VOL 19 NO 08 AUGUST 2022

# South Asia Biosafety Program

NEWSLETTER FOR PRIVATE CIRCULATION ONLY – NOT FOR SALE



INDIA

## State-Level Workshops on Genome Editing in Agriculture in India

Dr. Vibha Ahuja, Biotech Consortium India Limited

*Participants at the Workshop on Gene Editing for Crop Improvement: Opportunities and Enabling Policies – Bhopal .*

Biotech Consortium India Limited (BCIL) initiated a series of workshops to create awareness among stakeholders, with support from the Federation of Seed Industry of India (FSII). The first three workshops were organized in Hyderabad, Ludhiana, and Bangalore between May-June 2022. Continuing with this initiative, two state-level workshops were organized in Lucknow and Bhopal. The workshops were organized to share information about scientific advances and policies in India at the state-level for outreach amongst key stakeholders, including scientists and faculty from State Agricultural Universities (SAUs), officials from state agriculture departments, scientists/researchers from other research institutions, universities in respective states, and industry representatives. Technical presentations were made by experts on the basics of gene editing in plants, technological advances, and applications for crop improvement, including ongoing research at institutions, products approved, and emerging regulatory policies. Discussions were held with eminent experts from stakeholder groups on ways forward for gene editing in plants in the respective states, and a brochure on "Frequently Asked Questions About Gene Edited Plants" was circulated to all participants. A brief overview of the two workshops is provided in this article.

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### 1. WORKSHOP ON GENOME EDITING IN AGRICULTURE: SCIENCE, POTENTIAL, AND POLICIES – LUCKNOW

This workshop was organized jointly with the Uttar Pradesh Council of Agricultural Research (UPCAR), Lucknow on July 6, 2022. The workshop was inaugurated by Dr. Devesh Chaturvedi, Additional Chief Secretary, Department of Agriculture Education and Research, Government of Uttar Pradesh. Dr. Sanjay Singh, Director General, UPCAR welcomed the participants. He discussed the importance of using new technologies for crop improvement. The keynote address was given by Dr. A.K. Singh, Director, ICAR-Indian Agricultural Research Institute (IARI), New Delhi. He discussed the enormous potential offered by gene editing in achieving desired traits in crops. He informed participants that the rapid adoption of technology is key to tackling various challenges faced by agriculture and ensuring food security for the ever-increasing population of India. Dr. P.K. Trivedi, Director, CSIR-Central Institute of Medicinal & Aromatic Plants (CIMAP), Lucknow and Dr. A. K. Shasany, Director, ICAR-National Institute of Plant Biotechnology (NIPB), New Delhi also addressed the participants and stressed the need for active research in this area.

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*Speakers at the Workshop on Genome Editing in Agriculture: Science, Potential, and Policies – Lucknow.*


*Speakers at the Workshop on Gene Editing for Crop Improvement: Opportunities and Enabling Policies – Bhopal.*

Informing participants about principles and applications of gene editing, Dr. P.K. Singh, Senior Principal Scientist, CSIR-National Botanical Research Institute (NBRI), Lucknow and Member, RCGM explained the evolving timeline of gene editing and various gene editing tools. Dr. Deepak Prem, Manager–Regulatory & Scientific Affairs, Bayer Crop Science Limited presented the global and national status of development and use of gene edited plants. He explained that gene edited plants devoid of foreign DNA are being rapidly developed globally due to the precise nature of the technology and the less time it takes to develop new varieties, as compared to conventional breeding. He also informed participants that various research initiatives in India are also being taken up in many crops including rice, maize, banana, groundnut, tomato, potato, and mustard. After his presentation, an overview of the regulatory landscape of gene edited plants across the globe was provided by the author of this article, Dr. Vibha Ahuja.

In the second technical session, presentations were made about potential opportunities in the improvement of pulses, vegetables, sugarcane, cotton, and rice by research scientists from institutions in Uttar Pradesh. These included Dr. Alok Das, Senior Scientist, ICAR-Indian Institute of Pulses Research (IIPR), Kanpur, Dr. A.P. Sane, Chief Scientist, CSIR-NBRI, Lucknow, Dr. Achyut Kumar Singh, Principal Scientist, ICAR-Indian Institute of Vegetable Research (IIVR), Varanasi, Dr. Sanjeev Kumar, Principal Scientist (Agricultural Biotechnology), ICAR-Indian Institute of Sugarcane Research (IISR), Lucknow, and Dr. N. C. Gupta, Senior Scientist, ICAR-National Institute for Plant Biotechnology (NIPB), New Delhi.

The panel discussion focused on initiating extensive research efforts and capacity building in the state of Uttar Pradesh to harness the benefits of this technology to farmers and society. It was suggested that centres of excellence for genome editing, human resource development, adequate funding, necessary infrastructure, and enabling policies are important to gain global leadership in agriculture.

## 2. WORKSHOP ON GENE EDITING FOR CROP IMPROVEMENT: OPPORTUNITIES AND ENABLING POLICIES – BHOPAL

The workshop was inaugurated by Shri Kamal Patel, Minister (Farmer Welfare and Agriculture Development), Madhya Pradesh. The keynote address was delivered by N.K. Singh, National Professor and Former Director, ICAR-National Institute for Plant Biotechnology (NIPB), New Delhi. He informed participants about various gene edited products being developed with desirable features, such as rice, maize, cucumber, and tomato. He also highlighted the role of the National Academy of Agricultural Sciences (NAAS) in preparing the policy on gene editing technology and taking the research forward. Mr. Ram Kaundinya, Director General, FSII highlighted the enormous potential of new plant breeding technologies and their benefit in tackling climate change.

In his special address, Prof. S. K. Rao, Vice Chancellor, RVSKVV, Gwalior spoke about using gene editing technology in line with priorities of the state. Dr. S. K. Chaturvedi, Vice Chancellor, Rani Lakshmi Bai Central Agricultural University (RLBCAU), Jhansi expressed his appreciation of the initiative for creating awareness at the state level and suggested that the brochure be translated to Hindi.

Prof. Sharad Tiwari gave a presentation on "Gene Editing: Principles and Applications" wherein he informed participants about various tools being used in gene editing. He expressed his opinion that food security in the wake of climate change can be achieved sustainably only with adoption of emerging technologies such as gene editing. Dr. Bharat Char, Chief Scientific Officer, Mahyco Private Limited, delivered a presentation on the "Development and Use of Gene Edited Plants: Global and National Status." He informed participants that gene edited plants have been developed for incorporation of desirable traits in many countries and few gene edited products have been approved for commercialization as well. He emphasized that given the ease of regulations for gene edited plants in India, scientists should now actively work towards realizing the potential of these technologies in solving local problems. The author, Dr. Vibha Ahuja, delivered a presentation on the requirements for taking forward gene edited plants in various countries and India, informing participants about the increasing alignment of various countries towards easing regulations for gene edited plants and explaining that these science-based regulations will encourage improvements in multiple crops for various traits and also facilitate trade in the region with minimal policy hurdles.

**About 150-200 participants attended each workshop. The workshops were extensively covered by local print and online media.**

Presentations were made by Dr. Milind Ratnaparkhe, Senior Scientist (Biotechnology), ICAR-Indian Institute of Soybean Research, Indore and Dr. Manoj Kumar Tripathi, Professor & Head, Department of Biotechnology, RVSKVV, Gwalior about research initiatives being taken for improvement of various traits in soybean, pearl millet, groundnut, and chickpea in Madhya Pradesh. The panelists emphasized the need for extensive capacity building, particularly training of scientific staff and increased collaboration for taking the development of gene edited products in Madhya Pradesh forward.

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# Biotechnology Regulatory Framework and Forging a Path Forward

Faruq Hasan, Senior Manager, Advocacy and Policy Affairs, Farming Future Bangladesh


*Guests and participants at the discussion program "Biotechnology Regulatory Framework and Forging a Path Forward."*

Bangladesh initiated research activities in the area of biotechnology in the early 1990s. So far, substantial progress has been made in research and development in biotechnology, particularly in the field of recombinant DNA technology and plant genetic engineering.

There is an immediate need to pass on the benefits of modern biotechnology in the form of new products so that important issues like food security and climate change can be addressed. Millions of farmers in developing and industrial nations cultivate a number of new crop varieties that have been developed through the application of modern biotechnology. The introduction and commercial cultivation of such biotech products require a pre-market safety assessment to address potential biosafety concerns. Therefore, for the approval of genetically engineered or biotech crops, an effective regulatory mechanism is required.

Bangladesh has formulated an operative regulatory mechanism since signing and ratifying the Cartagena Protocol on Biosafety almost 20 years ago. Accordingly, Bangladesh has developed policies, guidelines, and framework towards an implied regulatory system for the development of the products of modern biotechnology. However, further attention is required to make the regulatory mechanism more robust and applicable.

Farming Future Bangladesh (FFB) organized a discussion session with stakeholders on the current biosafety regulatory system titled "Biotechnology Regulatory Framework and Forging a Path Forward" on June 30, 2022 at BRAC Centre Inn in Dhaka. National and international policy experts, academics, representatives from the private sector, government, and non-government organizations joined the event to interact with scientists, academia, and development partners to share their valuable knowledge and experience about the regulatory framework applicable for biotech product development. This event allowed participants to discuss issues concerning opportunities and challenges related to the implementation of biosafety regulations. Discussions were also held to find ways to strengthen the existing regulatory procedure and participants suggested cooperation amongst stakeholders for contributing to an effective regulatory system for the approval of biotech products required in Bangladesh.

This event started with a welcome speech and a short introductory session conducted by Md. Arif Hossain, CEO and Executive Director of FFB. Then, Gregory Jaffe, Associate Director of Policy for Alliance for Science presented on the "Current Status and Advancement of Biotechnology and Biosafety Around the World." His presentation focused on the current status of biotechnology globally, as well as the effectiveness and adaptability of the biosafety regulatory system. Discussing the goals of the biosafety regulatory system, he suggested how an ideal system should be comprehensive, consistent, equitable and fair, easily understandable, transparent, and participatory. Mr. Jaffe indicated ways to enhance the biosafety regulatory system of Bangladesh for adaptability and flexibility.

**Discussing the goals of the biosafety regulatory system, [Mr. Jaffe] suggested how an ideal system should be comprehensive, consistent, equitable and fair, easily understandable, transparent, and participatory.**

Following that, Faruq Hasan, Senior Manager of Advocacy and Policy Affairs for FFB, shared another short presentation on "Biosafety Regulations in Bangladesh." He shared information about the various committees and related documents regarding the biosafety activities of Bangladesh.

The participants then discussed the strengths and weaknesses of the current regulatory system and ways to overcome the challenges related to biosafety regulation in Bangladesh. The hosts conducted two separate breakout sessions where the participants shared their experiences. Participants from the private sector were also interested in using this advanced technology towards the development of biotech products in compliance with biosafety regulations in Bangladesh. Participants agreed to initiate the necessary steps in updating the policies and regulatory system following the most recent technological advancement. During the discussion, former Secretary of the Ministry of Agriculture, Mr. Anwar Faruque, urged participants to keep such discussions alive.

The event ended with concluding remarks from the host organization, mentioning that commercial agriculture requires advanced biotech products to achieve current expectations of sustainable development. Finally, FFB thanked the participants and encouraged them to continue positive debate and discussion in implementing science for human welfare in Bangladesh.

## CALENDAR OF EVENTS

| EVENT | ORGANIZED BY | DATE | WEBSITE |
|---|---|---|---|
| **INDIA** | | | |
| 11th National Seed Congress on Recent Advances in Research on Quality Seeds for Self Sufficiency in Oilseeds and Pulses | Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya | August 21-23, 2022 Gwalior | http://www.rvskvv.net/ |
| International Conference on Advances in Agriculture and Food System Towards Sustainable Development Goals | All India Agricultural Students Association, Indian Council of Agricultural Research, and University of Agricultural Sciences, Bangalore | August 24-22, 2022 Bengaluru | https://aafs2022.org.in/ |
| International Conference on Biotechnology Trends and Future Prospects | University of Agricultural Sciences, Bangalore | September 13-15, 2022 Bengaluru | https://uasbangalore.edu.in/images/Biotechconference2022gkvk.pdf |
| National Symposium on Emerging Innovations in Plant Molecules for Achieving Food and Nutritional Security (EIPMAFNS-2022) | Department of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari and Division of Biochemistry, ICAR-IARI, New Delhi, in association with the Society for Plant Biochemistry and Biotechnology, IARI, New Delhi | September 22-23, 2022 Navsari (in-person and online) | https://nau.in/index |
| International Conference on Advances in Agricultural, Veterinary, and Allied Sciences for Improving Livelihood and Environmental Security | ICAR-Indian Grassland and Fodder Research Institute, RRS, Srinagar, ICAR-National Agricultural Higher Education Project, Ranchi, and National Agriculture Development Cooperative Limited, Srinagar | September 28-30, 2022 Srinagar | https://www.nadcl.org/files/20220811205313496.pdf |
| Global Okra Round Table (GORT) | Foundation for Advanced Training in Plant Breeding (ATPBR) | October 10-12, 2022 New Delhi | https://www.atpbr.com/doc/okraconf/1st%20Circular%20Pdf.pdf |
| **INTERNATIONAL** | | | |
| Webinar Series for Popularizing Plant Tissue Culture in Asia-Pacific Region and African Countries Towards Realizing its Potential - Webinar 4: Ornamental Plants | Asia-Pacific Association of Agricultural Research Institutions (APAARI) | August 26, 2022 Online | https://www.apaari.org/ https://zoom.us/webinar/register/WN_rL1D4CpFRU2nyOz4b3Uknw |
| 8th Plant Genomics and Gene Editing Congress: Asia | Global Engage Ltd. | October 12-13, 2022 Kuala Lumpur, Malaysia | https://www.global-engage.com/event/plant-genomics-asia/ |

**The South Asia Biosafety Program (SABP)** is an international development program implemented in India and Bangladesh with support from the United States Agency for International Development (USAID). SABP aims to work with national governmental agencies and other public sector partners to facilitate the implementation of transparent, efficient, and responsive regulatory frameworks for products of modern biotechnology that meet national goals as regards the safety of novel foods and feeds, and environmental protection.

SOUTH ASIA BIOSAFETY PROGRAM

Agriculture & Food Systems Institute

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