

# South Asia Biosafety Program

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## BANGLADESH

### Meeting on National Biotechnology Policy and Action Plan 2019 Draft

Mr. Sium Ahmed, Biosafety Support Office



The discussion session of the “Meeting on National Biotechnology Policy and Action Plan 2019 Draft” (from left to right): Mr. Muhammad Akbar Husain, Additional Secretary, Ministry of Science and Technology, Bangladesh; Dr. Md. Salimullah, Director General, National Institute of Biotechnology; Prof. Dr. M. Anwar Hossain, Department of Biochemistry and Molecular Biology, University of Dhaka.

A day-long meeting on the “National Biotechnology Policy and Action Plan 2019 Draft” was held at the Atomic Energy Commission, Dhaka on December 29, 2019. The event was jointly organized by the National Institute of Biotechnology (NIB) and the Ministry of Science and Technology (MoST), Government of the People’s Republic of

Bangladesh. The meeting was chaired by Mr. Muhammad Akbar Husain, Additional Secretary, MoST. The session began with a welcome address from Dr. Md. Salimullah, Director General, NIB. Then, Mr. Palash Kumar Sarker, Senior Scientific Officer, Microbial Biotechnology Division, NIB presented the draft policy document.

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## ANNOUNCEMENT - INDIA

### Department of Biotechnology Invites Comments on “Draft Document on Genome Edited Organisms: Regulatory Framework and Guidelines for Risk Assessment”

The Department of Biotechnology (DBT), Government of India, has invited comments on “Draft Document on Genome Edited Organisms: Regulatory Framework and Guidelines for Risk Assessment” from researchers/institutions and other stakeholders. The draft guidelines include applicable laws and procedures governing genome editing, general considerations and tiered approach for risk assessment of genome edited organisms and products derived thereof, regulatory approval road map, data requirement for risk assessment, and institutional mechanism for governance and oversight.

It is extremely important for the scientific community to carefully review the draft guidelines and provide comments to DBT, in view of the extensive potential of gene editing techniques for innovation in biomedicine, agriculture, industrial biotechnology, and other sectors relating to the bioeconomy.

“Draft Document on Genome Edited Organisms: Regulatory Framework and Guidelines for Risk Assessment” can be downloaded at:

[http://dbtindia.gov.in/sites/default/files/Draft\\_Regulatory\\_Framework\\_Genome\\_Editing\\_9jan2020a.pdf](http://dbtindia.gov.in/sites/default/files/Draft_Regulatory_Framework_Genome_Editing_9jan2020a.pdf)

Comments/observations pertaining to the same must be conveyed by: **February 8, 2020**

to: [rcgm.dbt@nic.in](mailto:rcgm.dbt@nic.in) or [ibkp2019@dbt.nic.in](mailto:ibkp2019@dbt.nic.in), or sent through the IBKP portal at <https://ibkp.dbtindia.gov.in/Content/PublicConsultation>.

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The national biotechnology policy is periodically reviewed in consultation with other relevant ministries and stakeholders for updating, harmonization, and standardization of the policy in line with the fast development in this field and also with international treaties, protocols, conventions, etc. that the government signs. In continuation of that effort, the present gathering discussed various issues to make this draft document updated and more comprehensive with the government's commitments to international communities.

Around 60 participants, including eminent academics from various public universities, such as Dhaka University, Jahangirnagar University, Shahjalal University of Science and Technology, Jashore University of Science and Technology, Bangladesh Agricultural University, and Khulna University; public research organizations, such as Bangladesh

Rice Research Institute, Bangladesh Sugarcane Research Institute, and Krishi Gobeshona Foundation; relevant ministries, such as the Ministry of Agriculture, Ministry of Health and Family Welfare, and Ministry of Industries; private organizations, such as the Bangladesh Environmental Lawyers Association; industries, such as Lal Teer Seed Limited, and Apex Biotech Limited; and representatives from the University Grants Commission were present at the meeting. The participants shared their thoughts and ideas and offered suggestions on the draft policy based on current developments and future prospects in this field in Bangladesh.

This gathering was very effective, as there was two-way communication between the policymakers and stakeholders to finalize the document. It will definitely help to improve policy and lead the country in the context of both strategy and practical endeavors.

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NEWS RELEASE



## Philippines Approves Golden Rice for Direct Use as Food and Feed, or for Processing

After rigorous biosafety assessment, Golden Rice "has been found to be as safe as conventional rice" by the Philippine Department of Agriculture-Bureau of Plant Industry. The biosafety permit, addressed to the Department of Agriculture - Philippine Rice Research Institute (DA-PhilRice) and International Rice Research Institute (IRRI), details the approval of GR2E Golden Rice for direct use as food and feed, or for processing (FFP).

PhilRice Executive Director Dr. John de Leon welcomed the positive regulatory decision. "With this FFP approval, we bring forward a very accessible solution to our country's problem on Vitamin A deficiency that's affecting many of our pre-school children and pregnant women."

Despite the success of public health interventions like oral supplementation, complementary feeding, and nutrition education, Vitamin A deficiency (VAD) among children aged 6 months to 5 years increased from 15.2 percent in 2008 to 20.4 percent in 2013 in the Philippines. The beta-carotene content of Golden Rice aims to provide 30 to 50 percent of the estimated average requirement (EAR) of vitamin A for pregnant women and young children.

"IRRI is pleased to partner with PhilRice to develop this nutrition-sensitive agricultural solution to address hidden hunger. This is the core of IRRI's purpose: to tailor global solutions to local needs," notes IRRI Director General Matthew Morrell. "The Philippines has long recognized the potential to harness biotechnology to help address food and nutrition security, environmental safety, as well as improve the livelihoods of farmers."

The FFP approval is the latest regulatory milestone in the journey to develop and deploy Golden Rice in the Philippines. With this approval, DA-PhilRice and IRRI will now proceed with sensory evaluations and finally answer the question that many Filipinos have been asking: *What does Golden Rice taste like?*

To complete the Philippine biosafety regulatory process, Golden Rice will require approval for commercial propagation before it can be made available to the public. This follows from the field trials harvested in Muñoz, Nueva Ecija and San Mateo, Isabela in September and October 2019.

The Philippines now joins a select group of countries that have affirmed the safety of Golden Rice. In 2018, Food Standards Australia New Zealand, Health Canada, and the United States Food and Drug Administration published positive food safety assessments for Golden Rice. A biosafety application was lodged in November 2017 and is currently undergoing review by the Biosafety Core Committee in Bangladesh.

### About the Healthier Rice Program

Together with its national partners, the Healthier Rice Program at IRRI is working to improve the nutritional status in countries across Asia and Africa, where rice is widely grown and eaten. Delivering essential micronutrients through staple foods like rice offers a sustainable and complementary approach to public health interventions for micronutrient deficiency, which affects 2 billion people worldwide. In addition to Golden Rice, research is being conducted on high iron and zinc rice (HIZR) to help address iron-deficiency anemia and stunting.

Source: International Rice Research Institute, <https://www.irri.org/news-and-events/news/philippines-approves-golden-rice-direct-use-food-and-feed-or-processing>

## Vegetable Pest Management Practices in Bangladesh and their Impact on the Environment

Prof. Dr. Md. Shahidul Haque, Bangladesh Agricultural University (haquems@bau.edu.bd)

Biosafety Research in Bangladesh Grants Program Award Recipient



Prof. Dr. Md. Shahidul Haque, delivering a presentation about his research project at the 7<sup>th</sup> Annual South Asia Biosafety Conference (September 14, 2019).

The goal of my project is to suggest alternative environment-friendly pest management practices, including the use of genetically engineered (GE) vegetables.

### OBJECTIVES:

- To assess the pest management practices by farmers in Bangladesh
- To investigate pesticides used for vegetable production in Bangladesh
- To analyze the residues of pesticides on selected vegetable crops and in soil and water
- To investigate farmers' perception of the effects of pesticides on the ecosystem

### METHODOLOGY:

The study involves a total of ten districts (five for the winter season vegetables and five for the summer season vegetables), which were chosen based on major production of the selected vegetables in Bangladesh (Bangladesh Bureau of Statistics, 2018). For the winter season vegetables, the study areas include Cumilla, Narshindhi, Jessore, Rajshahi, and Dinajpur. For the summer season vegetables, the study areas include Chattogram, Naogaon, Jessore, Bhola, and Sylhet.

**TARGET AREAS AND POPULATION:** This cross-sectional study began in November 2019 and will continue until October 2020. Interviews with randomly selected vegetable farmers are being conducted in each upazilla of the selected ten districts, where vegetables are mostly cultivated using pesticides in particular. The sample comprises of 1000 farmers (100 from each district). Three categories of farmers, namely focal farmers (farmers who have regular contact with extension support staff), proximal farmers (neighbors of focal farmers who have occasional contact with the extension staff), and control farmers (farmers who have received no training or technical support from any organization and have no contact with the extension staff) are targeted for investigation.

For analyzing pesticide residues in vegetables, samples are being collected from the selected ten districts. Pesticide residues in the vegetable samples will be analyzed at the Pesticide Analytical laboratory at the Entomology Division of Bangladesh Agricultural Research Institute. The residues of pesticide compounds in experimental samples will be determined by gas chromatography and data will be analyzed using Microsoft Excel and Statistical Package for the Social Sciences (SPSS) software.

**DATA COLLECTION:** A questionnaire has been designed based on published literature on the subject, as well as the experience of authors in the field. Data are being collected through a survey by face-to-face interviews with farmers during farming activities. The questionnaire has been designed in English and translated into Bangla.

Three surveyors (one survey supervisor and two survey enumerators) from Bangladesh Agricultural University are involved in conducting interviews.

Inclusion criteria were set to direct handling of pesticide (i.e., spraying, mixing, disposal of pesticide, and weeding) for at least six months. Farmers not cultivating the selected vegetables will be excluded from the present study. The farmers are informed about the purpose of the study and a verbal consent is taken before interviews.

**SELECTED VEGETABLES:** Data will be collected on five summer vegetables and five winter vegetables. Summer vegetables include bitter melon, lady's finger, pointed gourd, snake gourd, and yard long bean. Winter vegetables include cabbage, cauliflower, country bean, red amaranth, and tomato.

**DATA ANALYSIS:** Data will be collected, coded, analyzed, and tabulated using SPSS. A Chi-square test will be used to compare categorical data.

### FACILITIES AND RESOURCES:

The Department of Biotechnology at Bangladesh Agricultural University has facilities for the proposed research. It has personnel trained in the biosafety aspects of genetically modified organisms. The Principal Investigator (PI) has knowledge on the biosafety of GE crops gained through attending training, workshops, meetings, and seminars. Co-PI, Professor Dr. Md. Shahidul Islam, is an expert on biosafety and biosecurity. The department has experience in conducting surveys on biosafety of Bt-brinjal cultivated throughout Bangladesh, assigned by the Department of Environment, Ministry of Environment, Forest and Climate Change, Bangladesh, which is the regulatory authority for biosafety of GE plants in Bangladesh. The department has trained graduate students who are capable of conducting the survey as proposed in this project. It has laboratory space and computer facilities for the proposed research. The proposed collaborator, Dr. Md. Sultan Ahmed, has modern facilities for pesticide residue analysis in an accredited laboratory and is experienced in pesticide chemistry and residue analysis.

### EXPECTED OUTCOME:

- Baseline information on pest management practices in Bangladesh.
- A list of pesticides commonly used in selected vegetables.
- Determination of pesticide residues in vegetables, soil, and water.
- Scenario of environmental degradation due to pesticide use.

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.

## CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
<b>BANGLADESH</b>			
9 <sup>th</sup> International Plant Tissue Culture & Biotechnology Conference	Bangladesh Association for Plant Tissue Culture and Biotechnology (BAPTC&B)	February 8-10, 2020 Dhaka	<a href="http://baptcb.org/conference/">http://baptcb.org/conference/</a>
<b>INDIA</b>			
7 <sup>th</sup> International Conference on Phytopathology in Achieving UN Sustainable Development Goals	Indian Council of Agricultural Research, Indian Agricultural Research Institute, and Indian Phytopathological Society, New Delhi	January 16-20, 2020 New Delhi	<a href="http://igau.edu.in/">http://igau.edu.in/</a>
ICAR Sponsored Winter School on "Current Applications, Challenges and Perspective of Genomics-Assisted Breeding for Crop Improvement"	Bihar Agricultural University	January 16-February 5, 2020 Sabour, Bihar	<a href="https://www.bausabour.ac.in/album/File105_12_201911_24_03P IMG1.pdf">https://www.bausabour.ac.in/album/File105_12_201911_24_03P IMG1.pdf</a>
3 <sup>rd</sup> International Symposium on Genomics in Aquaculture - 2020 (ISGA-III)	ICAR - Central Institute of Freshwater Aquaculture	January 21-23, 2020 Bhubaneswar	<a href="http://www.isga3cifa.com/">http://www.isga3cifa.com/</a>
Plant Genetics and Genomics Conference	SRM Institute of Science & Technology, Chennai	January 23-24, 2020 Chennai	<a href="http://www.plantbiology.in/">http://www.plantbiology.in/</a>
Global Potato Conclave 2020	Indian Council of Agricultural Research-Central Potato Research Institute, Shimla and Indian Potato Association, Shimla	January 28-31, 2020 Gandhinagar, Gujarat	<a href="http://gpc2020.in/">http://gpc2020.in/</a>
9 <sup>th</sup> Training Workshop for IBOs and Principal Investigators Engaged in Development of GM Crops: Regulatory Submissions for Development of GE Plants-Key Considerations	Indian Council of Agricultural Research, South Asia Biosafety Program, ILSI Research Foundation, Institute for International Crop Improvement - Donald Danforth Plant Science Center, and Biotech Consortium India Limited	January 31, 2020 New Delhi	<a href="https://icar.org.in/">https://icar.org.in/</a>
National Conference on Climate Resilient Agriculture for Sustainable Production and Nutritional Security	University of Agricultural Sciences, Dharwad	February 1-2, 2020 Dharwad	<a href="http://www.uasd.edu/images/last_news_2020/04012020a.pdf">http://www.uasd.edu/images/last_news_2020/04012020a.pdf</a>
National Oilseeds Seminar 2020: Technological Innovations in Oilseed Crops for Enhancing Productivity, Profitability and Nutritional Security	Indian Society of Oilseeds Research and ICAR-Indian Institute of Oilseeds Research	February 7-8, 2020 Hyderabad	<a href="http://www.icar-iior.org.in/media/docs/isor/2019/isor-seminar.pdf">http://www.icar-iior.org.in/media/docs/isor/2019/isor-seminar.pdf</a>



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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