

# South Asia Biosafety Program

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## INDIA

## Weed Management in India: Emerging Challenges and Management Strategies – A Meeting Organized by the ICAR-Directorate of Weed Research & the Federation of Seed Industry of India

Dr. Ratna Kumria, Director of Agri Biotech, Federation of Seed Industry of India

Dr. Arlene Asthana Ali, Senior Project Executive, Biotech Consortium India Limited (BCIL)



Guests and speakers at the Brainstorming Meeting on Weed Management in India: Emerging Challenges and Management Strategies (4 October 2024).

A brainstorming meeting on “Weed Management in India: Emerging Challenges and Management Strategies” was organized jointly by the ICAR-Directorate of Weed Research (ICAR-DWR) and the Federation of Seed Industry of India (FSI) on 4 October 2024 at the National Agricultural Science Complex in Pusa, New Delhi. The participants included representatives from the Ministry of Agriculture and Farmer’s Welfare and the Indian Council of Agricultural Research (ICAR), scientists, researchers, industry representatives, experts, farmers, and more.

The report on *Weeds–Impact on Indian Agriculture and its Mitigation Strategies* by Dr. N. T. Yaduraju, Dr. M. R. Hegde, and Dr. A. R. Sadananda was launched during the meeting. The report is based on a synthesis of an intensive review of the current literature and interactions with domain experts in Krishi Vigyan Kendras (KVKs), state agricultural universities and ICAR, leading farmers, and input dealers. It is also supported by extensive field surveys of farmers from across the country. The collaborative study involved 11 states, 30 districts, and 7 crops, with input from 3200 farmers

**The report on *Weeds–Impact on Indian Agriculture and its Mitigation Strategies* by Dr. N. T. Yaduraju, Dr. M. R. Hegde, and Dr. A. R. Sadananda was launched during the meeting.**

and 300 dealers, KVKs, and departmental officials. The report calls for the deployment of new, technology-led weed control strategies to address the weed menace and reduce weed management costs by 40-60%. It has been quoted that weeds are responsible for an annual economic loss of around Rs. 92,000 crores in crop productivity across India.

Dr. S. K. Chaudhari, Deputy Director General of the ICAR Natural Resource Management Division, highlighted the urgent need for the seed sector to remain vigilant and proactive in weed science: “As agricultural productivity is increasingly hindered by labor shortages and resource constraints, adopting solutions like mechanization, herbicide-tolerant traits, and precision agriculture are imperative to empower farmers.” He emphasized the importance of collaboration between public and private sectors to effectively overcome the challenges posed by weeds.

Dr. P. K. Singh, Commissioner of the Ministry of Agriculture & Farmers Welfare, Government of India, said that the government is deliberating

*Continued on page 2*



Opening ceremony (4 October 2024).



Discussion session (4 October 2024).

on complex policy decisions related to herbicide-tolerant Bt cotton and the use of the herbicide glyphosate as industry demands intensify. He informed attendees that a dedicated committee is studying the implications of introducing herbicide-tolerant cotton varieties. Dr. Singh informed listeners that herbicides are currently the major players in the agrochemicals industry, with a market share of 40 percent. He also called for an “integrated approach” to weed management in the farming sector with a mix of mechanization, herbicide application, and herbicide-tolerant varieties amid a growing labor shortage across the country.

Scientists from ICAR, Dr. D. K. Yadava, Assistant Director General (Seeds), Dr. Rajbir Singh, Assistant Director General (Agronomy, AF & CC), and Dr. J. S. Mishra, Director of ICAR-DWR, spoke about the emerging challenges in weed management and potential threats of weeds in agriculture.

Mr. Ajai Rana, FSII Chairman, highlighted the pressing challenges in weed management in India and stated: “Technological interventions like AI-driven weed detection, drone-based mapping, and data-backed integrated weed management strategies can redefine weed management in India.” He also emphasized the crucial role of herbicide-tolerant technology for cost-effective control against hard-to-manage weeds and wild species competing with the main crop.

Presentations were made by Dr. A. K. Singh, Former Director of ICAR-IARI, and Prof. Deepak Pental, Former Vice Chancellor of Delhi University, on research initiatives in rice and mustard, respectively. Dr. N. T. Yaduraju, Former Director of ICAR-DWR, spoke about myths surrounding herbicides. Scientists from both the public and private sectors shared their views on technology solutions for weed management. These included Dr. Sanjeev Kalia from BASF, Dr. A. R. Sadananda from Agreeva, Dr. Rajvir Rathi from Bayer Crop Science, Dr. Vinayak Raman Sharma of Paryan Alliance Limited, and Dr. V. K. Choudhary from ICAR-DWR.

A recording of the meeting is available at:  
<https://www.youtube.com/watch?v=aDNUS9jleAM>

RESOURCE

### WEEDS IMPACT ON INDIAN AGRICULTURE AND ITS MITIGATION STRATEGIES



**The report on *Weeds–Impact on Indian Agriculture and its Mitigation Strategies* is available at:**  
<https://fsii.in/weed-management-report/>



Meeting attendees (4 October 2024).

## Benchmarking Visit About the Indian Biosafety Framework by Officials from the Department of Biosafety of Malaysia

Dr. Vibha Ahuja, Chief General Manager, Biotech Consortium India Limited



Officials from the Department of Biosafety of Malaysia visiting a confined field trial (CFT) site.

A team of six officials from the Department of Biosafety, Ministry of Natural Resources and Environmental Sustainability (NRES), Malaysia visited India from 23-27 September 2024 to learn about the Indian biosafety regulatory framework under their UNEP/GEF-supported biosafety capacity building project. The objective of the visit was to substantiate ideas on improving the current regulatory system and operation, as well as enhance cooperation and information sharing between the two countries. The visit was coordinated by Biotech Consortium India Limited (BCIL).

The Department of Biosafety is Malaysia's primary regulator for all activities related to the biosafety of modern biotechnology, including the monitoring of all activities related to living modified organisms (LMOs) and products of such organisms. It is also a focal point for the Cartagena Protocol on Biosafety (CPB).

**The team met senior officials from the Ministry of Environment, Forest and Climate Change, [...] who thoroughly explained India's administrative processes and implementation experiences related to biosafety regulations.**

During the visit, the team met senior officials from the Ministry of Environment, Forest and Climate Change, Government of India, who thoroughly explained India's administrative processes and implementation experiences related to biosafety regulations. The team participated in various activities, including a visit to a confined field trial (CFT) site, a meeting with members of the Institute Bio-Safety Committee (IBSC) of Punjab Agricultural University (PAU), and interactions regarding procedures in place for the implementation of the Cartagena Protocol on Biosafety in India, with a particular focus on risk assessment and risk management, as well as the handling, transport, packaging, and identification of LMOs. The team was also briefed about the new protocols for gene edited plants in India.



A meeting with the IBSC of PAU.



A meeting with officials of the Ministry of Environment, Forest and Climate Change.



Dr. V. Siva Reddy presenting on operational aspects of biosafety regulations in India.



Dr. Celia Chalam presenting on operational aspects of biosafety regulations in India.

## Informational Webinars on Synthetic Biology and Risk Assessment & Risk Management (RARM)

Tashi Yangzom, Korea Institute for Promoting Asia Biosafety Cooperation (KIPABiC)

In September 2024, the Korea Institute for Promoting Asia Biosafety Cooperation (KIPABiC), in collaboration with the United Nations Environment Programme (UNEP) and the Biotech Consortium India Limited (BCIL), hosted two informational webinars as part of activities under the Global Environment Facility (GEF) Project: Safe Application of Biotechnology through Multi-country Cooperation in the Implementation of National Biosafety Frameworks in Asia (ID 10991). The project aims “to strengthen institutional, human and regulatory capacities and promote cooperative measures in the implementation of National Biosafety Frameworks for the safe transfer, handling and use of living modified organisms (LMOs) in Asia,” with a focus on four participating countries: Bangladesh, India, Mongolia, and the Philippines.

The webinars focussed on two key topics: (1) synthetic biology and (2) risk assessment and risk management (RARM). These issues are set to be discussed at the upcoming sixteenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP16) and the eleventh meeting of the Parties to the Cartagena Protocol on Biosafety (CP-MOP11).

The first webinar, Synthetic Biology–Technological Developments and Policy Discussions, was held on 13 September 2024, from 20:00 to 22:00 Korea Standard Time (KST). The webinar, structured as two technical sessions, introduced participants to the essentials of synthetic biology and highlighted the latest technological advancements and key policy discussions shaping the field.

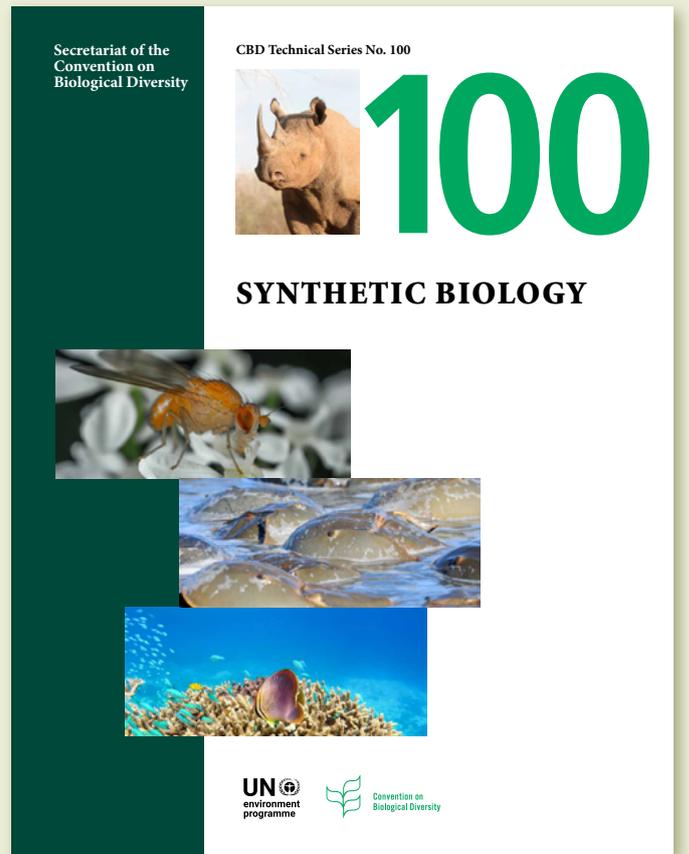
The first session on technological developments was moderated by Dr. Vibha Ahuja, Chief General Manager of BCIL, India. Dr. Felix Moronta Barrios, International Centre for Genetic Engineering and Biotechnology (ICGEB), Italy introduced synthetic biology and the latest advances based on the report *CBD Technical Series 100: Synthetic Biology*, prepared by ICGEB. Dr. Felicity Keiper, BASF-Australia and Member of the Multidisciplinary Ad Hoc Technical Expert Group (maHTEG) on Synthetic Biology, elaborated on the synthetic biology developments under the CBD.

The second session on policy discussions was moderated by Dr. Alex Owusu-Biney, UNEP, Kenya, and the presentation was made by Ms. Wadzanayi Mandivenyi, Senior Programme Management Officer, UNEP/Secretariat of the CBD, Canada. Ms. Wadzanayi spoke about looking ahead to COP-MOP 16 and what is next for synthetic biology. Dr. Vibha Ahuja shared regional insights on the complexities of synthetic biology for Asia. Dr. Taemin Woo, Center for Anthropocene Studies, Korea Advanced Institute of Science and Technology (KAIST), Republic of Korea, presented the policy landscape in the country. Presentations were followed by discussions and an opportunity to respond to questions from the audience.

The second webinar, Risk Assessment and Risk Management (RARM)–Looking Ahead to COP-MOP 11, was held on 27 September 2024 from 20:00 to 21:55 KST. The webinar provided participants with up-to-date insights on RARM. Moderated by Dr. Alex Owusu-Biney, the session opened with Dr. Vibha Ahuja’s overview of RARM discussions from previous COP-MOP meetings, beginning with COP-MOP2, setting the stage for subsequent presentations.

Dr. Florida Carino, a consultant with the Food and Drugs Administration of the Philippines, delivered a presentation on environmental risk assessment under the Cartagena Protocol on Biosafety. Dr. Brinda Dass from the USA, a gene drive expert and Member of the Ad Hoc Technical Expert Group (AHTEG) on Risk Assessment, gave a detailed account of the guidance for risk assessment of LMOs with engineered gene drives to be considered at the upcoming COP-MOP11. Mr. Austein McLoughlin from the Biosafety Protocol Unit, CBD Secretariat, Canada, spoke about

### RESOURCE



**CBD Technical Series 100: Synthetic Biology is available at:**  
<https://www.cbd.int/doc/publications/cbd-ts-100-en.pdf>

the key issues related to RARM that will be on the agenda at COP-MOP11. The African perspective on risk assessment of gene drive mosquitoes was shared by Dr. Barbara Glover from the African Union High-Level Panel on Emerging Technologies (APET) at the African Union Development Agency-NEPAD, South Africa. The webinar concluded with an engaging Q&A segment, allowing participants to engage with the experts.

Dr. Homin Jang, Chief Director, KIPABiC, provided welcome and closing remarks for both the webinars.

The webinars attracted 1,510 registrations from over 55 countries, with 1,045 participants joining live. Attendees represented various sectors working on biotechnology and biosafety, including government, international organizations, academia, NGOs, and private enterprises.

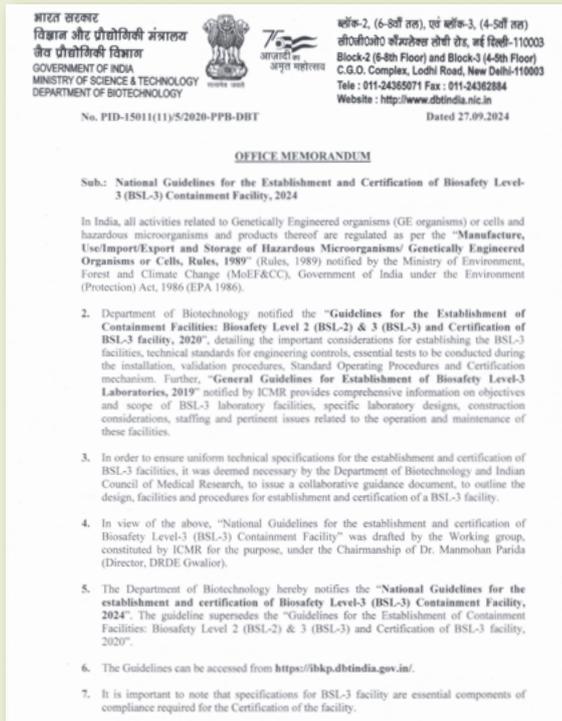
The webinars also received excellent feedback, with a total of 174 responses. Both sessions achieved a 100% satisfaction rating for organization and structure. The first webinar also received a 100% satisfaction rating for relevance and informativeness, while the second scored 96% in these categories.

**Recordings of the two webinars are available at:**  
[https://youtu.be/Bze\\_An6-FUY](https://youtu.be/Bze_An6-FUY) | <https://youtu.be/gOWm9sXgz8>

**More information about the webinars from BCH News are available at:**  
<https://bch.cbd.int/en/database/BCHN/BCH-BCHN-SCBD-273471-1>  
<https://bch.cbd.int/en/database/BCHN/BCH-BCHN-SCBD-273772/1>

# National Guidelines for the Establishment and Certification of Biosafety Level-3 (BSL-3) Containment Facility

Dr. Vibha Ahuja, Chief General Manager, Biotech Consortium India Limited



The Department of Biotechnology and the Indian Council of Medical Research (ICMR) prepared a collaborative guidance document to outline the design, facilities, and procedures for the establishment and certification of a Biosafety Level-3 (BSL-3) facility. The document "National Guidelines for the Establishment and Certification of Biosafety Level-3 (BSL-3) Containment Facility" aims to ensure uniform technical specifications and standardized practices across all BSL-3 facilities in India, thereby enhancing biosafety and biosecurity measures nationwide. The guidelines have been drafted by the working group constituted by ICMR for this purpose. The guidelines supersede the "Guidelines for the Establishment of Containment Facilities: Biosafety Level 2 (BSL-2) & 3 (BSL-3) and Certification of BSL-3 Facility, 2020".

As indicated in the guidelines, certification of a BSL-3 facility of entities (such as institutions, universities, S&T organizations, educational organizations/societies, and autonomous bodies) falling under or related to the Central Government will be dealt with by the concerned line Ministry of the Government of India for the relevant approvals. Certification of a BSL-3 facility of entities falling under or related to the State Government and pertaining to the Ministry of Health shall be dealt with by DHR, ICMR/DoH&FW. Certification of facilities established in other State Government institutions may be undertaken by DBT. For all other entities, i.e., Non-Governmental Organizations undertaking research and development activities, the Expert Committee constituted by DBT for the certification of the BSL-3 facility shall review the application for the certification of the BSL-3 facility and make a recommendation to RCGM, DBT for approval of the certification of the BSL-3 facility. This mechanism is applicable to all the existing and new BSL-3 facilities under the entities mentioned above. The certification mechanism for BSL-3 diagnostic labs and manufacturing units shall be issued separately.

The Certificate for BSL-3 facilities shall be issued for three years, with re-validation of essential parameters of the facility on an annual basis.

## PROCESS FLOW FOR BSL-3 FACILITY CERTIFICATION



A copy of the guidelines can be accessed at: <https://ibkp.dbtindia.gov.in/Content/Rules>

## CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
<b>INDIA</b>			
National Conference on Managing Agro-biodiversity in North Eastern India: From Biodiversity to Bio-wealth (NCMAN-2024)	Indian Society of Plant Genetic Resources (ISPGR)	23-25 October 2024 Umiam, Meghalaya	<a href="http://ispgr.nbpr.ernet.in/NewsEvents.aspx?NEid=10066">http://ispgr.nbpr.ernet.in/NewsEvents.aspx?NEid=10066</a>
International Conference on Futuristic Horticulture (ICFH'24)	Horticultural College and Research Institute, Tamil Nadu Agricultural University (TNAU), in association with the Society for Promotion of Horticultural Science and Technology	14-15 November 2024 Coimbatore	<a href="https://tnau.ac.in/site/icfh24/">https://tnau.ac.in/site/icfh24/</a>
National Symposium on Hybrid Technology for Enhanced Crop Productivity	Trust for Advancement of Agricultural Sciences (TAAS)	2-4 December 2024 New Delhi	<a href="https://www.taas.in/ForthcomingEvents.aspx">https://www.taas.in/ForthcomingEvents.aspx</a>
International Conference on Trailblazing Trends in Sustainable Climate Resilient Precision Agriculture Through Artificial Intelligence and Remote Sensing	Centre of Excellence on Soil & Water Management Research Testing and Training Centre at Junagadh Agricultural University	23-24 January 2025 Junagadh	<a href="https://www.ictpairs.in/">https://www.ictpairs.in/</a>
National Conference-cum-Workshop on Sustainable Biotech Solutions for Global Challenges	Jamia Hamdard University	19-21 February 2025 New Delhi	<a href="http://jamiahamdard.edu">http://jamiahamdard.edu</a>
Indian Seed Congress 2025: Emerging Technologies - Propelling Seed Revolution	National Seed Association of India	23-25 February 2025 New Delhi	<a href="https://isc.nsai.co.in/">https://isc.nsai.co.in/</a>
<b>INTERNATIONAL</b>			
11 <sup>th</sup> Meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety	CBD Secretariat	21 October-1 November 2024 Cali, Colombia	<a href="https://www.cbd.int/conferences/2024">https://www.cbd.int/conferences/2024</a>
Biosafety Clearing-House Training Workshop	CBD Secretariat	26 October 2024 Cali, Colombia	<a href="https://www.cbd.int/meetings/CP-BCH-WS-2024-01">https://www.cbd.int/meetings/CP-BCH-WS-2024-01</a>
Asian Seed Congress 2024	Asia & Pacific Seed Alliance (APSA) and the China National Seed Trade Association (CNSTA)	2-6 December 2024 Sanya, China	<a href="https://web.apsaseed.org/asc2024">https://web.apsaseed.org/asc2024</a>



SOUTH ASIA  
BIOSAFETY PROGRAM

The South Asia Biosafety Program (SABP) is an international development program implemented in India and Bangladesh by the Agriculture & Food Systems Institute (AFSI). 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.



Agriculture &  
Food Systems  
Institute

## CONTACT SABP

### BANGLADESH

Dil Afroj Moni  
Program Officer  
South Asia Biosafety Program  
Agriculture & Food Systems Institute  
1900 L Street NW, Suite 302  
Washington, DC 20036, USA  
Email: [dilafroj@southasiabiosafety.org](mailto:dilafroj@southasiabiosafety.org)

### UNITED STATES

Layla Tarar  
Manager, Communications & Digital Learning  
Agriculture & Food Systems Institute  
1900 L Street NW, Suite 302  
Washington, DC 20036, USA  
Twitter: @AgFoodSystems  
Email: [ltarar@foodsystems.org](mailto:ltarar@foodsystems.org)

### INDIA

Vibha Ahuja, Ph.D.  
Chief General Manager  
Biotech Consortium India Limited  
Anuvrat Bhawan, 5<sup>th</sup> Floor  
210, Deendayal Upadhyaya Marg  
New Delhi 110 002, India  
Email: [vibhaahuja@biotech.co.in](mailto:vibhaahuja@biotech.co.in)

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