

South Asia Biosafety Program

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May 2023 – February 2024

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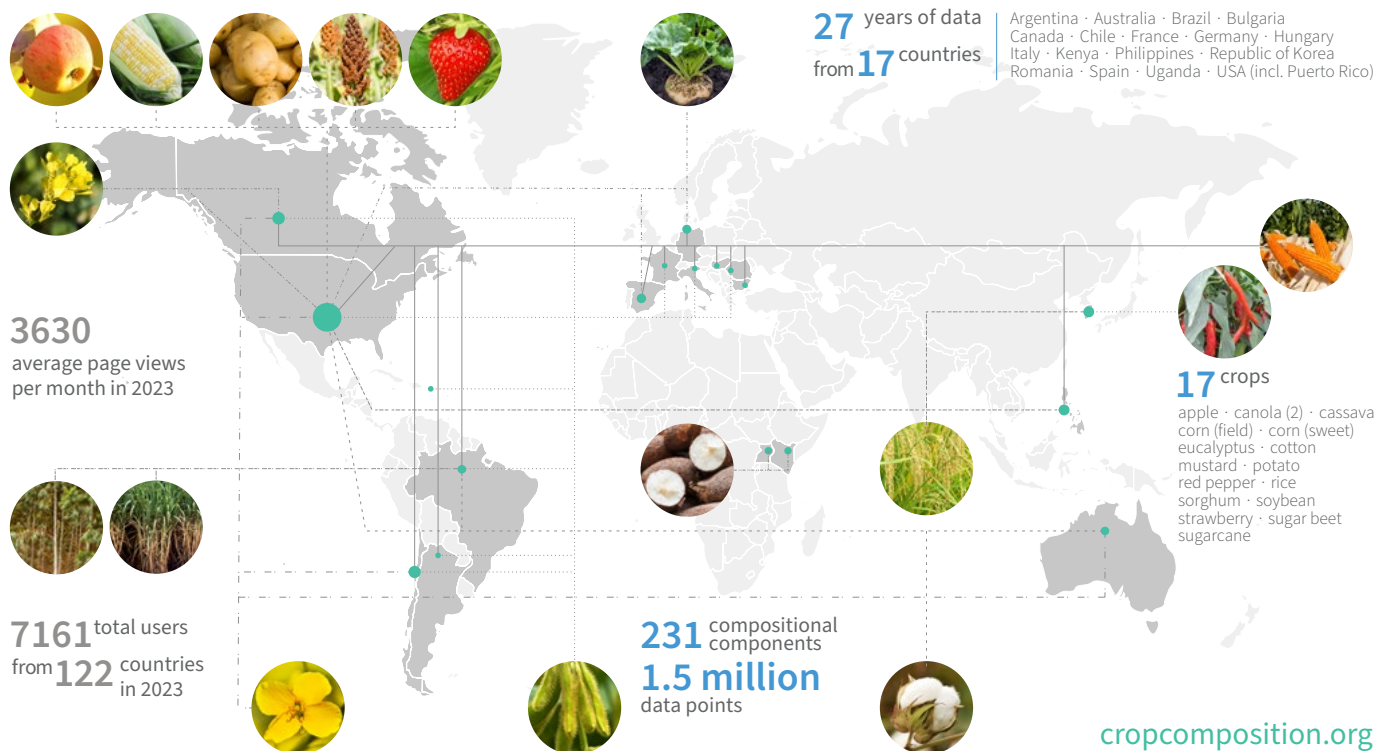
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RESOURCE SPOTLIGHT

Release of Crop Composition Database Version 10.0

Dr. Bhavneet Bajaj, Manager–Scientific Programs, Agriculture & Food Systems Institute



Infographic about Version 10.0 of the Agriculture & Food Systems Institute's Crop Composition Database (CCDB).

The Agriculture & Food Systems Institute released the latest version of the Crop Composition Database (CCDB) on 9 May 2024. With CCDB Version 10.0, the number of crops increased to 17. It now includes apple (*Malus domestica*), two canola crops (*Brassica juncea* and *Brassica napus*), cassava (*Manihot esculenta*), eucalyptus, field corn (*Zea mays*), sweet corn (*Zea mays*), cotton (*Gossypium hirsutum*), mustard (*Brassica juncea*), potato (*Solanum tuberosum*), red pepper (*Capsicum annuum*), rice (*Oryza sativa*), sorghum (*Sorghum bicolor*), soybean (*Glycine max*), strawberry (*Fragaria ananassa*), sugar beet (*Beta vulgaris*), and sugarcane (*Saccharum officinarum*).

The CCDB (cropcomposition.org) is an open-access, publicly accessible resource that provides compositional and nutritional information for agriculturally important food, feed, and fiber crops. The information about macronutrients, micronutrients, secondary metabolites,

and toxicants from the CCDB can be applied to improve the overall knowledge of human nutrition, support the development of diets that promote the growth of healthy livestock, and improve global data sets related to food security and nutrition modeling.

The CCDB is frequently referred to by regulators and product developers worldwide for comparative compositional assessments of new plant varieties developed through modern biotechnology.

The database is commonly used in the pre-market safety evaluation of crop varieties developed through modern biotechnology. The safety evaluation process involves a comparative assessment of transgenic events in the context of their conventional counterparts. The safety assessment of a transgenic event is carried out using a science-based framework based on a stepwise process that includes molecular characterization, testing of novel proteins for potential toxicity and allergenicity, and compositional studies. The CCDB is frequently referred to by regulators and product developers worldwide for comparative compositional assessments of new plant varieties developed through

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modern biotechnology. The database is also referenced in OECD consensus documents for compositional considerations for cotton, potato, rice, and soybean. It is used by academic researchers, scientists from public sector institutions, and students as a reference resource to access mean levels and ranges (minimum to maximum) of compositional components from agriculturally important crops.

The latest iteration of the CCDB houses over 1.5 million data points across 231 compositional components from 17 crops. The datasets in the CCDB are collected from controlled field trials from a range of

geographies over several growing seasons, representing compositional data from 17 countries collected over 27 years (1995–2022). The CCDB's robust datasets, accompanied by harvested samples, also provide additional information such as year, region, and country, allowing users to gain insights into the factors that drive the natural variability of compositional components. Users can access the detailed datasets to better understand data distributions for specific analytes from crops of their interest.

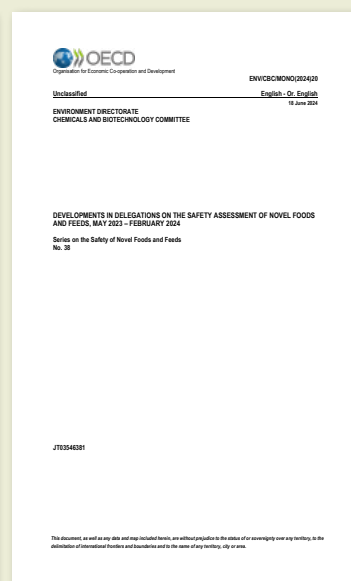
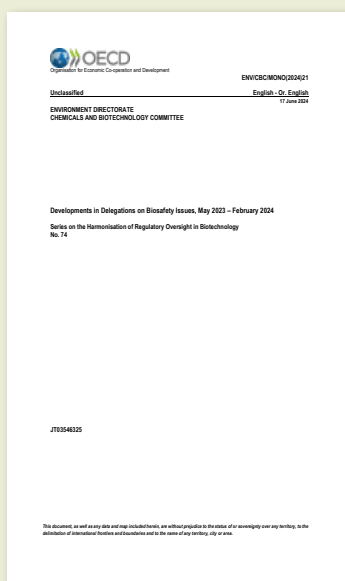
RESOURCE SPOTLIGHT

OECD Tour de Table Documents on Developments in Delegations on Biosafety Issues and Developments in Delegations on the Safety Assessment of Novel Foods and Feeds, May 2023 – February 2024

Dr. Bhavneet Bajaj, Manager–Scientific Programs, Agriculture & Food Systems Institute (AFSI)

The Organisation for Economic Cooperation and Development (OECD) conducts work by convening experts, committees, and working groups (also known as Working Parties or WPs) to share policy experiences, innovate, and review policy implementation and impact. Two Working Parties implement biotechnology-related work: the Working Party on the Harmonisation of Regulatory Oversight in Biotechnology (WP-HROB) and the Working Party for the Safety of Novel Foods and Feeds (WP-SNFF). Their goal is to increase the efficiency of the risk/safety assessment process, reduce duplication of effort, and promote harmonized country approaches to reduce costs and the potential for non-tariff barriers to trade.

The OECD WPs publish documents called “Tour de Table,” which is a compilation of the latest developments in delegation meetings. The Tour de Table documents published by the WP-HROB and WP-SNFF summarize relevant information on activities related to biosafety issues and safety assessment of novel foods and feeds at the international level since the previous meeting. The documents collate individual contributions from OECD members, partner countries, and observer organizations participating in the work.



Tour de Table Document on Developments in Delegations on Biosafety Issues

[https://one.oecd.org/document/ENV/CBC/MONO\(2024\)21/en/pdf](https://one.oecd.org/document/ENV/CBC/MONO(2024)21/en/pdf)

Tour de Table Document on Developments in Delegations on Safety Assessment of Novel Foods and Feeds

[https://one.oecd.org/document/ENV/CBC/MONO\(2024\)20/en/pdf](https://one.oecd.org/document/ENV/CBC/MONO(2024)20/en/pdf)

INDIA

Brochure on Frequently Asked Questions – GM Mustard Hybrid Technology

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

GM mustard hybrid technology refers to the use of genetic engineering to produce mustard hybrids using the *barnase-barstar* gene system. The introduction of GM hybrids in rapeseed (a sister crop of mustard), referred to as GM canola, has contributed significantly to yield enhancement globally since these were first allowed in Canada in 1996. Globally, GM canola is cultivated in more than 10 million hectares. The oil and seed meal produced from GM canola has been used for food and feed purposes all over the world for more than 25 years.

Hybrid seed production technology using genetic engineering techniques in mustard (commonly referred to as “GM mustard”) was developed by the Centre for Genetic Manipulation of Crop Plants (CGMCP) at the University of Delhi South Campus. Prof. Deepak Pental, a well-known geneticist and former Vice Chancellor of the University of Delhi,

The release of GM mustard in India is expected to allow the development of productive hybrids and contribute to enhancing mustard productivity.

developed two parental lines and hybrid DMH-11 with financial support from the Department of Biotechnology (DBT) and the National Dairy Development Board (NDDB). Biosafety evaluation of the GM parental lines and the first hybrid DMH-11 was undertaken with support from the Biotechnology Industry Research Assistance Council (BIRAC). The environmental release of GM mustard in India was approved by the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, on October 25, 2022. The release of GM mustard in India is expected to allow the development of productive hybrids and contribute to enhancing mustard productivity, thereby improving farmers' incomes and reducing imports.

This brochure provides answers to some of the frequently asked questions on GM mustard hybrid technology in simple language to facilitate easy understanding.

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These questions include:

- What is the GM mustard hybrid technology?
- What is the *barnase-barstar* gene system?
- What are the benefits of GM mustard hybrid technology?
- How is GM mustard hybrid technology different from the hybrid production systems already available?
- Who has developed GM mustard hybrid technology in India?
- How are hybrid seeds produced with the *barnase-barstar* system?
- Is GM mustard released as an herbicide-tolerant (HT) crop?
- What is the performance of GM mustard hybrid *vis-à-vis* pure line varieties?
- Is GM mustard safe? Has it been tested for biosafety and environmental safety?
- Are products such as “Sarson da saag” derived from GM and non-GM mustard nutritionally equivalent?
- How are oil and seed meal derived from GM mustard different from the products of the currently grown mustard varieties?
- Is India a center of origin or diversity for mustard? What would be the impact of growing GM mustard on biodiversity in India?
- Will GM mustard cross-pollinate and contaminate non-GM mustard?
- What would be the impact of GM mustard on honeybees and honey production?
- Who has reviewed and approved GM mustard in India?
- What are the guidelines and protocols used by regulatory authorities to assess the safety of GM plants, such as GM mustard?
- What is the source of the *barnase-barstar* technology deployed in mustard for hybrid seed production? Is it IPR protected?
- Do farmers have to pay royalties?
- Is GM mustard approved and cultivated in other countries?
- How will GM mustard benefit farmers in India?

LINK



Frequently Asked Questions GM MUSTARD HYBRID TECHNOLOGY


BCIL
Biotech Consortium India Limited
New Delhi
2024



Access the FAQ at:

https://biotech.co.in/sites/default/files/GM-Mustard_%2002.01.24.pdf



Indian meal consisting of sarson da saag (green mustard) with flat bread. © Gaurav Masand | Dreamstime.com

CALENDAR OF EVENTS

EVENT	ORGANIZED BY	DATE	WEBSITE
INDIA			
Training Programme on Genome Editing for Crop Improvement: Strategies and Applications	ICAR-National Institute for Plant Biotechnology and Division of Plant Physiology, ICAR-Indian Agricultural Research Institute (IARI)	1-12 July 2024 New Delhi	https://www.iari.res.in/bms/announcements/training.php
ISSCT 13 th Germplasm & Breeding/ 10 th Molecular Biology Workshop	ICAR-Sugarcane Breeding Institute and Society for Sugarcane Research and Development	8-12 July 2024 Coimbatore	https://sugarcane.icar.gov.in/index.php/issctworkshop2024/
Brainstorming Session on Public-Private Partnership in Agriculture: A Way Forward	Trust for Advancement of Agricultural Sciences (TAAS), in collaboration with ICAR, Federation of Seed Industry of India (FSII), and National Seed Association of India (NSAI)	9 July 2024 New Delhi	https://www.taas.in/index.html
National Training on Genomics of Agriculturally Important Pathogens, Microbes, and Insects	Center for Advanced Agricultural Science and Technology (CAAST) ICAR-IARI	22 July-2 August 2024 New Delhi	https://www.iari.res.in/bms/announcements/training.php
Global Conference on Nano Connect 2024	Centre for Agricultural Nanotechnology, Directorate of Natural Resource Management, Tamil Nadu Agricultural University	20-24 August 2024 Coimbatore	https://tnau.ac.in/
International Conference on Precision Horticulture (ICPH 2024): Advancing Technologies for Sustainable Production, Food, and Environment	Horticultural College and Research Institute, Tamil Nadu Agricultural University	22-24 August 2024 Coimbatore	https://tnau.ac.in/news-2/
International Conference on Futuristic Horticulture (ICFH'24)	Horticultural College and Research Institute, Tamil Nadu Agricultural University, in association with the Society for Promotion of Horticultural Science & Technology (SoPHoS)	14-15 November 2024 Coimbatore	https://tnau.ac.in/news-2/
INTERNATIONAL			
3 rd International Wheat Congress (IWC)	Murdoch University Centre for Crop and Food Innovation, in collaboration with Grains Research & Development Corporation and Wheat Initiative	22-27 September 2024 Perth, Australia	https://www.iwc2024.com/
Eleventh 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	https://bch.cbd.int/protocol#tab=2



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.

SOUTH ASIA
BIOSAFETY PROGRAM



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