

South Asia Biosafety Program

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BANGLADESH

Discussion about Regulation and Effective Compliance for Food Derived from Genetically Engineered Plants

Dr. Aparna Islam, South Asia Biosafety Program



Speakers and guests on stage at the Genetically Modified Food - Requirements for Legal Compliance and Consumer Awareness Workshop (from left to right): Mr. Monzur Morshed Ahmed, Bangladesh Food Safety Authority (BFSA), speaking at the podium; Dr. Aparna Islam, South Asia Biosafety Program; Dr. Andrew F. Roberts, ILSI Research Foundation; Md. Mahbub Kabir, BFSA; Md. Rejaul Karim, BFSA; Dr. Vibha Ahuja, Biotech Consortium India Limited (February 25, 2020).

In 2012, the Ministry of Environment, Forests and Climate Change (MOEFCC) of the Government of Bangladesh finalized and published the *Guidelines for the Safety Assessment of Foods Derived from Genetically Engineered (GE) Plants* for Bangladesh, following a lengthy consultation process that began in 2009 and engaged a wide range of stakeholders. In 2013, recognizing the potential for re-alignment of responsibilities for GE food safety assessment following the passing of the *Bangladesh Food Safety Act, 2013*, the Bangladesh Standards and Testing Institute adopted the finalized *Guidelines for the Safety Assessment of Foods Derived from Genetically Engineered Plants* as a national standard in 2013. In order to have a more organized and coordinated food safety system, the Government of Bangladesh established the Bangladesh Food Safety Authority (BFSA) under the Ministry of Food in 2015.

On February 25, 2020, a half-day-long workshop on “Genetically Modified Food - Requirements for Legal Compliance and Consumer Awareness” was organized jointly by BFSA and the South Asia Biosafety Program (SABP) in Dhaka. The event was aimed at raising awareness of the

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current status of food safety regulation for products of GE plants and to begin discussions between and among relevant government ministries and departments about the implementation of obligations contained in the *Biosafety Guidelines* and the *Food Safety Act*. Government officials from the Ministry of Food, Ministry of Fisheries and Livestock, Ministry of Agriculture, Ministry of Environment, Forest and Climate Change, and several departments, including the Department of Fisheries, Department of Livestock Services, and Department of Environment, joined the workshop. Scientists from research institutes and development partners, such as the Bangladesh Agricultural Research Council, Bangladesh Agricultural Research Institute, Bangladesh Rice Research Institute, Bangladesh Livestock Research Institute, International Rice Research Institute - Healthier Rice, Feed the Future Biotechnology Partnership, along with private sector scientists and academics from the University of Dhaka, were also among the participants. The workshop was chaired by Md. Rejaul Karim, Member, BFSA, while Md. Mahbub Kabir, Chairman (In Charge), BFSA, was present as Chief Guest.

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Dr. Andrew F. Roberts, ILSI Research Foundation, talking to the audience about the food safety assessment paradigm around GE-derived food (February 25, 2020).

The event began with a keynote speech by Dr. Andrew F. Roberts, Deputy Executive Director, ILSI Research Foundation. He began his talk with context around the concept of “safe” food, then introduced the food safety assessment paradigm around GE-derived food as detailed in the *Codex Alimentarius Guideline for the Conduct of Food Safety Assessment of Foods Derived from Recombinant-DNA Plants*. The status of GE food safety regulation in India was presented by Dr. Vibha Ahuja, Chief General Manager, Biotech Consortium India Limited. She discussed the regulations and implementation mechanisms for GE-derived food. It was followed up with a talk by Mr. Monzur Morshed Ahmed, Member, BFSa, who shared his organization’s role in GE food regulation, as well



Dr. Vibha Ahuja, Biotech Consortium India Ltd., discussing regulations and implementation mechanisms for GE-derived food. (February 25, 2020).

as highlighted the areas where implementation of obligations in the *Biosafety Rules* and *Food Safety Act* have lagged.

In the open discussion, participants joined in sharing their experience of and discussion around Bt Brinjal cultivation in Bangladesh over the past six years. Bt Brinjal remains the only GM crop released in Bangladesh for commercial use. Discussions were also held on GE crops and food safety issues in general around them. The participants emphasized the need for a coordinated mechanism, involving all stakeholders, for GE food safety assessment, as indicated by the *Bangladesh Food Safety Act, 2013* as well as the *Biosafety Rules and Guidelines* of Bangladesh.

BANGLADESH

Assessment of Weed Management Practices in Rice Cultivation in Bangladesh

Dr. Iftekhar Alam, National Institute of Biotechnology (iftekhar@nib.gov.bd)

2019 Biosafety Research in Bangladesh Grants Program Award Recipient



Dr. Iftekhar Alam, delivering a presentation about his project at the 7th Annual South Asia Biosafety Conference (September 14, 2019)

Bangladesh is a haven for plant diversity due to its climatic conditions. Rice fields are also not an exception to this. Therefore, weed management is a major concern in rice cultivation. It involves high financial and health costs. The traditional methods of weed control by small holder farmers include hand weeding by hoe and hand pulling. Usually, two or three hand weedings are done for growing a rice crop. However, especially at a time when labor demand is at its peak, weeding is often done late, causing drastic losses in rice yield. Small farm families typically are unable to do weeding on their own and need to hire labor. Getting labor on time and financing it is an issue. On average, the gap in rice yields in farmers’ fields due to poor weed control in Bangladesh has been determined to be 43-51%. However, nationwide data on the relative contribution of weed management practices is lacking. Therefore, the

goal of this project is to determine the relative contribution of weeding methods and any of their drawbacks in order to identify the scope of intervention. More specifically, we are focused on the importance of herbicides in weed management strategies of rice farmers in Bangladesh and looking for a data-based decision on whether herbicides could contribute to enhance productivity. Assessment of farmers’ knowledge and perception of herbicides and a survey of their availability in rural markets is also part of this project. In addition, farmers’ perception of weed resistance to available herbicides will be assessed. To understand these facts, a nationwide survey based on preset questionnaires is being conducted, covering all the agroecological zones of Bangladesh. Standard statistical procedures will be applied to identify the patterns. The data generated in this project will be helpful in deciding which existing methods should be promoted or if a new approach needs to be undertaken to sustain rice production. These may reveal the possible suitability of herbicide-tolerant transgenic rice.

Dr. Iftekhar Alam is a Senior Scientific Officer in the National Institute of Biotechnology, Dhaka, Bangladesh. His research focuses on development of genetically modified crop plants with improved agronomic traits.

The **Biosafety Research in Bangladesh Grants Program (BRBGP)** is managed by the ILSI Research Foundation as part of the USAID-funded South Asia Biosafety Program. Recognizing the need for biosafety research as part of a broader effort to support science-based decision-making and policy development, the BRBGP funds research that considers the potential impacts of agricultural biotechnology, particularly genetically engineered crops, on the environment and biodiversity in Bangladesh.

2nd Institutional Biosafety Officer Workshop: Developing an Agenda for 2020

Mr. Sium Ahmed, Biosafety Support Office, South Asia Biosafety Program



Group photo of the participants at the 2nd Institutional Biosafety Officer Workshop (February 20, 2020).

To keep pace with continued developments in both research and regulation on biosafety, the South Asia Biosafety Program (SABP) organized the 2nd Institutional Biosafety Officer (IBO) Workshop on February 20, 2020 at Hotel Sarina, Dhaka, Bangladesh. The workshop was intended for the members of Institutional Biosafety Committees (IBCs), as well as researchers from research institutes and universities. The purpose of this workshop was to discuss biosafety regulation and identify any needs from practitioners to comply with biosafety requirements. Building on the previous year's initiative to construct a network of biosafety practitioners for enabling collective learning and collaboration, this year, the IBO workshop was aimed at taking stock of research initiatives and need identification.

The day-long workshop was divided into four sessions. It started with an introductory speech on the purpose of the event by Dr. Aparna Islam, Country Manager, SABP. Then, Mr. Mohammed Solaiman Haider, Director, Department of Environment (DoE), discussed biosafety regulations for GE crops in Bangladesh. He gave a brief overview of the requirements and procedures for specific applications for regulatory approvals. This was followed with a presentation by Dr. Andrew F. Roberts, Deputy Executive Director, ILSI Research Foundation, who discussed the roles, expectations, and challenges of Institutional Biosafety Officers in Bangladesh.

In the second session, Dr. Aparna Islam gave a brief overview about how to take inventory of relevant biosafety documents. She discussed

the different standard operating procedures (SOPs) related to the transport, storage, cultivation, harvest, and post-harvest management of confined field trials (CFTs) of GE plants in Bangladesh. Then, Dr. Andrew F. Roberts gave an overview on the relevant plant biology documents and their utility during CFTs.

Session three was attributed to a group discussion comprising of not only a question and answer session, but also a sharing of opinions, ideas, and suggestions that shed light on future projects. The participants gave their opinions on developing different SOPs that are now needed for specific crops being developed at various organizations.

In the final session, Dr. Aparna Islam introduced this year's Biosafety Research in Bangladesh Grants Program (BRBGP 2020) and discussed its purpose, support areas, and procedures.

Thirty-four participants from nine different institutes were present at the workshop.

The institutes included Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural Research Institute (BARI), Cotton Development Board (CDB), National Institute of Biotechnology (NIB), Dhaka University, Jahangirnagar University, Bangladesh Agricultural University, BRAC University, and Independent University Bangladesh (IUB). This workshop was very effective in developing the agenda for future initiatives around institutional biosafety practices.

Building on the previous year's initiative to construct a network of biosafety practitioners for enabling collective learning and collaboration, this year, the IBO workshop was aimed at taking stock of research initiatives and need identification.



Mr. Mohammed Solaiman Haider, Director, Department of Environment (DoE), and scientists from public institutions, in a discussion at the 2nd Institutional Biosafety Officer Workshop (February 20, 2020).



Dr. Partha S. Biswas, PSO, Plant Breeding Division, BRRI taking part in the open discussion at the 2nd Institutional Biosafety Officer Workshop (February 20, 2020).

Regional Workshops by the United Nations Environment Programme (UNEP) and Korea Biosafety Clearing-House (KBCH) in New Delhi

Dr. Jyoti Batra and Ms. Shradha Nirwan, Biotech Consortium India Limited



Engagement Workshop for the Development of Post-2020 Regional Biosafety Project speakers and guests (from right to left): Ms. Richa Sharma, Joint Secretary, MoEFCC; Ms. B.V. Uma Devi, Additional Secretary, MoEFCC and Chairperson, GEAC; Mr. Atul Bagai, UNEP India Office; Mr. Rami Abdel Malik, Program Management Officer, MEAs Support and Cooperation Unit, UNEP (February 4, 2020).

The “Engagement Workshop for the Development of Post-2020 Regional Biosafety Project” and the “Asian Training of Trainers Workshop for Biosafety Clearing House National Focal Points (BCH NFPs)” were organized back-to-back on February 4-7, 2020 in New Delhi. The workshops were hosted by the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India and organized by the United Nations Environment Programme (UNEP), in cooperation with the Korea Biosafety Clearing-House (KBCH). Participants from eleven countries in Asia attended the two workshops, including Bangladesh, Bhutan, Cambodia, India, Indonesia, Kyrgyz Republic, Malaysia, Philippines, South Korea, Sri Lanka, and Vietnam.

The Inaugural Session was attended by senior officials from MoEFCC, UNEP (Headquarters and India Office), and KBCH. Ms. Richa Sharma, Joint Secretary, MoEFCC, welcomed the participants and informed them about various initiatives undertaken in India to strengthen capacities for effective implementation of the Cartagena Protocol on Biosafety (CPB). She particularly highlighted that India has completed two projects supported by the Global Environment Facility for biosafety capacity building, from 2004-2007 and 2012-2017. She added that a third project is being formulated. Regional cooperation has been a key component in these projects and India is committed to continuing activities toward the same in the new project. Ms. B.V. Uma Devi, Additional Secretary, MoEFCC and Chairperson, Genetic Engineering Appraisal Committee, in her opening remarks, explained that India has had a biosafety regulatory framework in place since 1989 under the Environment (Protection) Act. Dr. Ho-Min Jang, Korea BCH Focal Point and Director of KBCH, thanked MoEFCC for hosting the event and UNEP for planning a regional project to take the Asia BCH Family project forward, beyond 2020. He also

Mr. Rami Abdel Malik, Program Management Officer, MEAs Support and Cooperation Unit, UNEP provided an overview of the proposed regional project and progress thus far. He stated that the project outputs have been streamlined after a series of discussions among participating countries. Mr. Malik presented the status of utilization of the System for Transparent Allocation of Resources (STAR) allocation under the GEF-7 cycle and requested country representatives to follow up with their GEF focal points for allocation of grants for the regional biosafety project. He indicated that the project is being developed in line with various decisions at the Conference of the Parties serving as the Meeting of the Parties (COP-MOPs) to the CPB.

The objective of the three-day “Asian Training of Trainers Workshop” [...] was to help with the sustainability of biosafety efforts in the region by promoting networking between and among the region’s relevant biosafety focal points and other stakeholders

Deliberations at the “Engagement Workshop for the Development of Post-2020 Regional Biosafety Project” held on February 4, 2020 focused on developing proposed outputs and outcomes in the context of the theory of change through group work. The objective of the three-day “Asian Training of Trainers Workshop for Biosafety Clearing House National Focal Points” held on February 5-7, 2020 was to help with the sustainability of biosafety efforts in the region by promoting networking between and among the region’s relevant biosafety focal points and other stakeholders, equipping them with the necessary skills and knowledge to be able to replicate BCH capacity-building activities at the national level. To achieve this objective, different sessions were conducted, which comprised of an introduction and setting of expectations for the representatives, tutorials on the Virtual Learning Environment, work navigation meetings, BCH central portal navigation session, group-work activities, etc. The BCH training workshop was conducted by BCH Regional Advisors. All the participants were provided with a certificate (February 4, 2020).



Participants of the Asian Training of Trainers Workshop for Biosafety Clearing House National Focal Points (February 5, 2020).

indicated that KBCH would continue to support the regional project.

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Session on Potato Biotechnology at the Global Potato Conclave 2020

Dr. Vibha Ahuja, Biotech Consortium India Limited



The Prime Minister of India, Honorable Shri Narendra Modi, addressing the Global Potato Conclave 2020 via video conference (January 28, 2020).

Potato is the third most important food crop in the world, after rice and wheat, in terms of human consumption. The third *Global Potato Conclave (GPC) 2020* was organized by the Indian Potato Association (IPA), in collaboration with the Indian Council of Agricultural Research (ICAR), ICAR-Central Potato Research Institute, and International Potato Centre (CIP), Peru from January 28-31, 2020 at Gandhi Nagar, Gujarat. The Global Potato Conclave is organized once every 10 years, with two having been organized in New Delhi in 1999 and 2008.

The Prime Minister of India, Honorable Shri Narendra Modi, addressed the GPC via video conference. Shri Modi was pleased to note that the conclave is being held in Gujarat, as this is the leading state in India as far as potato production is concerned. He spoke about various initiatives taken by the Government of India in agriculture and stated that the central government has transferred a record Rs 12,000 crore directly into the bank accounts of six crore farmers in January 2020. He expressed his satisfaction that scientists and experts from around the world, potato farmers, processors, fabricators, and other stakeholders have gathered for the GPC 2020 to discuss important aspects about potato cultivation, food and nutritional value, and processing opportunities. The conclave witnessed the august presence of the Chief Minister of Gujarat, Shri Vijay Rupani; Union Minister of Agriculture and Farmers Welfare, Shri Narendra Singh Tomar; Secretary, Department of Agricultural Research and Education and Director General, ICAR, Dr. T. Mohapatra; Secretary, Department of Agriculture, Cooperation and Farmers Welfare, Shri Sanjeev Aggarwal; and Secretary, Department of Food Processing Industries, Smt. Pushpa Subrahmanyam.

The event was attended by more than 700 stakeholders, including academics, private sector representatives, administrators, farmers, traders, and input dealers, etc. Technical sessions focused on the latest developments in germplasm management and next generation breeding, crop production and climate change, biotechnology and omics, artificial intelligence and ICT, potato pest and disease management, post-harvest management and value addition, and advances in seed technology. The Agri-Expo exhibition was organized concurrently to showcase the status of potato and other agriculture-based industries, processing of potato, etc., with about 150 stalls. Technologies were exhibited by various ICAR institutes, the International Potato Centre, SAUs, NABARD, food processing industries, seed/pesticide/fertilizer producers, etc. A field day was arranged on January

31, 2020 at Village Chandrala, Dist. Gandhinagar, during which more than 3000 farmers participated. During the field day, live demonstration of potato varieties (indigenous and exotic), technologies, and farm machineries involved in the production chain of potato was undertaken.

The technical Session on potato biotechnology and omics started with an overview of potato biotechnology in India by ICAR-CPRI. Research initiatives underway for the development of improved varieties of potato through genetic engineering and gene editing were presented. These included transgenics for late blight resistance, potato viral disease resistance, bacterial wilt resistance, and quality improvement parameters.

Dr. Donald MacKenzie, Executive Director, Institute for International Crop Improvement (IICI), Donald Danforth Plant Science Center gave a presentation on the use of CRISPR technology as a new tool for better crops. Dr. MacKenzie discussed the status of research and regulation of gene editing technology in various countries, observing that China and the USA are the two countries with the highest number of publications in gene editing. He explained that countries like the USA, Argentina, Australia, Japan, etc. have exempted certain categories of gene editing from regulation. As India is still in the process of discussing/reviewing draft guidance, he added that plants should be dealt with separately from animal and human stem cells.

Presentations were also made on biotechnological approaches for producing in vivo haploids in potato and the application of genomics for the understanding of trait improvements in potato. Issues on biotechnology and biosafety were also discussed in the session on potato policy issues. In the plenary lecture on global research and development priorities for potato, Dr. Ian Barker, Program Leader, Global Agrifood Systems, CIP, highlighted the need for biotech intervention to deal with the challenges being faced in potato cultivation. In particular, he spoke about successful trials of late blight resistant potatoes and farmers demanding the technology in view of the extensive losses faced by them. Dr. Vibha Ahuja, Chief General Manager, Biotech Consortium Limited, spoke about the challenges being faced for taking forward such products in India through biosafety regulations. She emphasized the need for streamlining regulatory requirements, as well as a dialogue with policymakers for effective use of biotechnology in enhancing potato production.

The event was attended by more than 700 stakeholders, including academics, private sector representatives, administrators, farmers, traders, and input dealers, etc.

CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
INDIA			
National Conference on Food & Nutritional Security and Sustainable Agriculture	Professor Jayashankar Telangana State Agricultural University	March 20-21, 2020 Hyderabad	https://www.pjtsau.edu.in/
DST-SERB-Sponsored Workshop on GENOMICS - Powerful Tool to Better Understand the Genome	ICAR-Indian Institute of Sugarcane Research	March 24-25, 2020 Lucknow	http://www.iisr.nic.in/download/SERBWorkshop_IISR_2020.pdf
Hands On Training in Tissue Culture in Banana	Business Entrepreneurship & Start-Up Support through Technology in Horticulture (BESST-HORT), a Technology Business Incubator of ICAR-Indian Institute of Horticultural Research	April 21-25, 2020 Bengaluru	https://iihr.res.in/five-days-training-programme-%E2%80%9Ctraining-tissue-culture-banana-21st-25th-april-2020-icar-iihr?
6 th Agricultural Graduate Students' Conference (AGSC 2020)	Tamil Nadu Agricultural University	May 7-8, 2020 Tamil Nadu	https://sites.google.com/tnau.ac.in/agsc2020/
INTERNATIONAL			
Meeting of the Ad Hoc Technical Expert Group on Risk Assessment	Secretariat of the Convention on Biological Diversity	March 31-April 3, 2020 Montreal, Canada	https://www.cbd.int/meetings/?thm=CPB
17 th Meeting of the Compliance Committee under the Cartagena Protocol on Biosafety	Secretariat of the Convention on Biological Diversity	April 15-17, 2020 Montreal, Canada	https://www.cbd.int/meetings/?thm=CPB
14 th Meeting of the Liaison Group on the Cartagena Protocol on Biosafety	Secretariat of the Convention on Biological Diversity	April 20-23, 2020 Montreal, Canada	https://www.cbd.int/meetings/?thm=CPB
The 3 rd Asian Horticultural Congress 2020 (AHC 2020)	Horticultural Science Society of Thailand, International Society for Horticultural Science, Department of Agriculture, Department of Agricultural Extension, Ministry of Agriculture, Kasetsart University, and VNU Exhibitions Asia Pacific	May 7-9, 2020 Bangkok, Thailand	http://ahc2020.org/
24 th Meeting of the Subsidiary Body on Scientific, Technical, and Technological Advice	Secretariat of the Convention on Biological Diversity	May 18-23, 2020 Montreal, Canada	https://www.cbd.int/meetings/?thm=CPB
3 rd Meeting of the Subsidiary Body on Implementation	Secretariat of the Convention on Biological Diversity	May 25-30, 2020 Montreal, Canada	https://www.cbd.int/meetings/?thm=CPB



SOUTH ASIA
BIOSAFETY PROGRAM

The South Asia Biosafety Program (SABP) is an international developmental program implemented in India and Bangladesh 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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