

South Asia Biosafety Program

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Key Messages from the International Symposium on Biosafety of GM Organisms

INAAM ULLAH, PH.D. STUDENT, NATIONAL INSTITUTE FOR BIOTECHNOLOGY AND GENETIC ENGINEERING (NIBGE), FAISALABAD



It was a great week in the serene, coastal city of Cape Town, South Africa, on November 9-14. I was there thanks to the International Society for Biosafety Research (ISBR) for the award of scholarship to attend the 13th International Symposium on Biosafety of Genetically Modified Organisms (ISBGM013). I was glad to have met with my mentors at Agroscope, Dr. Joerg Romeis and Dr. Michael Meissle, after more than two years since our last meeting. I was not surprised to see the people from the Center for Environmental Risk Assessment (CERA), including Dr. Morven McLean, Dr. Andrew Roberts and Ms. Libby Williams, there with their illuminating smiles and confidence boosting greetings. The excellent choice of the venue spoke for itself about the importance of the event and the caliber of individuals going to discuss the prospects and challenges faced by genetically modified organisms (GMOs) and their regulatory framework.

Listening to scientific lectures and discussions from 9am to 5pm for four full working days may sound crazy and could have been so, if there were not the people of highest stature for the subjects presented for discussion. It would have been dry and dull if the speakers were not as efficient and innovative in presentation skills as they are in execution of scientific work. I saw and listened to people for the first time who I have been reading about for several years, including Dr. Monica Garcia-Alonso, Dr. Hector Quemada, Dr. David Heckel, Dr. Wendy Craig, Dr. Karen Hokanson, Dr. Alan Gray, Dr. Raymond Layton and Dr. Alan Raybould. It felt like meeting childhood superheros. The range of the topics selected for discussion was diverse and inclusive of all the regional and international challenges faced by GMOs and their regulatory bodies. The topics that caught my special attention were "Advancing ERA, Fit for Purpose Risk Assessment", "RNAi and Risk Assessment of GE Plants", "Quality of Scientific Studies

Supporting Non-Target Risk Assessment of Transgenic Crops" and "Testing for Synergism Among Multiple Insecticidal Proteins Produced in Stacked Transgenic Events".

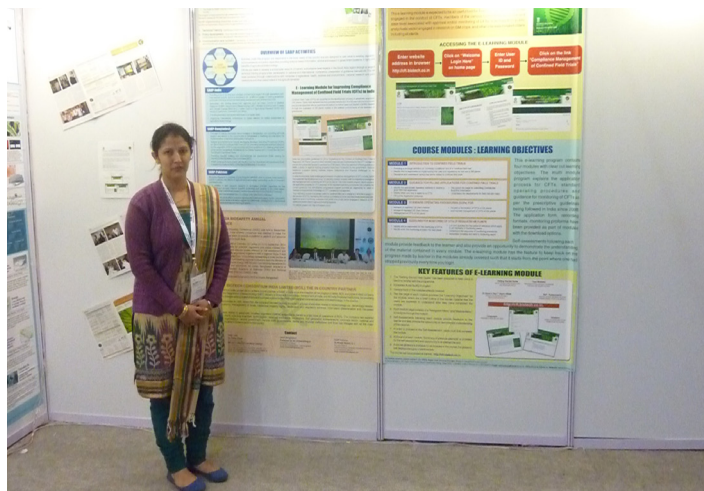
Fit for purpose risk assessment is very appropriate now, especially in low economy, developing countries of Africa and South Asia. With large populations to feed and clothe, and imminent food shortage in these countries, I feel it would be very harsh to spend money on risk assessment of traits already proven safe in other regions and crops. We must convey to the regulatory bodies of our countries to focus risk assessment on the most likely hazards of a GMO and compare it to the existing technologies. Adopting a tier system could be the key to eradicate many risk assessment steps and hence expenses of money, and time thereof. If we lag behind with these events, we will not only fail ourselves but also the trust of coming generations on this amazing technology.

Overall, the event was a spectacle of innovative science, purposeful discussion, and excellent food. The event was a success not only in terms of science but also in promotion of the culture and diversity of the region. All credit goes to the ISBGM013 committees and the team of local organizers led by Dr. Hennie Groenwald and Ms. Liezel Gouws. Such events increase awareness among the public, interaction among different scientific communities, and capacity building in terms of event management among local organizers. They also create special opportunities for early career researchers and students to learn scientific ethics and make long term collaborations. In the future, I would suggest a formal meeting of SABP colleagues about what we have gained from this important meeting of experts, and exchange our ideas to formulate an effective, conveyable message for South Asian regulatory bodies.

"Such events increase awareness among the public, interaction among different scientific communities, and capacity building in terms of event management among local organizers."

Observations from the India-U.S. Technology Summit

MR. DINAKAR RADHAKRISHNAN, DEPUTY GENERAL MANAGER, AND MRS. SONIA KAUSHIK, SENIOR PROJECT EXECUTIVE, BIOTECH CONSORTIUM INDIA LIMITED, NEW DELHI



The India–U.S. Technology Summit on Tackling 21st Century Challenges was organized by the Department of Science & Technology, Government of India, and the Department of State, United States of America, in collaboration with the Confederation of Indian Industry (CII). It was held on November 18-19, 2014 at the India Expo Centre, Greater Noida, in Delhi. The Summit was inaugurated by Dr. Harsh Vardhan, Union Minister of Science and Technology and Earth Sciences, Government of India.

The Summit was attended by a total of 1,700 participants. This event had the largest U.S. delegation to ever visit India, comprising of 300 people. More than 100 people of the U.S. delegation were very senior U.S. government officials and other CEOs of top U.S. companies, research institutions and academic universities. Dr. John P. Holdren, Assistant to the President for Science and Technology, Director of the White House Office of Science and Technology Policy, and Co-Chair of the President's Council of Advisors on Science and Technology, led the official delegation from the United States to the Summit.

This event saw high levels of policy dialogues. It also had 35 parallel business sessions on manufacturing, life sciences, clean and renewable energy, information technology and sustainable/smart cities. It focused on innovation, design and hi-technology, as well as all key drivers of knowledge economy.

The South Asia Biosafety Program (SABP) was showcased during this Summit. Biotech Consortium India Limited, as the in-country partner of SABP, put up a stall on activities under SABP in India. It included a set of posters as well as a live demonstration of the online course on confined field trials developed through this program. A large number of industry leaders, innovators, researchers, academics and government officials participated to exchange ideas, showcase their expertise and forge new partnerships to increase trade and investment. Several visitors, particularly young researchers and students, showed keen interest in knowing about activities under SABP.

KEY RESOURCES:

- To access the CFT online course mentioned in this article, please go to: <http://cft.biotech.co.in/>
- To see more information about the Summit, click on the event's webpage: <http://indoustechnologysummit.in/>

SPOTLIGHT ON THE BIOSAFETY RESEARCH IN PAKISTAN GRANTS PROGRAM

The Biosafety Research in Pakistan Grants Program (BRPGP) supports laboratory, field, and literature research that will significantly advance knowledge relevant to environmental risk assessment of genetically engineered plants in Pakistan.

The Biosafety Research in Pakistan Grants Program is managed by the Center for Environmental Risk Assessment (CERA), ILSI Research Foundation, as part of the biosafety component of the Pakistan Strategy Support Program (PSSP). The PSSP is financially supported by the US Agency for International Development (USAID) through the International Food Policy Research Institute (IFPRI), which manages PSSP. The Biosafety Research in Pakistan Grants Program recognizes the need for biosafety research as part of a broader effort to support science-based decision-making and policy development and will fund research aimed at addressing the effects of agricultural biotechnology, particularly transgenic crops, on the environment and biodiversity in Pakistan.

Grantees come from agricultural or environmental research institutions or universities in Pakistan or from international agricultural research centers involved in research relevant to Pakistan.

All grantees work to:

- Address the effects of genetically engineered (transgenic) crops on the environment.
- Be relevant to Pakistan and take place in Pakistan.
- Demonstrate applicability to environmental risk assessment of transgenic plants and regulatory decision-making in Pakistan

Over the next several newsletters, we will be introducing each of the 2014 grantees that are part of BRPGP.

2014 GRANTEE: Dr. Muhammad Irfan

JOB TITLE: Assistant Professor, Department of Biological Sciences

ORGANIZATION: Forman Christian College

PROJECT TITLE: "Risk Assessment of Transgenic Wheat with Enhanced Phosphorous Use Efficiency (PUE) and Increased Bioavailability of Iron and Zinc"

PROJECT DESCRIPTION:

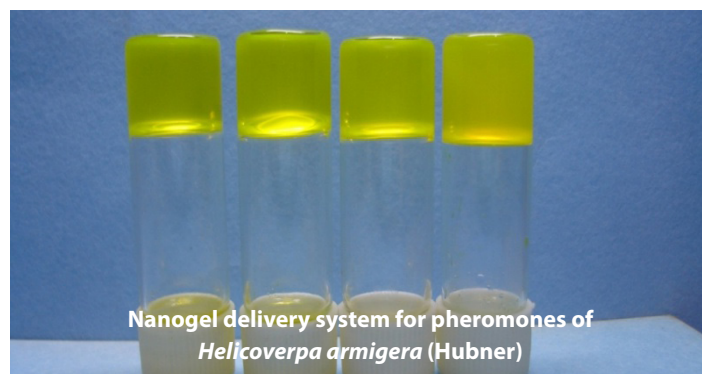
The proposed project will focus on toxicological risk assessment of transgenic wheat plants with enhanced phosphorous use efficiency (PUE) and increased bioavailability of iron and zinc and its impact on environment. The first part of the project is focused on the effect of these transgenic plants on the diversity of micro-organisms present in the rhizosphere and rhizoplane of the plants. This plant microbe interaction is very critical for better growth of plants under field conditions because of the interaction of these micro-organisms with plant roots. The other part will focus on morphological characteristics of transgenic plant to record any type of possible undesirable morphological change.

To view all grant projects, visit the CERA website at:

http://cera-gmc.org/index.php/The_Biosafety_Research_in_Pakistan_Grants_Program

New Innovation with Pest Management by Semiochemical-Loaded Nanogels

DEEPA BHAGAT, PH.D., SENIOR SCIENTIST, ICAR-NBAII, BANGALORE



Description: Novel nanoformulations of nanogel carrier systems were developed in collaboration with the Department of Organic Chemistry, Indian Institute of Sciences. The nanogels dramatically extend the field-life of various adsorbed pheromones effective in disrupting the lifecycle of harmful crop pests, such as *Bactrocera dorsalis* (Hendel); *Helicoverpa armigera* (Hubner) (Lepidoptera, Noctuidae); *Scirphophaga incertulas* (Walker) (Lepidoptera, Pyralidae); *Leucinodes orbonalis* (Guenee) (Lepidoptera: Pyralidae); *Xylotrechus quadripes* (Chevrolat) (Coleoptera: Cerambycidae) and others.

Benefits: The specially-formulated nanogels can be used in all seasons and at any temperature, due to their oxidative, photochemical and thermal stability. If global climate brings higher temperatures that may cause the population growth of various pest species, these products will be especially useful. Also, the transportation of the nanogels and their pheromones is trouble-free due to the nanogels' mechanical strength. Similar carrier systems with new nanogel formulations can be developed to control other pests, such as *Helicoverpa armigera* (Hubner) (Lepidoptera, Noctuidae); *Scirphophaga incertulas* (Walker) (Lepidoptera, Pyralidae); *Leucinodes orbonalis*

(Guenee) (Lepidoptera: Pyralidae) and others, with suitable LMMGs and the appropriate pheromones that attract these species. Also, the strategy may be applicable for kairomones for the attraction of predators and parasitoids (natural enemies). Overall, the approach can be efficiently and economically carried forward from the research laboratory to the agricultural field.

Targeted Agricultural Products: Pheromones delivered by these systems will control pests that infest cotton, pigeon pea, chick pea, tomato, coffee, guava, mango, rice, brinjal, and others.

Market Potential: Nanogels, with the adsorbed pheromones of various pests, can control crop losses and thereby minimize the attendant financial losses.

Developed under the Guidance of: Prof. Santanu Bhattacharya, Chairman, Department of Organic Chemistry, IISc, Bangalore

Reference: Nanogels, Methods and Device thereof in Pest Management, Santanu Bhattacharya, Deepa Bhagat, Suman Kalyan Samanta.

Indian Patent Application Number: 372/CHE/2014, January 2014.

My Experience at ISBGM013

M. IMDADUL HOQUE, BANGLADESH COUNTRY COORDINATOR, SOUTH ASIA BIOSAFETY PROGRAM (SABP), DEPARTMENT OF BOTANY, UNIVERSITY OF DHAKA, DHAKA



The 13th International Symposium on the Biosafety of Genetically Modified Organisms (ISBGM013) was held at the Hotel Westin Cape Town, Cape Town, South Africa on November 9-13, 2014. As reported in the members meeting, the total number of participants was approximately 300 people.

The Honourable Grace Naledi Mandisa Pandor, Honourable Minister of Science and Technology, Republic of South Africa, formally inaugurated the conference as the keynote speaker. In her speech, the Honourable Minister highlighted the importance of biotechnology as well as showed her concern on the benefits and potential risks of this new technology.

There were three plenary sessions in the conference, specifically, "Advancing ERA - Fit for Purpose", "Advancing ERA - For Africa" and "Advancing ERA - A Global Perspective".

The scientific sessions were held in altogether 12 parallel sessions. The parallel sessions covered different topics, including, the Basic Elements of ERA; RNAi and ERA of GE Plants; the Long and Winding Road for Regulatory Approval of GM Forest Trees; Quality of Scientific Studies Supporting the Non-target Risk Assessments of Transgenic Plants; Science Communication; Evidence Synthesis; Implementation

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of IRM Programs for GM Crops; and Capturing and Addressing Public Inputs to Biosafety Decisions.

There were also poster sessions and about 40 posters were displayed on various biosafety related issues which created lot of interest by the participants. On behalf of the South Asia Biosafety Program (SABP) Bangladesh, I also presented a poster entitled "SABP Contribution towards Developing Biosafety Regulatory Regimes in Bangladesh". In my poster, I tried to describe how SABP started functioning in Bangladesh and contributed to the development of different regulatory documents like the National Biosafety Framework, the Biosafety Rules, the Guidelines for the Safety Assessment of Foods Derived from GE Crops, and the Guidelines for the ERA of GE Crops. I also highlighted the activities related to capacity building of Bangladeshi scientists through local and foreign trainings, workshops and conferences.

I had attended ISBGMO11 and ISBGMO12, which was held in Buenos Aires, Argentina in 2010 and in St Louis, USA in 2012 respectively. I noticed significant improvement in the topics and presentations in each of the subsequent symposiums. The plenary speakers at ISBGMO13 were very renowned and well experienced in their respective fields. There was also a lot of presentations from the scientists of different African countries. I had the opportunity to learn about the recent developments of biosafety and the application of agricultural biotechnology in different African countries.

The conference ended with a short closing ceremony where it was announced that ISBGMO14 will be held in Mexico in March 2017. To see the agenda from this symposium or sign up for updates for ISBGMO14, go to the ISBR website at <http://isbr.info/>.

CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
INDIA			
National Conference on Emerging Challenges and Opportunities in Biotic and Abiotic Stress Management (ECOBASM-2014)	Society for Scientific Development in Agriculture and Technology in collaboration with Astha Foundation and Society for Advancement of Rice Research	December 13-14, 2014 Hyderabad	www.drricar.org/ECOBASM%202014%20circular.pdf
2 nd International Conference on Bio-Resource and Stress Management	Prof Jayashankar Telangana State Agricultural University and Acharya N.G. Ranga Agricultural University	January 7-10, 2015 Hyderabad	www.angrau.ac.in/hfiles/2014/oct/Brochure-ICBSM-2015_05092014_2100_with_RC.pdf
Indian Seed Congress 2015	National Seed Association of India	February 13-15, 2015 Agra	www.nsai.co.in/isc
5 th International Conference on Next Generation Genomics and Integrated Breeding for Crop Improvement	ICRISAT	February 18-20, 2015 Patancheru	http://ceg.icrisat.org/v-nggibci/
INTERNATIONAL			
Theoretical and Practical Course on Molecular Plant Breeding for Crop Improvement	Agricultural Genetic Engineering Research Institute	March 8-19, 2015 Giza, Egypt	www.icgeb.org/meetings-2015.html
IOSBC/WPRS Group 'GMOs in Integrated Plant Production'	Agroscope	June 1-3, 2015 Sofia, Bulgaria	Contact: michael.meissle@agroscope.admin.ch



SOUTH ASIA
BIOSAFETY PROGRAM

The South Asia Biosafety Program (SABP) is an international developmental program implemented in India, Bangladesh and Pakistan with support from the United States Agency for International Development. SABP aims to work with national governmental agencies and other public sector partners to facilitate the implementation of transparent, efficient and responsive regulatory frameworks for products of modern biotechnology that meet national goals as regards the safety of novel foods and feeds, and environmental protection.



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