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South Asia Biosafety Program

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BANGLADESH

Hon'ble Minister Chowdhury Distributes Bangladesh's First GM Bt Brinjal Seedlings to Farmers

In Bangladesh, brinjal can be grown in both the winter and summer seasons. The crop covers approximately 64,000 ha with a production of 381,420 metric tons. It constitutes about 25% of the total vegetable area of the country and is one of the country's most consumed vegetables. Fruit and shoot borer (FSB) is the major pest of brinjal which causes yield losses of approximately 50 to 70 percent. To protect the crop, farmers would spray insecticides throughout the cropping season.

Scientists from the Bangladesh Agricultural Research Institute (BARI) developed nine genetically engineered brinjal varieties by inserting a crystal protein gene (Cry1Ac) taken from the soil bacterium *Bacillus thuringiensis*, known as Bt, in 2005. BARI performed contained and confined field trials at various agro-ecological zones in the country. According to their results, insertion of the Bt gene in brinjal makes it resistant to the FSB pest.

On October 30, 2013, the National Committee on Biosafety gave approval to the newly developed genetically modified (GM) brinjal varieties after years of lab and field experimentation. These varieties include: BARI Bt Brinjal-1 (Uttara), BARI Bt Brinjal-2 (Kajla), BARI Bt Brinjal-3 (Nayontara) and BARI Bt Brinjal-4 (ISD006). Bangladesh has now joined a group of 29 countries that grows GM crops.

BARI formally started to distribute seedlings of the country's first GM Bt brinjal among the farmers. On January 22, Hon'ble Agriculture Minister Matia Chowdhury distributed the seedlings to 20 selected farmers from four regions at a ceremony held at the Bangladesh Agricultural Research Council.

Many attended the ceremony including the USAID mission director to Bangladesh, Janina Jaruzelski, former caretaker government adviser and also former agriculture secretary MM Shawkat Ali, Agriculture Secretary SM Nazmul Islam and BARI Director General Dr. Md Rafiqul Islam Mondal.

In her speech as the Chief Guest, the Hon'ble Minister for Agriculture said that we have decided to start cultivation of Bt brinjal after conducting different necessary tests at home and abroad. She shared that there is no alternative but to accept the reality of GM crops to ensure food security. She also added that the government is always alert to any kind of negative impact on public health and environment.

According to Dr. Md Rafiqul Islam Mondal, Director General of BARI, 20 selected farmers will grow Bt brinjal under the supervision of BARI on 1 bigha (1 acre is 2.5 bigha) of land each and reap the crop in April. He also added that the seeds of Bt brinjal would be made available to all farmers in the country later this year.

SAVE THE DATE

FOR THE 7TH INTERNATIONAL PLANT TISSUE CULTURE AND BIOTECHNOLOGY CONFERENCE

The Bangladesh Association for Plant Tissue Culture & Biotechnology (BAPTC&B) and the University of Dhaka Bangladesh are organizing the 7th International Plant Tissue Culture and Biotechnology Conference. This conference will take place in Dhaka on March 1-3, 2014. The theme of this event will be focused on biotechnology and biosafety for human welfare.

To view more information or to register for the event, please visit: http://bit.ly/1bVyKGs

Highlights from the Biosafety Research in Pakistan Grants Program Workshop

ANWAR NASIM, CONSULTANT, ILSI RESEARCH FOUNDATION, ISLAMABAD

On December 13, 2013, the Biosafety Research in Pakistan Grants Program Workshop was held in Islamabad, Pakistan. This event was hosted by the Department of Biosciences, COMSATS Institute of Information Technology (CIIT), Islamabad, Pakistan. The workshop was organized by Dr. Anwar Nasim, Consultant, ILSI Research Foundation, Islamabad and Dr. Zahid Ali, Department of Biosciences, COMSATS Institute of Information Technology, Islamabad, with collaboration from Dr. Andrew Roberts, Deputy Director of the Center for Environmental Risk Assessment, and Dr. Karen Hokanson, adjunct Professor of the University of Minnesota, USA.

Through the workshop, important concepts were introduced on environmental risk assessments that are necessary to address biosafety issues related to genetically engineered (GE) plants. Key note speakers focused on the Biosafety Research in Pakistan Grants Program as well as provided advice on what the advisory committee hopes to see in future proposals.

The first session of the workshop provided on an introduction to biosafety. Dr. Roberts highlighted the needs and objectives of biosafety, risk assessment and research regulations in Pakistan. He shared that biosafety regulation is essentially environmental regulation for the safe development and commercial application of GE plants. Since the first commercial release of GE plants in the mid-1990s, rapid development has taken place in GE plants production. This has posed a serious question of biosafety and bioregulation of GE plants, especially with potential threats to human beings and biodiversity. The National Research Council is commissioned to consider potential risks from biotechnology. There are also several international initiatives that have taken place to help minimize risks including an international agreement on trade and biodiversity, the Rio Declaration, the Convention on Biological Diversity (CBD), the World Trade Organization (WTO) and the Cartagena Protocol. The talk concluded with a note that there is no generalized international agreement on environmental risk assessment of GE plants because the risk assessment procedure varies from case to case and requires deep knowledge of the particular receiving environmental interactions of GE plants. However, there are international bodies, standards and agreements that provide relevant guidance.

In his keynote lecture, Dr. Yusuf Zafar provided insight into the biosafety regulations in Pakistan, including the investment and infrastructure currently dedicated to advanced agricultural technologies. This important lecture was focused on the challenges facing the biosafety system and the necessary steps for advancing the biosafety regulatory system in order to improve the ability of the government and the people of Pakistan to adopt technologies that will bring benefits to Pakistani agriculture while ensuring an adequate level of protection for the environment. He also highlighted the role of the Higher Education Commission (HEC) Pakistan for funding and promoting the research in Pakistan. Dr. Zafar commended HEC for recruiting foreign Ph.D. researchers in the universities to increase the quality research activities that may have positive impact on agricultural biotechnology. In the end, Dr. Zafar outlined a follow up path for the success of any research pursuit by emphasizing the need for collaboration of researchers, breeders, commercial sector and NGOs.

Regulation of agricultural biotechnology in Pakistan and the need for biosafety research was highlighted in the presentation given by Mr. Afzaal Admad, Deputy Director of the National Biosafety Center (NBC) Climate Change Division Pakistan. The national biosafety guidelines, which were notified in October 2005, provided the procedure for the implementation of the Pakistan Biosafety Rules. Mr. Admad highlighted that the sole purpose of the development of biosafety guidelines is to regulate the manufacturing, importing and storage of all types of genetically modified organisms and the research involving them in labs, institutes, research centers and private companies.

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Mr. Ahmed introduced the participants of the workshop to the regulatory bodies for the implementation of the national biosafety guidelines and the individual roles of the Institutional Biosafety Committee (IBC), the National Biosafety Center (NBC) and the Technical Advisory Committee (TAC). He emphasized that with the current regulatory framework, it is the utmost responsibility of researchers to design and conduct research work in accordance with the goals of the NBC, collaborating with international obligations and standards.

Another important aspect of the workshop was Dr. Roberts and Dr. Hokanson introducing the Biosafety Research in Pakistan Grants Program (BRPGP). The purpose of the BRPGP is to strengthen the capacity of Pakistani researchers, build familiarity with biosafety research, strengthen ties between researchers and regulators in Pakistan, generate local data for biosafety issues of relevance and build networks for scientists with an interest in biosafety across South Asia. BRPGP funded 6 projects in 2012 and 5 projects in 2013. Requirements for the pre-proposals for the 2014 grants program were reviewed.

The workshop ended with a special thanks by Dr. Anwar Nasim to all participants. He also shared his appreciation for the facilities and infrastructure provided by CIIT, specifically thanking Dr. SM Junaid Zaidi and Dean ORIC Prof. Dr. Raheel Qamar for organizing this successful event. He pinpointed that this is the first time such a large number of participants working on transgenic plant development have gathered under one umbrella. He honored the full time participation and involvement of Dr. Roberts and Dr. Hokanson. He also expressed his sincere thanks to COMSATS Institute of Information Technology Islamabad as well as Dr. Zahid Ali and his team who organized the event.

Dr. Nasim concluded the event that on the basis of the current situation, he is very optimistic that everyone gathered at the workshop will work together as one team for science communication and biosafety related developments in Pakistan.

To learn more about the BRPGP, see the grantee profiles on page 4.

Key Findings:

Participants who attended this workshop were sent a survey in order to evaluate the event. The results are as follows:

70 PARTICIPANTS ATTENDED THE ONE DAY WORKSHOP.

ATTENDEES WERE FROM ISLAMABAD, FAISALABAD, KARACHI, LAHORE, MULTAN, PESHAWAR AND RAWALPINDI.

98% OF RESPONDERS FELT THE CONTENT OF THE WORKSHOP WAS RELEVANT TO THEIR WORK.

95% OF RESPONDERS FELT THE LENGTH OF THE WORKSHOP WAS APPROPRIATE.

88% OF RESPONDERS ARE LIKELY TO APPLY FOR A GRANT UNDER THE BIOSAFETY RESEARCH IN PAKISTAN GRANTS PROGRAM AFTER ATTENDING THIS WORKSHOP.

93% OF RESPONDERS WOULD RECOMMEND THIS WORKSHOP TO OTHERS.

"It was a very good workshop and broadened my knowledge about the biosafety of genetically engineered crops."

"Overall the workshop was fine. However, it will be more useful to conduct such kinds of workshops regularly per year in various national institutes."

"I am highly thankful to both Andrew and Karen for their time."

"All the aspects of the workshop were valuable."

"Information about the history of genetically engineered crops, their potential effects on the agriculture production and environment and information regarding the project proposals" were the most valuable aspects of the workshop.

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 the 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 and universities in 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 grantees that are part of BRPGP.

To view all grant projects, visit the CERA website at: http://bit.ly/1hVizAM

2012 GRANTEE: Dr. Saifullah Khan

JOB TITLE: Associate Professor and in charge of the Biotechnology Wing

ORGANIZATION: International Centre for Chemical and Biological Sciences, HEJ Research Institute, University of Karachi

PROJECT TITLE: "Collection of baseline information about papaya crop cultivation in all growing areas of Sindh Pakistan"

PROJECT DESCRIPTION:

The main purpose of this project is to collect baseline information about complete production technology of papaya in the Sindh province of Pakistan. A questionnaire has been designed and information from actual growers is being collected by personally visiting all areas of papaya cultivation. The other sources of information are also being exploited to collect maximum information about cultural practices and neighboring crops including their weeds, wild relatives and other necessary information for an environmental risk assessment study.

2012 GRANTEE: Dr. Iqrar Ahmad Rana

JOB TITLE: Assistant Professor

ORGANIZATION: Centre of Agricultural Biochemistry and Biotechnology (CABB), University of Agriculture Faisalabad

PROJECT TITLE: "Impact assessment of the transgenic sugarcane over expressing antifungal proteins on endophytic and rhizospheric microorganisms"

PROJECT DESCRIPTION:

This project will isolate bacteria and fungi from stem, root and soil rhizospheres in order to be cultured on artificial mediums. The cultures will be analyzed microscopically using the Box-PCR technique. Additionally, a non-cultured approach will be conducted by targeting the rRNA encoding gene sequences through PCR. For this purpose, universal metagenomic primer pairs will be used. Total soil metagenomic DNA will be isolated from the rhizosphere of transgenic and non-transgenic control plants. This DNA will be used as a template to run the PCRs for amplifying rRNA genes of microbial population who's DNA are represented in the metagenomic DNA. This information will inform us about any changes between transgenic and non-transgenic plants. The sequencing and BLAST analysis will lead to conclusive information on if some species are absent or present in transgenic and non-transgenic plants.

Indian Prime Minister Dr. Manmohan Singh Addresses the 101st Indian Science Congress

Dr. Manmohan Singh, Prime Minister of India, made a special reference to genetically modified crops in his address at the 101st Indian Science Congress held from February 3-7, 2014, in Jammu. The Annual Meeting of Indian Science Congress is an extremely important event where scientists from across the country gather to discuss ways and means of encouraging Indian science research. Approximately 12,000 delegates, including noble laureates, senior scientists, teachers, young scholars and students, participate in Congress every year and present their research findings.

In his inaugural speech at the 101st session, Dr. Manmohan Singh emphasized the need to increase annual expenditure on science and technology to at least 2% of the GDP. He also encouraged the youth to take up the right path of science that will provide them not only productive employment but also excitement in their profession. The relevant excerpts of his speech regarding the use of biotechnology in agriculture are as follows:

"To ensure food security and to improve land and water productivity, we have to launch a national drive for an ever-green revolution. This will test the ingenuity of our agricultural scientists. Climate-resilient agriculture and modern bio-technological tools hold great promise. Use of bio-technology has great potential to improve yields. While safety must be ensured, we should not succumb to unscientific prejudices against Bt. crops. Our government remains committed to promoting the use of these new technologies for agricultural development. I urge our scientific community to increase communication and engagement with society at large in explaining socially productive applications of technology alternatives and for improving the productivity of small and medium enterprises.

India needs to leverage the ability of modern science to deliver value to society. We must also seek global leadership in at least some research and development areas. Affordable innovations for human healthcare, sustainable agriculture, clean energy and total solutions for water-related challenges are some areas where Indian science can seek global leadership.

Indian scientists have to learn from the past, they have to connect with the present, and they have to focus on the future. Our basic research must be directed to make new discoveries with innovative efforts to develop affordable solutions suited to Indian condition. Above all, our science should be a driving force propelling India as a resurgent civilization which holds out both hope and opportunity for our young citizens."

The full text of the speech can be accessed at:

http://www.pmindia.nic.in/speech-details.php?nodeid=1427

"Indian scientists have to learn from the past, they have to connect with the present, and they have to focus on the future."

- Dr. Manmohan Singh, Prime Minister of India

CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
INDIA			
International Conclave on Sugar Crops & SugarFest 2014: "Sweeteners and Green Energy from Sugar Crops : Emerging Technologies"	Society for Sugar Research and Promotion	February 15-17, 2014 Lucknow	http://www.iisr.nic.in/download/InternationalConclave.pdf
Biennial Conference of Indian Society of Weed Science - Emerging Challenges in Weed Management	Indian Society of Weed Science and Directorate of Weed Science Research	February 15-17, 2014 Jabalpur	http://isws.org.in/Bc2014/default.html
International Conference on "Probing Bioscience for Food Security & Environmental Safety"	Applied Zoologists Research Association (AZRA) and Central Rice Research Institute	February 16-18, 2014 Cuttack, Odisha	http://www.crri.nic.in/azra_first_circular.pdf
Indian Seed Congress 2014	National Seed Association of India	February 18-19, 2014 Gandhinagar	http://nsai.co.in/events/forthcoming-events/1040.html
SOYCON-2014 International Soybean Research Conference	Society for Soybean Research and Development (SSRD) in collaboration with the Directorate of Soybean Research and Indian Council of Agricultural Research	February 22-24, 2014 Indore	http://www.soycon2014.com/
Seminar on "Agri Biotechnology"	Confederation of Indian Industry	February 25, 2014 Chennai	http://www.cii.in/Events.aspx?gid=S
Workshop on Key Issues in Commercialization of Biotechnology	Department of Biotechnology, Govt. of India and the Biotech Consortium India Limited, New Delhi	March 3, 2014 New Delhi	http://www.biotecnika.org/content/february-2013/workshop-key-issues-commercialization-biotechnology-bcil
National Seminar on GM Crops: Prospects and Issues	Kerala Agricultural University	March 17-18, 2014 Thrissur, Kerala	http://www.kau.edu/Seminars/national_seminar_cpbmb.htm
INTERNATIONAL			
7th International Plant Tissue Culture & Biotechnology Conference	Bangladesh Association for Plant Tissue Culture & Biotechnology	March 1-3, 2014 Dhaka, Bangladesh	www.baptcb.org

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.

USAID FROM THE AMERICAN PEOPLE

Center for Environmental Risk Assessment

IFPRI

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