

## FINAL PROGRAM

# DDRN/BiosafeTrain/IOBC Global Working Group on GMOs workshop: “Environmental consequences of growing GM crops in the developing countries”

Copenhagen, Denmark, 20-30 November 2007

**Conference location: Meeting Room 05.2.527**

**University of Copenhagen, GeoCenter**

Øster Voldgade 10, 1350 Copenhagen K

### **Registration:**

Send a message with personal details, e-mail, intended contribution, to the Workshop Organizer: Dr. G. Lovei, Slagelse, Denmark (gabor.lovei@agrsci.dk).

Registration fee should be sent to:

University of Aarhus, Faculty of Agricultural Sciences Slagelse, Denmark.

Bank. Jyske Bank, Copenhagen

Account nr.: IBAN DK27 8109 0001 0175 33

SWIFT code: JYBADKKK

With the indication of the name of the participant and the code “F-02829”

Registration is also possible at the conference.

### **Registration costs**

*Full participants:* Dkr. 450/person (€60)

*Student participants:* Dkr.200/person (proof of student status necessary)

Registration cost includes access to all sessions, the right to present a talk or poster, morning/afternoon tea/coffe. It does not cover accommodation or meals.

## Program

### Day 1, 29 November 2007

8.30 –9.30 Registration & morning tea

9.30 Opening remarks

10.00 –11.15 Plenary talk & discussion – **POST-RELEASE MONITORING OF GENETICALLY MODIFIED ORGANISMS – IS IT POSSIBLE TO DEVELOP BLUEPRINTS?** Dr. Andreas LANG, Dr. Frank BERHORN, Dr. Heike SEITZ – University of Basel, Switzerland

11.15 – 12.15 Plenary talk & discussion - **WHY WE NEED STUDIES OF GENE FLOW BETWEEN CULTIVATED AND WILD PLANTS IN THE TROPICS** – Dr. Thure P. HAUSER, University of Copenhagen, Denmark

12.15 – 13.30 Lunch break

13.30 – 14.30 Plenary talk & discussion – **INSECT RESISTANCE MANAGEMENT AND MONITORING FOR BT CROPS WITH EMPHASIS FOR DEVELOPING COUNTRIES** Prof. David ANDOW, University of Minnesota, USA

14.30 – 15.00 Afternoon tea

15.00 – 16.00 Plenary talk & discussion – **MODELS OF SUSTAINABLE DEVELOPMENT AND THE CASE OF GENETICALLY MODIFIED PLANTS** - Dr. Mercy KAMARA & Prof. Brian WYNNE – Roskilde University & University of Lancaster, U.K.

16.00- 16.30 General discussion

### Day 2, 30 November 2007

9.00 – 10.30 Discussion groups

Group 1: Resistance Management & gene flow. Discussion leader: D. Andow

Group 2: Monitoring requirements. Discussion leader. A. Lang

Group 3: Social & economic consequences, development models. Discussion leader: M. Kamara

10.30 – 11.00 Morning tea

11.00- 12.30 Group reports & general discussion

12.30 – 12.45 Closing remarks & end of symposium

## **POST-RELEASE MONITORING OF GENETICALLY MODIFIED ORGANISMS – IS IT POSSIBLE TO DEVELOP BLUEPRINTS?**

Andreas LANG<sup>1)</sup>, Frank BERHORN<sup>2)</sup>, Heike SEITZ<sup>3)</sup>

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The legislative framework of the European Community based on the EU Directive 2001/18/EC requires post-release surveillance of any genetically modified organism (GMO) placed on the market and released into the environment, including a detailed monitoring plan. The objectives of the environmental monitoring are (i) to confirm that any assumptions of the GMO in the environmental risk assessment are correct regarding the occurrence and impact of potential adverse effects, and (ii) to identify the occurrence of adverse effects of the GMO or its use on the environment which were not anticipated in the environmental risk assessment. Following these two objectives, it is distinguished between (i) a case-specific monitoring, where possible effects identified in the environmental risk assessment should be observed (presumably immediate and direct effects), and (ii) a general surveillance where unexpected effects are monitored (mostly indirect and delayed effects). After selection of the parameters to be recorded during the GMO monitoring, the appropriate methodology has to be developed and applied for monitoring these parameters, including techniques for sampling and analysing. Here, we report on the activities of an expert commission of the German Federal Agency for Nature Conservation (BfN) and the Association of German Engineers (VDI) to develop standardised recording directives for the monitoring of butterflies and moths (Lepidoptera). Lepidoptera were chosen as a case example, because transgenic Bt maize events are already registered for cultivation in Europe, and especially large-scale growing of Bt maize may have negative consequences for species biodiversity of butterflies. Objectives, rationale and contents of the guideline for the monitoring of butterflies and moths will be presented and discussed. In particular, the paper will refer to (i) the suitability of Lepidoptera as indicators (for biodiversity), (ii) the selection of focus species, and (iii) the technical and scientific requirements for the performance of the monitoring procedure including area selection and sampling design as well as sampling intervals and methods. In conclusion, it is argued that the developed and described methods can serve as a generic blueprint for the monitoring of Lepidoptera in other cases and regions, too.

## **WHY WE NEED STUDIES OF GENE FLOW BETWEEN CULTIVATED AND WILD PLANTS IN THE TROPICS**

Thure P. HAUSER

Department of Ecology, University of Copenhagen, Denmark

The development and cultivation of genetically modified (GM) crops has spurred a surge of research into their effects on agricultural and unmanaged ecosystems. Most of this research has focused on the effects and impacts in temperate, rich regions of the world. Much less is known about the possible impacts in poorer tropical countries. This is unfortunate, as the benefits from such novel production systems may potentially be gained especially in these regions where losses to e.g. weeds and other pests are enormous.

In the talk, I will argue that gene flow between cultivated and wild related plants may be especially important in many tropical regions. Many crops have wild relatives that are weedy within the fields and with which they can hybridize. Transgenes may soon integrate in the weedy populations, which will break down the advantages from e.g. GM herbicide tolerance, and complicate resistance management in e.g. an insect resistant crop. Transgenes may also disperse by pollen from GM to and non-GM crops and contaminate harvests and complicate resistance management. Traditional cultivation systems with small farms and low organisation and education level are highly conducive for such gene flow effects.

I will further argue that already obtained knowledge from studies in modern temperate agriculture can in most cases not be transferred to cultivation systems in the tropics. Very different cultivars are often used by small scale farmers, and wild relatives are often different and adapted to other conditions. Seed production, exchange, and movement is obviously different, a factor that has not been in focus, albeit highly important.

Impacts of gene flow from GM crops may thus greatly erode the perceived benefits from introducing some GM cultivars, especially by shortening the time before pest species evolve to overcome the defense systems built into the crops. This time frame can be greatly extended by clever management, but in order to do so we need much more focused research into the agricultural and ecological dynamics into which the GM crops will be placed.

## **INSECT RESISTANCE MANAGEMENT AND MONITORING FOR BT CROPS WITH EMPHASIS FOR DEVELOPING COUNTRIES**

David ANDOW

Department of Entomology, 219 Hodson Hall, University of Minnesota, St. Paul, MN 55108 USA

In developed countries insect resistance management (IRM) has relied on the high-dose and refuge strategy. I will review the main costs of resistance and the key assumptions of this strategy. I will then discuss how successful IRM might be achieved in developing countries with special reference to Kenya, Brazil and Vietnam.

## **MODELS OF SUSTAINABLE DEVELOPMENT AND THE CASE OF GENETICALLY MODIFIED PLANTS –**

Mercy W. KAMARA, Brian WYNNE

Roskilde University & Centre for the Study of Environmental Change, University of Lancaster, U.K.