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South Asia Biosafety Program

NEWSLETTER FOR PRIVATE CIRCULATION ONLY – NOT FOR SALE

BANGLADESH

First Workshop of the IBO Training Program

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Participants at the First Workshop of the IBO Training Program (December 2, 2021).

The *First Workshop of the Institutional Biosafety Officer (IBO) Training Program* was held on December 2, 2021 at the Sarina Hotel, Dhaka, Bangladesh. The training program was organized by the Ministry of Agriculture, Government of the People's Republic of Bangladesh, in collaboration with the South Asia Biosafety Program (SABP), Agriculture & Food Systems Institute (AFSI), and Biotech Consortium India Limited (BCIL). Twenty scientists from different organizations, including the National Agriculture Research Systems (NARS) institutes and universities, participated in this event. This training workshop was organized mainly to understand the biosafety requirements in conducting research and development of the genetically modified (GM) crops. It also aimed to establish a network of trained IBOs/scientists to coordinate biosafety activities across the entire regulatory system.

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At the beginning of the inaugural session, Dr. Andrew F. Roberts, Chief Executive Officer, AFSI, expressed his greetings to all participants and welcomed them to the workshop. Dr. Aparna Islam, Professor, Brac University, presented a brief overview on agri-biotechnology and biosafety issues in relation to Bangladesh. While addressing the audience as the Special Guest, Dr. Md. Salimullah, Director General, National Institute of Biotechnology (NIB), Bangladesh emphasized the importance of GM technology for crop improvement. In his speech, the Chief Guest, Dr. Md. Ruhul Amin Talukder, Additional Secretary, Ministry of Agriculture, Government of Bangladesh addressed the dire need for the improvement of crops in view of the growing population, consumer demand, and climate change issues. Dr. Talukder also praised the initiatives taken by SABP. At the end of the inaugural session, Dr. Rakha Hari Sarker, Professor, University of Dhaka and Country Manager, SABP offered the vote of thanks.

The next session began with an ice breaker activity conducted by Dr. Bhavneet Bajaj, Manager-Scientific Programs, AFSI, which was designed to encourage interaction between the participants. The participants were also invited to share their experiences during the COVID-19 pandemic. Dr. Roberts gave a detailed overview of biosafety concepts at the beginning of the technical session. He talked about laboratory safety, understanding laboratory hazard, and safety tools for the laboratory. He also explained the requirements of the measures for genetically modified organisms (GMOs) in the environment. Mr. Sium Ahmed and Dr. Sarker discussed different potential hazards, including physical, chemical, and biological hazards, while conducting an exercise on biosafety. They provided information about different safety tools, including personal protective equipment and safety infrastructure, both for the laboratory and field. They explained different risk groups of microorganisms and

Continued on page 2

Continued from page 1

associated safety procedures for handling them. Dr. Vibha Ahuja, Chief General Manager, BCIL and Senior Advisor, SABP, gave a presentation on GMOs and biosafety. Dr. Ahuja discussed risk assessment of GMOs, containment procedures, and biosafety requirements for GM plants.

Following the presentations, there was a lively question and answer session. The session closed with a brief overview of future workshops in the training program.

BANGLADESH

U.S.-Sponsored Webinar Provides Overview of Agricultural Biotechnology – Global and Bangladesh Perspective

Farhad Hossain, Project Management Specialist, USAID/Bangladesh and Sifat E. Rabbi, Director, Change Initiative

Speakers at the webinar: Overview of Agri Biotechnology - Global and Bangladesh Perspective (December 20, 2021).

The agricultural sector in Bangladesh has steadily developed in recent years and biotechnology has played an important role in this advancement. The Government of Bangladesh (GOB) seeks to move forward in developing and commercializing biotechnology through its National Biotechnology Policy (2012) and Action Plan of the National Biotechnology Policy (2014). Bangladesh's regulatory framework for biotechnology has expanded greatly with the introduction of new rules and guidelines. Demonstrating alignment with these GOB goals, the U.S. Agency for International Development (USAID), U.S. Department of State, and the U.S. Department of Agriculture (USDA), hereafter referred to as Mission Dhaka, jointly organized a Biotechnology Outreach webinar titled "Overview of Agricultural Biotechnology - Global and Bangladesh Perspective" on December 20, 2021, with over sixty participants.

The event promoted awareness of the role of innovative technologies in addressing agricultural challenges.

The event promoted awareness of the role of innovative technologies in addressing agricultural challenges. The audience included policymakers, researchers, academics, technical experts, development partners, private sector actors, consumers, and international stakeholders who all play a role in promoting agricultural biotechnology and challenging misinformation by advancing informed policy in Bangladesh.

The webinar featured presentations from two guest speakers, the highly recognized Bangladeshi scientist and researcher, Dr. Mirza Mofazzal Islam, Director General, Bangladesh Institute of Nuclear Agriculture (BINA), and a renowned foreign expert, Dr. Maricelis Acevedo, International Research Professor (joint), School of Integrative Plant Science, Plant Pathology and Plant-Microbe Biology Section, College of Agriculture and Life Sciences, Cornell University. This prestigious event was moderated by one of the most reputable bioscience and agriculture scientists of Bangladesh, Dr. Mohammad Tofazzal Islam, Professor, Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU) and Fellow, BAS. Mr. Kevin Fath, Acting Director, Economic Growth Office, USAID-Bangladesh welcomed the guests and participants with opening remarks.

Dr. Maricellis Acevedo delivered a presentation entitled "Biotechnology as an Agent of Change in Agriculture and Development." Throughout the presentation, Dr. Acevedo explained the benefits of biotechnology to agriculture, the global landscape of agricultural biotechnology development, and the future of this technology for agriculture and food systems.

Dr. Mirza Mofazzal Islam followed with a presentation on the topic, "Road to the Development of Innovative Biotech Research." His presentation highlighted the application of different techniques of biotechnology such as tissue culture, molecular marker technology, and genetic engineering in the agriculture and research sector of Bangladesh. Dr. Islam highlighted these points by presenting several recent achievements in the field. Both the sessions were followed by an interactive question and answer session.

Five additional webinars and two in-person seminars will take place in January and February 2022 and will include internationally recognized experts who will be speaking about this significant technology and its role in the advancement of agriculture in Bangladesh.

Frontiers Research Topic: Biosafety of Genetically Modified Organisms 3

Sium Ahmed, South Asia Biosafety Program

Diamondback Moth © Catherine Eckert | Dreamstime.com

A collection of publications from the 15th International Society for Biosafety Research (ISBR) Symposium were finalized as a research topic titled "Biosafety of Genetically Modified Organisms 3". The research topic was published in the Biosafety and Biosecurity section of *Frontiers in Bioengineering and Biotechnology*. This research topic contains thought pieces on future research needs for biosafety, research results, and a discussion of the current environmental risk assessment paradigm and its application to new and emerging applications of genetic engineering.

The ISBR Symposium is an international meeting organized by the ISBR, a society whose membership is composed of individuals with expertise and interest in regulations, risk assessments, and research associated with the sustainable use of biotechnology. The 15th ISBR Symposium had "New Horizons in Biotechnology: Risk Analysis for a Sustainable Future" as its theme. Around this central theme, the program included a series of presentations in four topical plenary sessions. In addition to these plenary sessions, the symposium included over 20 organized sessions and workshops offered in parallel on a range of topics, numerous Pecha Kucha and traditional poster presentations, and accommodated some smaller satellite conferences in its margins. Out of the diverse presentations, the society has assembled a collection of 17 peer reviewed publications representative of the different kinds of thought-provoking topics presented and discussed at the 15th ISBR Symposium.

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The research topic includes four timely and compelling "policy and practice reviews." Two of these articles deal specifically with the most current new breeding techniques broadly described as "gene-editing". Another important policy and practice review discusses regulation of GMOs being developed for invasive species control, specifically using gene drive applications. The fourth one takes a close look at biosafety and biosecurity of GMOs in containment and provides a global overview of how regulatory frameworks have evolved to manage these.

The research topic also includes three progressive general "review" articles. One describes different approaches for genetic biocontrol, including gene drives, and the regulatory considerations of each to minimize potential harm to the environment. Another review discusses the deliberations taking place on "synthetic biology" under the Convention on Biological Diversity (CBD). A third article reviews ongoing discussions about the appropriate tests and use of endpoints needed to inform non-target arthropod assessment of crop plants with pesticidal properties, especially for new technologies that have a different mode of action than the more familiar Bt Cry proteins, such as traits based on RNA interference.

In addition to the reviews, the research topic includes four "original research" articles. Two of these address some of the most common environmental and food safety concerns associated with genetically engineered crops. Another article reports on the first limited field release of a genetically engineered, "self-limiting" agricultural pest insect, the diamondback moth, which is a serious global pest of crucifers, and the series of studies that were conducted to evaluate its potential as a biologically-based approach to crop pest management. In addition, another article presents the results of research demonstrating the impact in the market value chain in Bangladesh of a genetically engineered insect resistant brinjal. This article was complemented by a "brief research report" considering the biosafety management measures, as well as socio-economic impacts and challenges of this same insect resistant brinjal in Bangladesh.

The remaining articles in the research topic are five "perspective" pieces. Four of these perspectives come from Latin America and each of these share lessons that should be applicable to regulatory systems across the globe. One more perspective describes the experience of developing an effective insect resistance management (IRM) strategy for Bt maize following the discovery of resistance development in the target insect pest in South Africa, with implications for developing more effective IRM strategies for other insect resistant maize in Africa.

This research topic is undoubtedly an excellent example of the impact of community-based biosafety research, and it can be an important resource for future considerations around biosafety and biotechnology. ISBR intends to continue to bring together this unique group of people to share perspectives, learn from experiences and plan for sound scientific global approaches to biosafety in the future.

***This article is reproduced from the editorial*

The research topic is available at:
https://www.frontiersin.org/research-topics/9709/biosafety-of-genetically-modified-organisms-3

CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
BANGLADESH			
The Annual Botanical Conference: Innovative Research in Plant Science for Sustainable Development	Bangladesh Botanical Society	February 25-26, 2022 Dhaka	https://www.bdbotsociety.org
INDIA			
Webinar on Genome Editing in Agriculture: Science, Potential, and Policies	Jawaharlal Nehru Krishi Vishwa Vidyalaya (JNKVV), Jabalpur and Biotech Consortium India Limited (BCIL)	January 20, 2022 New Delhi (online)	https://www.biotech.co.in/en
Winter School on Innovation in Potato Improvement, Production, and Utilization Technologies for Doubling Farmer's Income	ICAR-Central Potato Research Institute, Shimla	January 18-February 7, 2022 Shimla	https://cpri.icar.gov.in/
International Conference on Harnessing the Potential of Finger Millet for Achieving Food and Nutritional Security: Challenges and Prospects (ICFM-2022)	University of Agricultural Sciences, Bangalore	January 19-22, 2022 V.C. Farm, Mandya	https://www.millets.res.in http://uasb-icfm2022.in https://www.uasbangalore.edu.in
7th National Youth Convention - Food Security to Nutritional Security: Youth Perspective (FSNS 2022)	AIASA and ICAR-Tamil Nadu Agricultural University, Coimbatore	January 20-21, 2022 Tamil Nadu (in person and online)	https://tnau.ac.in/news-events/
National Seminar on Empowerment of Rural Youth with Novel Agricultural Technologies (ERYNAT-2022)	The Andhra Agricultural Journal	January 28-29, 2022 Andhra Pradesh (in person and online)	https://angrau.ac.in/
International Conference on Sustainability of the Sugar and Integrated Industries: Issues and Initiatives (SUGARCON-2022)	ICAR-Indian Institute of Sugarcane Research, Lucknow	February 16-19, 2022 Lucknow	https://iisr.icar.gov.in/iisr/
43rd Annual Meeting of the Plant Tissue Culture Association–India (PTCA-I) & International Symposium: Advances in Plant Biotechnology and Nutritional Security (APBNS-2022)	ICAR-National Institute for Plant Biotechnology, New Delhi	February 17-19, 2022 New Delhi (in person and online)	http://www.nrcpb.res.in/
National Symposium on Ornamental and Edible Horticulture: Emerging Challenges and Sustainable Goals	Bidhan Chandra Krishi Viswavidyalaya	February 21-22, 2022 Nadia, West Bengal	https://www.bckv.edu.in

SOUTH ASIA BIOSAFETY PROGRAM

The South Asia Biosafety Program (SABP) is an international development program implemented in India and Bangladesh with support from the United States Agency for International Development (USAID). 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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