

South Asia Biosafety Program

NEWSLETTER FOR PRIVATE CIRCULATION ONLY – NOT FOR SALE



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Series: Genome Editing in
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SOUTH ASIA

Harmonization of International Standards for Food Safety - Part II

Dr. Bhavneet Bajaj, Agriculture & Food Systems Institute, Washington, DC



Village road in Bangladesh at sunset © Dreamstime.com

In this article, we'll outline the benefits of a regional harmonization approach towards safety assessment of genetically engineered (GE) foods, with a focus on the *Codex Guideline for the Conduct of Food Safety Assessment of Foods Derived from Recombinant-DNA Plants* (Codex Plant Guideline, hereafter) as an international benchmark.

INTERNATIONAL INITIATIVES IN HARMONIZATION OF GUIDELINES FOR SAFETY ASSESSMENT OF GE FOODS

Commercialization of GE plants, whether for food, feed, and processing or for cultivation, is contingent upon a pre-market safety assessment followed by a decision on approval consistent with regulatory requirements. Guidelines for the safety assessment of GE foods, such as those developed by the Codex Alimentarius Commission (CAC) and the Organisation for Economic Co-operation and Development (OECD), are accepted internationally and routinely referred to or incorporated into domestic guidelines, standards, and/or legislation.

The *Codex Plant Guideline* with Annex 1 (pertaining to allergenicity assessment) was adopted in 2003. Annex 2 (pertaining to genetic modification for nutritional and health benefits) and Annex 3 (pertaining to low-level presence) were subsequently added in 2008. This document, which describes a robust and scientifically sound approach to the safety assessment of GE foods, is foundational to safety assessment guidance published by national regulatory authorities, as exemplified by India's 2008 guideline, developed by the Indian Council of Medical Research and Bangladesh's 2012 guideline, developed by

RELATED ARTICLE

Read "Harmonization of International Standards for Food Safety - Part I" in the previous *SABP Newsletter*:

<http://bit.ly/sabp-news-08-2020>

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the Bangladesh Agricultural Research Council. Regulatory agencies, such as Food Standards Australia New Zealand (FSANZ), take Codex standards into consideration as part of the development of domestic food standards, while US Food and Drug Administration (FDA) encourages developers of new plant varieties to refer to the Codex Plant Guideline for considerations in early food safety evaluation of novel-non-pesticidal proteins.

OECD's work on biosafety is carried out by technical experts comprising the Working Party for the Harmonisation of Regulatory Oversight in Biotechnology and the Working Party for the Safety of Novel Foods and Feeds. The output from these groups includes high-quality, science-based consensus documents on crop biology and compositional considerations for novel plant varieties, which provide information relevant to GE food and feed safety assessments.

BENEFITS OF HARMONIZATION OF SAFETY ASSESSMENT OF GE FOODS AND FEEDS IN SOUTH ASIA

During discussions led by the South Asia Biosafety Program (SABP), Bangladesh, Bhutan, India, Pakistan, and Sri Lanka collectively recognized that harmonization of genetically engineered food safety assessment should be a priority for the region, with particular interest in advancing the discussions in light of potential international trade benefits.

Countries in South Asia, including Bangladesh, Bhutan, India, Pakistan, and Sri Lanka, being Codex members with established national Codex committees and national biosafety regulatory systems, are well positioned to pursue harmonization of guidelines in the context of GE foods. In addition, regional organizations like the South Asian Association for Regional Cooperation (SAARC), with its specialized body, the South Asian Regional Standards Organization (SARSO), could provide a neutral

platform for deliberations on a possible consensus approach to the safety assessment of GE foods. For example, Articles 8(a) and (b) of the South Asian Free Trade Area Agreement state "harmonization of standards, reciprocal recognition of tests and accreditation of testing laboratories of Contracting States and certification of products"; and "simplification and harmonization of customs clearance procedure" respectively, potentially providing a mechanism to realize/operationalize such an approach.

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Consideration of a harmonized approach to GE food and feed safety assessment across South Asian countries that is consistent with international standards and best practices could provide benefits if it:

1. Improves transparency and predictability by having assessment criteria anchored to internationally agreed standards.
2. Streamlines safety assessment processes and time to decision-making by regulatory authorities, which will also decrease chances for asynchronous approvals of GE plants or derived food and feed products between different South Asian markets.
3. Provides efficiencies for applicants by allowing for standardized technical content to be used across all countries.
4. Reduces opportunities for *ad hoc* or spurious information or data requirements that are used to delay or avoid decision-making.
5. Facilitates regional trade and minimizes trade disruptions.
6. Increases consumer trust in novel products.
7. Boosts innovation and research and development.



BIOSAFETY DISCOURSES

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INDIA

One CGIAR Global Webinar Series: Genome Editing in Agriculture - Innovations for Sustainable Production and Food Systems

Dr. Pooja Bhatnagar-Mathur, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad

As you are aware, the forecasted impacts of the Covid-19 pandemic on global food security have highlighted the need for science-based deliberations on the use of advanced breeding methodologies to accelerate crop improvement within global agricultural research programs. Developments are advancing at a rapid pace and many countries are in the process of considering how to best realize the contributions that genome editing can make to improving agriculture and food systems, with particular attention to how genome edited products may or may not be regulated.

To continue these conversations, practitioners and scientists across CGIAR centers have come together with global experts, industry partners, policy makers, academics, innovators and regional agencies to organize a One CGIAR Global webinar series on *Genome Editing in Agriculture: Innovations for Sustainable Production and Food Systems* to take stock of current research and applications of genome editing within CGIAR and address related topics that will impact the enabling environment needed to translate research into practice, raising the profile of the genome editing discussions among CGIAR and its partners.

The webinar series will cover five weekly sessions between September 22-October 20, 2020 across a range of broad topics on:

- Applications of Genome Editing for Crop and Livestock Improvement across CGIAR: An overview of the ongoing work

in various CGIAR centers, providing context for and examples of agricultural applications of the technology in plant and animal agriculture.

- Regulation of Genome Edited Plants and Animals: Exploring considerations that may impact how or when genome edited products may trigger regulatory oversight, with examples from various countries.
- Path to Commercialization for Genome Edited Crops: Addressing considerations of environmental and food safety for broad categories of genome edited plants (SDN1, SDN2 and SDN3). Exploring issues related to commercial release of genome edited plants, such as stewardship, trade, and regulatory and policy harmonization.

Provisional agendas for these webinars can be found on the following three pages. Thank you, and we look forward to seeing you online!

REGISTRATION

Registration for the webinars is free*:

<https://register.gotowebinar.com/register/2415711018306101775>

*Participation will be confirmed by an invitation post-registration on a first-come-first-served basis.



One CGIAR Global Webinar Series

“Genome Editing in Agriculture: Innovations for Sustainable Production and Food Systems”



Webinar 1

Genome Editing in Agriculture: Innovations for Sustainable Production and Food Systems

Proposed dates: Tuesday, September 22, 2020. 12:30 UTC

Topic ¹	Speaker	Time
Welcome and Context Setting	Jacqueline d'Arros Hughes <i>Director General, ICRISAT</i>	8'
Opening Address: Transforming Plant and Animal Breeding through One CGIAR	Marco Ferroni, Ph.D. <i>Chair, CGIAR System Board</i>	15'
Finding Solutions for Sustainable, Climate-resilient Development through Collaborative Research	Claudia Sadoff, Ph.D. <i>Managing Director, Research Delivery and Impact, CGIAR</i>	15'
Technology Innovation in Agriculture to Achieve the Sustainable Development Goals	Robert Bertram, Ph.D. <i>Chief Scientist, Bureau for Resilience and Food Security, USAID</i>	15'
New Breeding Techniques for Resilient Agriculture in Sub-Saharan Africa	TBC	15'
Genome Editing of Plants - A Step Change in Plant Breeding	Neal Gutterson, Ph.D. <i>CGIAR System Board, Senior Vice President and Chief Technology Officer Corteva (retired)</i>	15'
Accelerating Technology Discovery through Effective Partnerships	Renee Lafitte, Ph.D. <i>Deputy Director, Crop R&D, Bill & Melinda Gates Foundation</i>	15'
Panel Discussion Audience Q&A	All Speakers Moderator: Marco Ferroni	40'

¹Topics are provisional, with presentation titles to be confirmed.



Webinar 2

Applications of Genome Editing in Agriculture: CGIAR Focus on Crop Improvement

Proposed dates: Tuesday, September 29, 2020. 12:30 UTC

Topic ¹	Speaker	Time
Achieving Genetic Gains through Advanced Breeding Technologies	Michael Quinn, Ph.D. <i>Platform Leader, Excellence in Breeding Platform</i>	20'
State of the Science: Wheat and Maize	Zhengyu Wen, Ph.D. and Kanwarpal S. Dhugga, Ph.D <i>Applied Biotechnology Laboratory, CIMMYT</i>	10'
State of the Science: Rice	Inez H Slamet-Loedin, Ph.D. <i>Cluster Lead-Trait and Genome Engineering, IRRI</i>	15'
State of the Science: Legumes and Dryland Cereals	Pooja Bhatnagar-Mathur, Ph.D. <i>Principal Scientist and Theme Leader-Cell, Molecular Biology and Genetic Engineering, ICRISAT</i>	15'
State of the Science: Root and Tuber Crops	Leena Tripathi, Ph.D. <i>Principal Scientist and Deputy Director, East Africa Hub, IITA</i>	15'
State of the Science: Cocoa	Paul Chavarriaga, Ph.D. <i>Leader Platform for Advanced Breeding, CIAT</i>	10'
Panel Discussion Audience Q&A	All Speakers Moderator: Marc Ghislain, Ph.D. <i>Global Program Leader, Genomics & Biotechnology, CIP</i>	30'

Webinar 3

Applications of Genome Editing in Agriculture: CGIAR Focus on Livestock and Aquaculture

Proposed dates: Tuesday, October 6, 2020. 12:30 UTC

Topic ¹	Speaker	Time
Introduction: Innovations in Livestock Breeding for Improved Productivity, Health and Welfare	Steve Kemp, Ph.D. <i>Program Leader, Livestock Genetics, ILRI</i>	5'
State of the Science: Livestock	Mike McGrew, Ph.D. <i>Group Leader, Roslin Institute, UK</i>	15'
State of the Science: Veterinary Vaccines	Lucilla Steinaa, Ph.D. <i>Principal Scientist, ILRI</i>	15'
The Policy Environment around Genome Edited Animal Products	Diane Wray-Cahen, Ph.D. <i>Senior Science Advisor, Foreign Agricultural Service, USDA</i>	15'
State of the Science: Aquaculture	Ross Houston, PhD. <i>Chair of Aquaculture Genetics The Roslin Institute</i>	
Path to Commercialization for Genome Edited Animals	Tad Sonstegard, Ph.D. <i>President & CEO, Acceligen, USA</i>	15'
Panel Discussion Audience Q&A	All Speakers Moderator: Steve Kemp, PhD. <i>Program Leader, Livestock Genetics, ILRI</i>	40'

¹ Topics are provisional, with presentation titles to be confirmed.



Webinar 4

Regulation and Genome Edited Plants

Proposed dates: Tuesday, October 13, 2020. 12:30 UTC

Topic ¹	Speaker	Time
Regulation of Plants in Agriculture – Understanding the Context	Donald MacKenzie, Ph.D. <i>Executive Director, Institute for International Crop Improvement, Donald Danforth Plant Science Center, USA</i>	15'
SDN1, SDN2 and SDN3 Plants: One Size Does Not Fit All	Hugo Campos, Ph.D. <i>Research Director, International Potato Center (CIP)</i>	15'
Country Case Study: Argentina	Augustina Whelan, M.Sc. <i>Biotechnology Directorate, MAGYP, Argentina</i>	10'
Country Case Study: India	Vibha Ahuja, Ph.D. <i>Biotech Consortium India Limited, India</i>	10'
Country Case Study: Kenya	Dorington Ogoi, Ph.D. <i>CEO, National Biosafety Authority, Kenya</i>	10'
Country Case Study: Philippines	Florida Carino, Ph.D. <i>Department of Science & Technology Biosafety Committee, Philippines</i>	10'
Panel Discussion Audience Q&A	All Speakers Moderator: Leena Tripathi, Ph.D. <i>Principal Scientist and Deputy Director, Eastern Africa Hub, IITA</i>	45'

Webinar 5

Path to Commercialization for Genome Edited Crops

Proposed dates: Tuesday, October 20, 2020. 12:30 UTC

Topic ¹	Speaker	Time
Bringing Innovative Technologies to the Farmer from Public Sector Breeding Programs	Trilochan Mohapatra, Ph.D. <i>Director General, Indian Council of Agricultural Research</i>	10'
Creating an Enabling Policy Environment for Genome Editing in Agriculture	Mark Rosegrant, Ph.D. <i>Emeritus Fellow, IFPRI</i>	20'
What's Happening Internationally? Status Update from the OECD	Peter Thygesen, Ph.D. <i>Chief Regulatory Scientist, Office of the Gene Technology Regulator, Australia and Chair, OECD Working Group on Harmonization of Regulatory Oversight in Biotechnology</i>	15'
Status Update from the Cartagena Protocol	Sarah Lukie, JD <i>Managing Director, Regulatory and Multilateral Affairs for Plant Biotechnology, CropLife International, USA</i>	15'
The Importance of Regulatory Harmonization to Facilitate Research, Deployment and Trade of Genome-Edited Plants	Morven A. McLean, Ph.D. <i>CEO, Agriculture & Food Systems Institute</i>	15'
Genome Edited Plants in Commerce: Ensuring Seed Quality and Identity	Fan-Li Chou, Ph.D. <i>Vice President, Scientific Affairs and Policy, American Seed Trade Association</i>	15'
Panel Discussion Audience Q&A	All Speakers Moderator: Kiran K. Sharma, Ph.D. <i>Deputy Director General -Research, ICRISAT</i>	30'

¹Topics are provisional, with presentation titles to be confirmed.



Standard Operating Procedures Preparation for Confined Field Trials of Bt Cotton in Bangladesh

Dr. Md. Kamrul Islam, Cotton Development Board, Dhaka

The Cotton Development Board (CDB), an organization of the Bangladesh Government under the Ministry of Agriculture, has taken the initiative to introduce Bt cotton in Bangladesh. The CDB signed a material transfer agreement with JK Agri Genetics Ltd. (JKAL), an Indian private seed company, which agreed to provide two (JKCH-1947 Bt and JKCH-1950 Bt) hybrid Bt cotton seeds for regulatory trials in Bangladesh. Upon successful completion of the contained greenhouse trial, the CDB obtained permission from the National Committee on Biosafety (NCB) on March 4, 2020 for carrying out Bt cotton confined field trials (CFTs) at the Cotton Research Center, Sreepur, Gazipur during the 2020-2021 growing season.

Against this backdrop, in May 2020, the CDB and JK Agri Genetics Ltd. (JKAL) had a meeting with the South Asia Biosafety Program (SABP), where the CDB requested SABP's support for the development of standard operating procedures (SOP) for conducting CFTs for GE cotton. In response to the request, SABP, on behalf of the CDB and in consultation with the Bangladesh Agricultural Research Council (BARC), formed a committee with experts from the Bangladesh Agricultural Research Institute (BARI) and the Bangladesh Rice Research Institute (BRRI). The Cotton Development Board, along with expert committee members and SABP, then worked jointly on the preparation of SOPs. To move forward with the preparation, the SOPs were first drafted by the CDB and circulated among the members.

Finally, a virtual meeting was held in July 2020 to discuss written feedback and any other issues. During this meeting, the committee finalized the draft *SOP 3: Compliance Management of Current Season Field Trials of Genetically Engineered (GE) Cotton (Gossypium hirsutum) in*

Bangladesh. This meeting was chaired by Dr. Md. Farid Uddin (Executive Director, CDB), while Dr. Md. Aziz Zilani Chowdhury (Member Director, BARC) served as Chief Guest. Dr. Md. Kamrul Islam (SSO, CDB) presented the draft for SOP 3, which through discussion and previously received feedback was finalized.

Following this, the draft for *SOP 5: Post-Harvest Management of Field Trial Sites of Genetically Engineered Cotton (Gossypium hirsutum) in Bangladesh* was communicated to the members. Later, a virtual meeting was organized by SABP to finalize the draft. Dr. Md. Aziz Zilani Chowdhury, Member Director, BARC was present as the Chief Guest in that meeting, while Dr. Md. Farid Uddin (Executive Director, CDB) chaired

the event. After a very fruitful interaction and with the suggestions and inputs of the participants, necessary changes were made to the draft to finalize the document.

In a recent meeting, Dr. Md. Aziz Zilani Chowdhury praised the initiatives taken by the CDB to increase the acreage and yield of cotton in Bangladesh and make it popular. He remarked on the promising future of the GE cotton in Bangladesh. The meeting ended with a vote of thanks from Dr. Md. Farid Uddin to Dr. Md. Abdul Kader (SSO, BRRI), Dr. Mohammad Kamrul Hasan (SSO, BARI), Dr. Andrew F. Roberts (Vice President, AFSI), Dr. Vibha Ahuja (Chief General Manager, BCIL Ltd.), and Dr. Aparna Islam (Country Manager, SABP) for their contributions. Dr. Md. Farid Uddin specially thanked Dr. Aziz Zilani Chowdhury for his support and suggestions on the way forward for this GE crop. The chair informed the meeting's attendees that confined field trials of GE cotton were being conducted smoothly at the Cotton Research Center, Sreepur, Gazipur, before concluding the meeting.

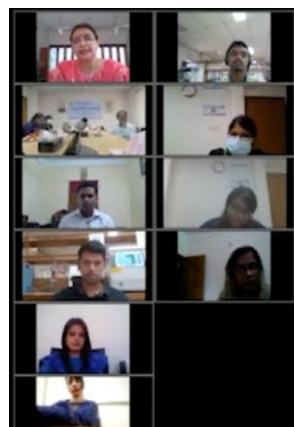
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Gossypium hirsutum flower © Dreamstime.com

Awareness on Compliance with Biosafety Regulations at Every Step of Plant Biotechnology Research

Mahbuba Ferdous, National Institute of Biotechnology, Savar



Initiation of Biosafety Regulation in Bangladesh

Bangladesh has a long history on Biosafety Regulation

• Biosafety Guidelines of Bangladesh was



BIOSAFETY GUIDELINE OF

Participants from the National Institute of Biotechnology attending the SABP webinar on Biosafety at Every Step of Plant Biotechnology (August 26, 2020)

The National Institute of Biotechnology (NIB) and the South Asia Biosafety Program (SABP) jointly organized the webinar *Biosafety at Every Step of Plant Biotechnology* on August 26, 2020. The goal was to facilitate knowledge exchange on biosafety requirements at various stages of plant biotechnology research. Dr. Md. Salimullah, Director General, NIB chaired the event and Dr. Aparna Islam, SABP delivered the keynote lecture. More than 30 participants, including early career researchers, senior scientists, research fellows, and group leaders of various biotechnology research divisions of NIB participated in the webinar.

The webinar started with a welcome speech from Dr. Iftekhar Alam, Senior Scientific Officer (SSO) and Head, Plant Biotechnology Division. In his speech, he discussed that every technology is associated with risks and benefits, and whereas genuine risks are addressable, the psychological risk is quite a challenge. He explained our responsibility as scientists to address the perception of the risks associated with transgenic plants. He emphasized the involvement of SABP with the Bangladesh government. Later on, he discussed institutional biosafety and NIB's involvement as a national policy-making institute and in introducing new transgenic plant varieties. He concluded his speech by explaining the importance of the webinar to ensure safe application of this technology to harness the benefit for the nation.

Following this, the Chair of the webinar, Dr. Md. Salimullah, acknowledged the involvement and efforts of SABP in developing biosafety-related documents with the Bangladesh government. He emphasized NIB's work on coronavirus whole genome sequencing (WGS), emerging diagnostic kits, successfully running BSL-2+ diagnostic services, and ongoing development on new therapeutics based on the mutations found from WGS. Then, he discussed NIB's biosafety committee, biosafety officers, supporting training programs, and publications in the journal *ABSA International*. He mentioned NIB's training activities involving 3000 professionals with Bangladesh Biosafety and Biosecurity Society (BBBS) on biosafety and biosecurity issues related to infectious diseases, developing 133 resource persons, and special training of 29 SSOs. He also talked about visiting 127 labs in relation to biosafety issues. He concluded his speech by pointing out the importance of regular webinars and international conferences to develop an awareness on biosafety and biosecurity.

Dr. Aparna Islam, Country Manager, SABP, presented the keynote speech, where she discussed different aspects of transgenic plants

and the regulations allied with this. She mentioned the concerns associated with GM-crops from the very beginning of recombinant DNA technology. She elucidated different biosafety regulations, such as the *Convention on Biological Diversity (CBD)* and *Cartagena Protocol on Biosafety (CPB)*. Later, she talked about the typical biosafety framework, national and international biosafety regulations, and especially different institutional approval requirements in developing transgenic organisms in Bangladesh. She emphasized the risk assessment guidelines (*ERA Guidelines for GE Plants 2016*) and food safety assessments guideline (*Food Safety Assessment of Foods Derived from GE Plants 2013*), with their data requirements.

During the second part of her talk, she introduced SABP's *Bangladesh Biosafety Portal* and eLearning modules to the participants and encouraged all to benefit from the resources.

There was an open discussion session, during which Dr. Islam addressed queries from participants. An important suggestion was posed by a young scientist to translate the SABP eLearning courses into Bengali in addition to Chinese and Spanish, as that would make the information more accessible to Bangladeshis. Dr. Islam informed them that initiatives have been taken by SABP to develop resources in Bengali.

At the end of the interactive session, the chair closed the webinar by expressing his appreciation for SABP and Dr. Islam's efforts to highlight the biosafety regulatory guidelines. He stated his wish that SABP will continue to work with NIB toward proper installation of biosafety regulations in Bangladesh. The event was facilitated by Tanzena Tanny, SSO, Plant Biotechnology Division, NIB.

By and large, the webinar provided a unique opportunity to increase the knowledge of young researchers at NIB about biosafety regulations and assessment guidelines and how they contribute to transgenic plant development and GM crop research, leading towards more secure and sustainable crop production. The webinar presented a comprehensive package of how to take a crop from a laboratory culture flask to the environment, upholding biosafety and biodiversity.

For more information, contact Mahbuba Ferdous (Email: mahbuba.ferdous59@gmail.com)

VIDEO

Watch the full recording at:

<https://foodsystems.org/event/sabp-webinar-2020-5/>

Monitoring Adventitious Presence of Insect Resistance *cry* Genes in Brinjal Samples and Checking Transboundary Movement of *Bt* brinjal Event EE1

Dr. Gurinderjit Randhawa, ICAR-National Bureau of Plant Genetic Resources, New Delhi



Collection of brinjal samples from farmer's fields and subzi mandis (a-d) and seeds purchased from local seed shops (e).

Bt brinjal event *EE1* for fruit and shoot borer resistance was developed in India by Maharashtra Hybrid Seeds Company Pvt. Ltd. (Mahyco) and was under field trials during 2004-2009. The event has not been released for cultivation in India and a moratorium was placed in 2010 by the then Minister of Environment & Forests. In 2013, the same *Bt* brinjal event *EE1* was approved in Bangladesh for cultivation. *Bt* brinjal has since been grown in Bangladesh on over 50,000 hectares. As Bangladesh shares borders with West Bengal and the North Eastern states of India, there have been apprehensions of both unintentional introgression and transboundary movement of *Bt* brinjal.

The ICAR-National Bureau of Plant Genetic Resources (NBGR) has extensive facilities and expertise in the area of detection and identification of genetically modified organisms (GMOs). With an ISO/IEC 17025:2017 accredited laboratory for GM testing and two-decades of experience, it is also one of the National Referral laboratories designated under the Seeds Act. As an initiative to address this issue, 211 brinjal

Adventitious presence of transgenes was monitored in brinjal samples employing singleplex and multiplex Polymerase Chain Reaction (PCR) and real time PCR assays targeting the genetic elements of *Bt* Brinjal.



BACKGROUND

What is *Bt* brinjal?

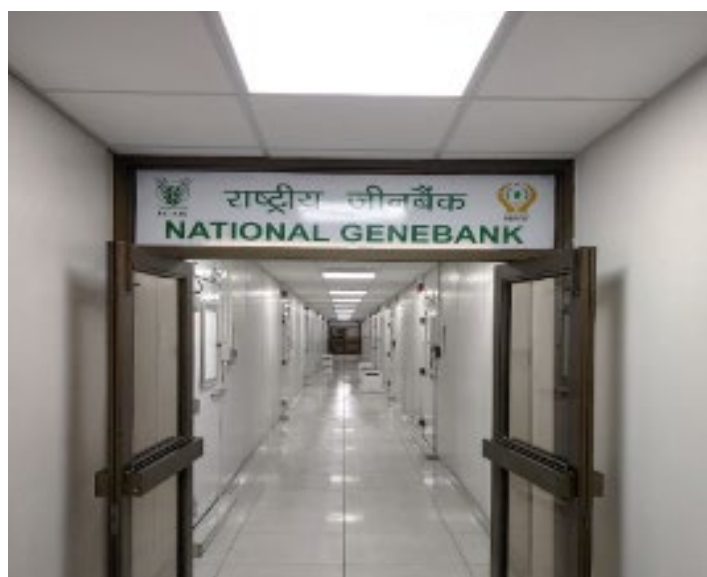
A genetically modified brinjal (*Solanum melongena* L.) developed to impart resistance against fruit and shoot borer, one of the most devastating insect pests. *Bt* brinjal has the transgenic event *EE1*, which is a combination of the *cry1Ac* gene of *Bacillus thuringiensis*, 35S promoter of Cauliflower Mosaic Virus (CaMV 35S), and two marker genes—*neomycin phosphotransferaseII* (*nptII*) and *aminoglycoside-3'-adenylyltransferase* (*aadA*).

samples were collected by ICAR-NBPGR, New Delhi from 32 locations in the five states of India adjoining Bangladesh (Assam, Meghalaya, Mizoram, Tripura, and West Bengal) from farmer's fields, vegetable markets, and local seed shops to monitor adventitious presence of transgenes.

The National Genebank (NGB) at ICAR-NBPGR houses the second largest collections of diversity in the world, conserving more than 0.45 million accessions of 1990 agri-horticultural crop species, including 4,496 brinjal accessions that includes wild species of *Solanum* (<http://www.nbpgr.ernet.in/>). Adventitious presence of transgenes was also monitored in 96 brinjal accessions collected during 2007-2016 from areas adjacent to Bangladesh.

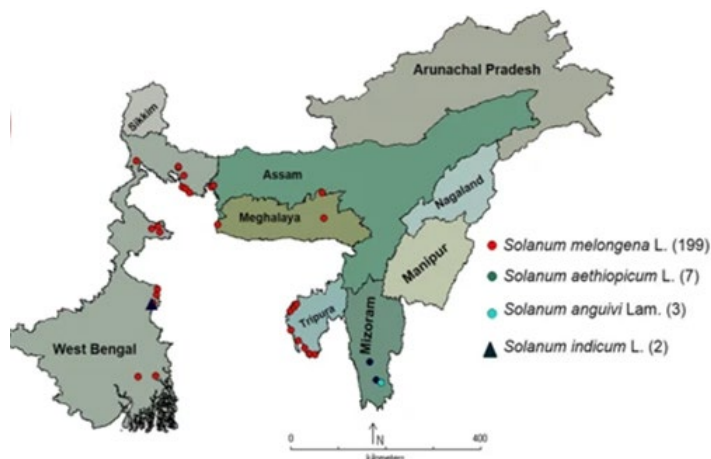
Adventitious presence of transgenes was monitored in brinjal samples employing singleplex and multiplex Polymerase Chain Reaction (PCR) and real time PCR assays targeting the genetic elements of *Bt* brinjal, namely the *cry1Ac* transgene, CaMV 35S promoter, and

Continued on page 9



National Gene Bank (NGB), ICAR-National Bureau of Plant Genetic Resources, New Delhi is the second largest reservoir of diversity, conserving more than 0.45 million accessions belonging to 1990 different crop species and their wild relatives.

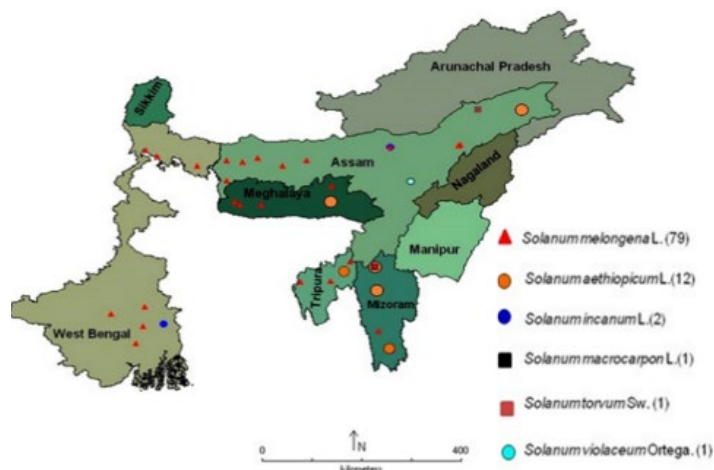




Brinjal collection sites from five states adjoining Bangladesh.

nptII and *aadA* marker genes. Based on PCR and real-time PCR assays, it was confirmed that none of the samples of brinjal collected from adjoining rich diversity regions of India bordering Bangladesh and brinjal accessions conserved in the NGB contained *Bt* brinjal event *EE1*. This was a unique study conducted in biodiversity-rich regions of India bordering Bangladesh and is expected to fully dispel apprehensions, if any, of accidental conservation of transgenic brinjal sample or a genotype with possible introgression of a known transgenic event. The results of the diagnostic assays are already published and are available in the public domain.

For more information, please contact Dr. Gurinderjit Randhawa (Email: gurinder.randhawa@icar.gov.in).



Brinjal collection sites of accessions from regions bordering Bangladesh.

References:

- Kuwardadra, S.I., Bhatt, K.C., Paliwal, A. Sood, P., Malav, P.K., Sodhi K.K. & Randhawa, G.J. 2020. Monitoring adventitious presence of transgenes in brinjal (*Solanum melongena* L.) collections from the regions in India bordering Bangladesh: a case report. *Genetic Resources and Crop Evolution* 67, 1181–1192. <https://doi.org/10.1007/s10722-020-00903-w>
- Kuwardadra, S.I., Pandey, C.D., Paliwal A., Randhawa, G.J. 2020. Screening brinjal accessions conserved in the National Genebank collected from North Eastern states of India for adventitious presence of EE1 event. *Indian Journal of Agricultural Sciences* (in press).

ANNOUNCEMENT

Release of Handbook for Institutional Biosafety Committees (IBSCs), 2020 by the Department of Biotechnology, Government of India

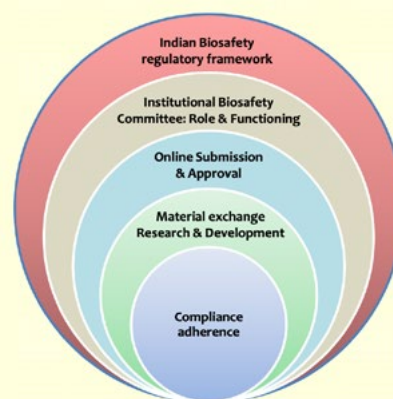
As per the Indian biosafety regulations, organizations handling genetically modified organisms (GMOs), recombinant DNA materials, and non-GE hazardous microorganisms for research or production purposes are required to constitute an Institutional Biosafety Committee (IBSC). The IBSC is one of the key statutory bodies operating directly from the premises of the institution and is responsible for proper implementation of biosafety, rules, regulations, and guidelines. The IBSCs are set up with approval from the Department of Biotechnology (DBT).

A *Handbook for IBSCs* was first prepared in 2004, and its second revised edition, *Guidelines and Handbook for IBSC Members*, was released in 2011. The handbook provides valuable information on the composition of IBSCs, the role of IBSC members, application formats, etc. As of September 2020, a total of 285 IBSCs are functioning in India. The handbook has been found to be very useful in streamlining activities by IBSCs.

DBT has now released the third revised edition of the *Handbook for IBSCs*. In this edition, decentralized regulatory powers of IBSCs and the regulatory mechanism of online registration and renewal of IBSCs at the **Indian Biosafety Knowledge Portal** (<https://ibkp.dbtindia.gov.in>) have been incorporated. Information on appropriate forms for submission of applications has been updated. Further, the competent authorities for approval of various applications have been described.

The handbook can be accessed at: <http://dbtindia.gov.in/> | <https://ibkp.dbtindia.gov.in/Content/Rules>

HANDBOOK for INSTITUTIONAL BIOSAFETY COMMITTEES (IBSCs)



Department of Biotechnology
Ministry of Science & Technology,
Government of India

Third Revised Edition September, 2020

CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
INDIA			
One CGIAR Global Webinar Series on Genome Editing in Agriculture: Innovations for Sustainable Production and Food Systems	CGIAR	September 22-October 20, 2020* via Webcast <i>*see pgs. 2-5 for detailed agenda</i>	https://register.gotowebinar.com/register/2415711018306101775
International Web Conference on Perspective on Agricultural and Applied Sciences in COVID-19 Scenario (PAAS-2020)	Agricultural & Environmental Technology Development Society (AETDS) and U.S. Nagar, Uttarakhand, in collaboration with other international organizations	October 4-6, 2020 via Webcast	https://www.skuastkashmir.ac.in/DisplayNews.aspx?id=111317
4 th International Conference on NANOFORAGRI 2020 - Application of Nanotechnology for Sustainable, Productive and Safer Agriculture and Food System	The Energy and Resources Institute	November 5-6, 2020 Gurugram, Haryana	https://www.teriin.org/events/nanoforagri/
2020 International Agriculture Innovation Conference Webinar	International Association for Agricultural Sustainability (IAAS) and the University of Maryland, Asia-Pacific Association Of Agricultural Research Institutions (APAARI), in collaboration with other international organizations	November 6-9, 2020 via Webcast	https://www.eventbank.cn/event/2020-international-agriculture-innovation-conference-webinar-24843/ https://www.eventbank.cn/event/24843/register/
International Conference on Sugarcane Research	ICAR-Sugarcane Breeding Institute, Tamil Nadu Agricultural University, and Society for Sugarcane Research and Development	November 7-10, 2020 Coimbatore	https://icar.org.in/sites/default/files/CaneCon2020FirstCircular.pdf
India Bio @ Bengaluru Tech Summit	Department of IT & Biotechnology, Government of Karnataka	November 19-21, 2020 Bengaluru	http://www.indiabio.in/
Indian Seed Congress 2021	National Seed Association of India	February 24-26, 2021 Bengaluru	https://isc2021.nsai.co.in/
INTERNATIONAL			
3 rd Asian Short Course on Agri-Biotech, Biosafety Regulation, and Communication	ISAAA Southesat Asia Center	November 23-26, 2020 via Webcast	https://zoom.us/join/zoom/register/tJMvCO6oqTgJG9UyXl uukBoh57wUacbPLAoR



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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