: [www.gisp.org](http://www.gisp.org)
- A newsletter – the introductory issue is on-line now
- The Invasive Alien Species Toolkit (see *BNI* 22(4) [December 2001] 100N–101N) in French and Spanish, as well as English, now available for download as pdfs from the website
- Collating information for an interactive map, which will link to information from all the countries in the world. Sample information can be seen in the Regional Resources section of the website. At this early stage, GISP is calling for information about projects on IAS management, control or research from all countries. Email: [mcocks@uwc.ac.za](mailto:mcocks@uwc.ac.za)

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## International Trichoderma Workshop

The 8th International Workshop on *Trichoderma* and *Gliocladium* will be held on 20–23 September 2004 at Zhejiang University, Hangzhou, China, organized jointly by the university and the Mycological Society of China.

Topics will include:

- The role of *Trichoderma* and *Gliocladium* in natural ecosystems
- Applications: biocontrol; improvement of plant growth, disease resistance and yield; enhancement of plant resistance to abiotic stresses; enzymes for pharmaceutical production and for the food and fabric industries; bioremediation
- Taxonomy, proteomics, genomics and metabolomics

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## Conference Report

*Have you held or attended a meeting that you want other biocontrol workers to know about? Send us a report and we will include it in BNI.*

### Ecological Impact of Genetically Modified Organisms

In January 2003, a study group of the West Palaearctic Regional Section (wprs) of the International Organization for Biological and Integrated Control of Noxious Animals and Plants (IOBC) was established to consider the ecological impact of genetically modified organisms (GMOs). At its last meeting in September 2003, the council of the IOBC/wprs changed the status of the group to a working group. The first full meeting of this new working group was held in Prague, Czech Republic, on 26–29 November 2003. The local organizer was František Šehnal from the Entomology Institute of the Czech Academy of Sciences in ěeské Budějovice. More than one hundred participants from 23 countries attended the meeting. During the first 2 days, two keynote papers, 32 oral contributions and more than 40 posters were presented.

In her keynote paper, Angharad M.R. Gatehouse (University of Newcastle, UK) gave an overview of the methods routinely used for plant transformation, presenting examples of this novel technology with an emphasis on its contribution to agriculture; she also reviewed the current global status of GM crops. The opportunities for unintended effects (both predictable and unpredictable) to occur during transformation were discussed in detail in the light of such events occurring during natural recombina-

tion or classical plant breeding. She suggested that such unintended effects did not necessarily imply risks to the environment or, in the case of food crops, consequences for human health. In the second keynote paper, Jonathan Gressel (Weizmann Institute of Science, Israel) discussed possible ways to prevent transgene introgression from GM crops to other varieties and to related weeds or wild species (containment strategies) as well as ways to preclude the impact of introgressions should containment fail (mitigation strategies). Such technologies will allow transgenic crops to be developed for situations where they are especially needed, e.g. herbicide-resistant rice and barley that will allow control of closely related weeds without risk of the transgene moving into the weeds.

A large proportion of the presentations and discussions focused on the possible impact of insect-resistant GM crops, and *Bt*-maize in particular, on nontarget arthropods such as parasitoids, predators, butterflies and soil organisms. This focus came about because (a) most participants had a background in entomology, (b) there is a vast amount of published information and on-going research on the ecological effects of this particular GM crop, and (c) *Bt*-maize is the only insect-resistant transgenic crop that is currently grown commercially in Europe (i.e. Spain) and likely to enter the market in other European countries. Other important agronomic traits such as herbicide resistance were also addressed, but not in such detail. The exception, however, was a series of three oral presentations with results from the UK farm-scale evaluation of spring-sown herbicide resistant crops. This study made quite clear that detected effects such as differences in weed biomass,

seed rain or invertebrate abundance were due to changes in herbicide regimes and, connected to this, in weed abundance and management rather than to the GM trait itself.

In addition to laboratory studies, results from a number of field experiments with *Bt*-maize conducted in Germany, Hungary, Czech Republic, Spain and Turkey and with *Bt*-potato and *Bt*-canola (rape) conducted in Italy were presented. The studies were generally faunistic in nature, using a number of different sampling methods to record the population dynamics of a large range of arthropod species. None of the studies revealed any clear evidence for ecologically relevant differences between the *Bt*- and non-*Bt* crops. A strong positive 'side effect' was reported from a study in Turkey where 20 times less of the mycotoxin fumonisin was detected in *Bt*-maize kernels after harvest compared with non-*Bt* kernels.

Other ecological effects of GM crops that were covered in the presentations included (a) the potential for gene flow from GM crops to non-GM plants and the possible consequences of this event, (b) unintended effects of GM crops such as probiotic effects on nontarget herbivores and (c) regulatory issues, especially the importance of post-release monitoring. This latter topic was discussed in detail in relation to *Bt*-maize and nontarget butterflies.

Unfortunately some relevant fields of study were absent or only marginally represented. These included the impact of GM crops on soil function/organisms and studies on GM organisms other than plants. Furthermore, the need was felt to involve botanists/weed specialists whose knowledge would be important for the discussion of gene flow from GM crops to non-GM crops or wild relatives.

On day 3 of the meeting, the following seven half-day long workshops were held (workshop organiser in parentheses):

- Hybridization/fitness of hybrids (Detlef Bartsch, Robert Koch Institute, Germany and Hans C. M. den Nijs, University of Amsterdam, The Netherlands)

- Monitoring/bioindicators (Salvatore Arpaia, Italian National Agency for Energy and Environment, Italy)
- Biodiversity implications – off crop (Andreas Lang, Bavarian State Research Center for Agriculture, Germany)
- Impact of GM crops on natural enemies (Jörg Romeis, Swiss Federal Research Station for Agroecology and Agriculture, Switzerland)
- Impact of GM crops on soil organisms/functions (Wolfgang Büchs, Federal Biological Research Centre for Agriculture and Forestry, Germany)
- Resistance management (Achim Gathmann, RWTH Aachen, Germany)
- GM crops and pollinators (Stefan Kühne, Federal Biological Research Centre for Agriculture and Forestry, Germany and Dirk Babendreier, Swiss Federal Research Station for Agroecology and Agriculture, Switzerland)

There was a feeling expressed throughout the meeting that most risks associated with GM crops are similar to the risks of other agricultural innovations and should be evaluated in this context. The risks must be assessed on a case-by-case basis, i.e. separately for each crop, each type of genetic manipulation and, where appropriate, for the geographic region. Participants at the meeting agreed on the need to elaborate risk assessment methods that should be applied to all new agrotechnologies, GM crops included.

The proceedings of the meeting, including short workshop reports, will be published in 2004 as an IOBC/wprs Bulletin. The next full meeting of the working group will take place in the first half of 2005. If you wish to be included on the mailing list of this working group or need additional information, please get in contact with the convenor at the address below.

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