

# South Asia Biosafety Program

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## ANNOUNCEMENT

### A Competitive Grants Program to Strengthen the Biosafety Knowledge Base in Bangladesh

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. SABP is currently inviting pre-proposals for 2020 BRBGP grants.

**The BRBGP will support laboratory, field, or literature research** that will significantly advance the body of knowledge relevant to biosafety in Bangladesh priority areas. Research or activities included in (but not limited to) one of the following areas are eligible for funding:

**1. Providing baseline information related to current agricultural practice in Bangladesh in order to inform future assessments of the likely use of GE plants and their potential impact, including:**

- a. The management and use of pesticides or herbicides.
- b. Other agricultural management practices, including tillage, crop rotations, etc.
- c. Characterizing the impacts and interactions of current agricultural practices on surrounding ecosystems.

**2. Developing effective mechanisms to enhance risk management, including:**

- a. Understanding how farmers in Bangladesh obtain and use information about agricultural management practices, in order to inform future efforts to support effective stewardship of GE plants.

**3. Providing baseline information relevant to biodiversity in Bangladesh, including:**

- a. The presence and compatibility of wild populations of plants that are related to crop species in order to inform future assessments of the possibility and consequences of gene flow from genetically engineered plants.
- b. Characterization of arthropod abundance in and around agricultural fields in order to inform future assessment of the potential impacts of pest resistant GE plants on arthropod populations.
- c. Identifying important protected/charismatic species and characterizing their interactions with agricultural production.

**4. Providing information on the effectiveness of risk management provisions, particularly around confined field trials for GE crops, including:**

- a. Testing the use of spatial and reproductive isolation methods in the context of Bangladeshi agriculture.

### Eligible Institutions and Collaborations

Public and private agricultural research institutions and universities of Bangladesh, or International Agricultural Research Centers (IARCs) involved in research in Bangladesh, may submit pre-proposals. The pre-proposal must include at least one collaborating scientist that resides and works in Bangladesh.

Collaboration between research and regulatory institutions is strongly encouraged. Consortia comprised of research institutions in Bangladesh and those from developed countries or international institutions are also strongly encouraged. In such cases, complementarity and/or value addition in terms of experience, expertise, and/or facilities should be shown.

### Grant Size

In 2020, a number of grants ranging between **US \$15,000** and **US \$25,000** are expected to be awarded to competent institutions to conduct research for one year.

### Pre-Proposal Guidelines

The BRBGP Grant Announcement & Pre-Proposal Guidelines may be downloaded at: <https://ilsirf.org/sabp/#BRBGP>

### Pre-proposal Submission Deadline

**March 31, 2020, 17:00 hrs BST**

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### Contacts for more information on the program & pre-proposal format:

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Source: [www.ilsir.org/sabp](http://www.ilsir.org/sabp)

**BANGLADESH**

## Use and Handling Practices of Pesticides used in the Cultivation of High Yielding Potato Varieties in Bangladesh

Prof. Dr. Mohammad Zabed Hossain, University of Dhaka (zabed@du.ac.bd)

2019 Biosafety Research in Bangladesh Grants Program Award Recipient



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

### BACKGROUND

Diffusing high yielding varieties (HYVs) and genetically modified (GM) crops in agriculture has created concerns since some of these crops are chemical input intensive, rendering potential risks of genetic erosion and environmental degradation. Assessment for introducing GM crops is, therefore, relevant to sustainably combatting the battle of food shortage. Nevertheless, data on the use, composition, and handling practices of pesticides used in non-transgenic crop cultivation is important to assess the future potential environmental impacts of the same on transgenic crops. Potato (*Solanum tuberosum* L.) is one of the most important vegetable crops, contributing about 50% of the total vegetable production in Bangladesh. Cultivation of HYVs of potato indicate high risk of environmental pollution through increased

application of agrochemicals. Moreover, researchers are trying to develop varieties resistant to diseases like late blight through genetic engineering, using three disease resistance genes to gain adequate defense against these diseases. However, before adopting GM potato, it is important to have baseline information on the use, composition, and handling practices of pesticides used in the cultivation of HYVs of potato in Bangladesh, in order to inform future assessments of the likely use of GM potato and their potential impacts. Therefore, the proposed research aims to study (1) the use and composition of pesticides used in the cultivation of HYVs of potato, (2) the handling practices of pesticides used in the cultivation of HYVs of potato, and (3) the factors that influence the choice of pesticide application in the cultivation of HYVs of potato in Bangladesh.

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## METHODOLOGY

The proposed research will be a cross-sectional study design applying quantitative methods to generate baseline findings on pesticide use and handling practices by the high yielding potato growers in Bangladesh. All potato producing districts of Bangladesh will be sub-divided into three sub-divisions on the basis of productivity rate of potato: high, medium, and low productivity districts where each subdivision will be considered as a stratum. From each stratum, five districts (and thus 15 districts in total) will be selected for data collection. Then, a multi-stage stratified random sampling design will be followed so that 40 farmers will be selected from each district and a total of 200 farmers from a stratum constituting 600 sample farmers in total for three strata will be selected. Both structured and open-ended questionnaires will be prepared to collect detailed information on particular cases, such as health and environmental issues encountered by the farmers. Data will be collected just before or immediately after harvesting of potato so that farmers can recall and answer questions regarding use, composition, and handling practices of the pesticides used in the cultivation of potato.

## EXPECTED OUTCOMES

The proposed study will generate baseline data on the use, composition, and handling practices of pesticides used in the cultivation of HYVs of potato in Bangladesh. The study will thus help examine the feasibility of adoption of genetically modified potato in Bangladesh in the future. Knowing the composition of these chemicals and the handling practices adopted by the farmers can provide information on its potential hazards and assist the relevant policy makers in suggesting ways of improving the condition of these problems. Information gained on the level of knowledge of farmers about the impacts of pesticides on the environment will help formulate region-wise improved policy or guidelines for achieving sustainable agricultural development programs in the country. The study is also expected to contribute to the limited knowledge on pesticide use aspects of potato growers in Bangladesh. Overall, the proposed study will help devise environment-friendly sustainable agricultural development interventions. In addition, the researchers and other staff of the institutions engaged in implementing the project are expected to gain skills in carrying out research activities of this sort and will develop expertise in this specific field.

### BANGLADESH

## Training Program under the 2019 Biosafety Research in Bangladesh Grants Program at the University of Dhaka

Prof. Dr. Mohammad Zabed Hossain, University of Dhaka

A 10-day long training program on "Use and handling practices of pesticides used in the cultivation of high yielding potato varieties in Bangladesh" under the 2019 Biosafety Research in Bangladesh Grants Program (BRBGP), which is managed by the ILSI Research Foundation as part of the USAID-funded South Asia Biosafety Program (SABP), started on January 28, 2020 at the Department of Botany, University of Dhaka (DU). At the inaugural session, Prof. Dr. Mohammad Zabed Hossain, Lead Investigator of the project, briefed the participants about the project and the training program. Later, Prof. Dr. Rakha Hari Sarker, Chairman, Department of Botany, DU and Dr. Aparna Islam, Country Manager, SABP, Bangladesh delivered their speeches as Chief Guest and Invited Guest, respectively.

Prof. Dr. Sarker elaborated on the involvement of the Department of Botany in Bangladesh's biosafety system. He encouraged the

**At the training, participants were introduced to the biology of potato, cultivation, production constraints, and its management.**

participants to become experts on this issue. Also, he emphasized research communication and encouraged publications in journals. Dr. Islam briefed the audience about the importance of baseline data collection for biosafety assessment. She also described the process of

BRBGP grantee selection and SABP activities. Dr. Md. Mosharraf Hossain Molla, Principal Scientific Officer, Tuber Crop Research Centre (TCRC) of the Bangladesh Agriculture Research Institute (BARI) contributed to conducting part of the training

program. A total of 10 research assistants and a research associate participated in the training program. At the training, participants were introduced to the biology of potato, cultivation, production constraints, and its management. Training also included data collection methodology and field visit for a hands-on experience.



Prof. Dr. Rakha Hari Sarker, delivering a speech at the Inaugural Session of the training program, with while Prof. Dr. Mohammad Zabed Hossain and Dr. Aparna Islam on the stage (left to right).



Dr. Md. Mosharraf Hossain Molla, Principal Scientific Officer, TCRC, BARI, conducting part of the training program.

## Key Recommendations on Gene Editing in Agriculture and its Regulation: Regional Expert Consultation in Hyderabad, India

The *Regional Expert Consultation on Gene Editing and its Regulation* was organized by the Asia-Pacific Association of Agricultural Research Institutions (APAARI), in collaboration with the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) and other partners, on October 10-11, 2019 in Hyderabad. Dr. Renu Swarup, Secretary, Department of Biotechnology, Government of India, was the Chief Guest. In her inaugural address, she spoke about the emerging needs of agriculture in India and how gene editing technology can be a game changer, while addressing some of the intractable traits. In his address, Dr. Peter S. Carberry, Director General, ICRISAT also emphasized the dire need for a change to improve the crops and address multiple new issues, in view of the growing population, consumer demand, and climate change. He also suggested that advanced technologies like gene editing need to be considered as an equivalent of accelerated mutations for the understanding of civil society. Dr Rishi K. Tyagi, Coordinator, Asia-Pacific Consortium on Agricultural Biotechnology and Bioresources (APCoAB), discussed the rationale and expectations from the Expert Consultation.

The objective of the expert consultation was to deliberate on the innovations through gene editing, their impact in the agricultural sector, and review the status of regulatory policies around gene editing across the globe, particularly in countries of the Asia-Pacific region. More than 100 experts from academia, agriculture industry, government, and regulatory agencies from 12 different countries of the Asia-Pacific region participated in this consultation. APAARI has published the proceedings and recommendations of the expert consultation that is available at <http://www.apaari.org/>.

Key recommendations that emerged from the 2-day deliberations are as follows:

1. Many governments are seeking to ensure that the regulation of genome-edited plants is commensurate with the potential risks of these plants to the environment, human, or livestock safety. To this end, some governments have already taken the position that gene edited plants with phenotypes that have been or can be achieved using conventional plant breeding techniques (which includes mutagenesis techniques) should be subject only to those same regulations as their conventionally-bred counterparts, e.g., phytosanitary regulations, variety registration, etc. Any regulatory oversight should be based on the final product rather than the process involved. Therefore, it was recommended that consistency can be achieved by not regulating products of plant varieties developed through the latest breeding methods if they are similar or indistinguishable from varieties produced through earlier breeding methods. The genetic variation in the final product would not be regulated when:

- it does not contain a novel combination of genetic material\*;
- the final plant product contains genetic material from sexually compatible plant species; or
- any form of mutagenesis is involved.

This will ensure that agricultural innovation can proceed unhindered for the benefit of farmers and society.

2. As is abundantly clear from experience with the regulation of GM (genetically modified) plants across the globe, ambiguity in regulatory requirements causes unpredictable delays in approvals, thereby increasing costs, deterring innovation, and restricting product pipelines. These costs have also effectively eliminated

small- and medium-sized enterprises from being able to compete in this space. This has severely constrained the development and deployment of GM crops important for food security or with traits that are relevant for smallholder agricultural systems. Science-based, predictable, and proportionate regulations with clear timelines are urgently required to encourage innovations. It was recommended that countries should clarify the scope of their regulation for the products of gene editing at the earliest.

3. Should it be determined that a sub-set of gene-edited plants may warrant regulation as GM, then harmonization of approaches within the Asia-Pacific region is important for collaboration in research, capacity development, regulation,

and trade. Efforts towards common ground should be facilitated by organizing interactive meetings among researchers and regulatory agencies in the region and should also be informed through appropriate stakeholder engagement and/or consultations.



Cover of Regional Expert Consultation on Gene Editing and its Regulation: Proceedings and Recommendations © APAARI.org

**Download the Proceedings & Recommendations Document from:**

[www.apaari.org](http://www.apaari.org)

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4. Significant efforts are needed from all stakeholders to improve and prioritize communication and information exchange about gene editing, particularly focusing on how it is an extension of conventional plant breeding. Focused programs for communicating science-based information in easy-to-understand language should be initiated by academics, industry, and experts from both public and private sectors.

5. Besides, capacity and competency building in research and development, deployment, and delivery of the products of gene editing should be enhanced at the regional level. Partnerships—public-public and public-private—should be encouraged. Better mechanisms for sharing knowledge/technology need to be in place to enable such partnerships. Public-private partnerships should be encouraged to work in the areas of relevance to the Asia-Pacific. Regional organizations like APAARI should lead the development

of network projects involving national partners in the interest of smallholder farmers and consumers of the region.

6. Crops, as well as areas of improvement, need to be prioritized for an efficient deployment of gene editing technology. The first applications of gene editing in the country can set precedents and hence proactively establish effective policies. Innovative institutional arrangements, networks, and collaboration will contribute substantially to the development of human capital needed to ensure the judicious application of these advanced tools and technologies in the region. Similarly, regional collaborations and networks can also contribute to capacity building, communication strategies, policy development, and advocacy.

For more information about the proceedings, contact Dr. Rishi K. Tyagi, Coordinator, APCoAB (Email: rishi.tyagi@apaari.org) and Dr. Pooja Bhatnagar, Theme Leader – Cell, Molecular Biology and Genetic, ICRISAT (Email: p.bhatnagar@cgiar.org).



*Group photo of participants from the Gene Editing in Agriculture and its Regulation: Regional Expert Consultation in Hyderabad, India (October 11, 2019)*

#### ANNOUNCEMENT

### United States Launches Unified Website for Biotechnology Regulation

January 2020 was celebrated as the National Biotechnology Month in the United States. As part of recognizing the tremendous potential of biotechnology in providing safe food and technological breakthroughs in the field of medicine and agriculture, a common website was launched in early January 2020 by the three regulatory agencies that are involved in regulation of biotechnology products.

The website provides a single platform with multifold uses, including education about innovative discoveries and inventions in the field of biotechnology and enhanced customer service. Users can now submit questions to all the three agencies, United States Department of Agriculture (USDA), United States Food and Drug Administration (US FDA), and United States Environmental Protection Agency (US EPA), using a single website at the same time. The federal review process for biotechnology products under the Coordinated Framework is described, with clear explanations of each regulatory agency's role. The website also houses links to various laws, regulations, and guidelines that govern the products of agricultural biotechnology, as well as provides quick links to USDA, US FDA, and US EPA websites, along with a Frequently Asked Questions page.

It is important to note that the release of the new website does not change the regulatory process for products of modern biotechnology in the United States but provides an interactive platform for consolidation of information pertaining to the regulation of all biotechnology products.

*Source: <https://usbiotechnologyregulation.mrp.usda.gov/biotechnologygov/home/>*

## CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
<b>BANGLADESH</b>			
2 <sup>nd</sup> Institutional Biosafety Officer Workshop: Developing an IBO Agenda for 2020	South Asia Biosafety Program	February 20, 2020 Dhaka	<a href="http://www.ilsirf.org/sabp">http://www.ilsirf.org/sabp</a>
<b>INDIA</b>			
ICB 2020 - International Conference on Banana	Indian Council of Agricultural Research (ICAR), ICAR-National Research Centre on Banana, Bioversity International, and Society for Promotion of Horticulture	February 22-25, 2020 Trichy, Tamil Nadu	<a href="http://www.icb2020.in/index">http://www.icb2020.in/index</a>
Training Program on Genomics for Improvement of Horticultural Crops	ICAR-Indian Agricultural Research Institute	February 24-March 5, 2020 New Delhi	<a href="https://www.iari.res.in/files/Latest-News/Brochure_Genomics_for_Improvement_of_Horticultural_Crops_02092019.pdf">https://www.iari.res.in/files/Latest-News/Brochure_Genomics_for_Improvement_of_Horticultural_Crops_02092019.pdf</a>
1 <sup>st</sup> Indian Rice Congress-2020	Association of Rice Research Workers, ICAR-National Rice Research Institute, and ICAR-Indian Rice Research Institute	February 27-29, 2020 Cuttack	<a href="http://arrworyza.com/AdminPanel/uploadfile/Rice_Congress_2020%20(1).pdf">http://arrworyza.com/AdminPanel/uploadfile/Rice_Congress_2020%20(1).pdf</a>
<b>INTERNATIONAL</b>			
7 <sup>th</sup> Plant Genomics and Gene Editing Congress: Asia	Global Engage Ltd.	April 20-21, 2020 Taipei, Taiwan	<a href="http://www.global-engage.com/event/plant-genomics-asia/">http://www.global-engage.com/event/plant-genomics-asia/</a>
The Third 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 Co., Ltd.	May 7-9, 2020 Bangkok, Thailand	<a href="http://ahc2020.org/">http://ahc2020.org/</a>
10 <sup>th</sup> Meeting of the Conference of the Parties Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety	Secretariat of the Convention on Biological Diversity	October 15-28, 2020 Kunming, China	<a href="https://www.cbd.int/meetings/?thm=CPB">https://www.cbd.int/meetings/?thm=CPB</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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