
GENE CAMPAIGN V. UNION OF INDIA: JUDICIAL SCRUTINY OF ENVIRONMENTAL RELEASE OF GENETICALLY MODIFIED MUSTARD AND THE REGULATORY SYSTEM UNDER THE ENVIRONMENT (PROTECTION) ACT, 1986

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INTRODUCTION

The Supreme Court of India's ruling in the *Gene Campaign v. Union of India*¹ is a point of eminence in the administrative and constitutional aspects of biotechnology environmental control. Delivered on 23 July, 2024, by a division bench consisting of Justices Sanjay Karol and B.V. Nagarathna. The Genetic Engineering Appraisal Committee's (GEAC) recommendation of 18 October 2022 and the resultant consequential acceptance of Ministry of Environment, Forest and Climate Change's (MoEFCC) of 25 October, 2022, regarding the environmental release of transgenic mustard hybrid DMH 11.² The Court unanimously affirmed that GMO regulatory decisions are subject to judicial review while simultaneously directing the government for formulation of a National Policy on GM crops. However, the Bench rendered contrasting opinions in context of validity of the approvals.

This case note analyzes the statutory mechanism, the factual and scientific matrix around genetically modified crops with special emphasis to DMH 11. The contrasting judicial perspectives along with involvement of the precautionary principle under Article 21 of the Constitution. To set forth proper context for this legal analysis, to form the basis necessary to understand the interpretation of regulatory discretion and constitutional safeguards; this piece of writing proceeds upon amalgamation of the agricultural history, scientific rationale for

¹ *Gene Campaign & Anr. v. Union of India*, 2024 INSC 545 (23 July 2024); SCR parallel [2024] 7 S.C.R. 1847; MANU/SC/0743/2024. Split verdict of Justices B.V. Nagarathna and Sanjay Karol.

² Minutes of the 147th Meeting of the Genetic Engineering Appraisal Committee held on 18 October 2022, available at <http://www.geacindia.gov.in/Uploads/MoMPublished/MoMPublishedOn20221025200345.pdf> (last visited on [22 September, 2026]).

hybrid technology along with economic aspects of edible oil import dependence.

RELEVANT PROVISIONS/ LEGISLATIVE FRAMEWORK

The Environment (Protection) Act, 1986 (EPA) governs the rules and regulations of genetically engineered organisms in India. Sections 3,6,8 and 25 read together empower the Central government to take necessary measures for the protection and improvement of the environment and to frame rules governing hazardous substances and environmentally sensitive activities.³ Exercising these powers, the central government notified the rules for the manufacture, use, import, export and storage of hazardous microorganisms/genetically engineered organisms or cells, 1989 (Rules, 1989) vide G.S.R. 1037(E) dated 5 December, 1989.⁴

Rule 2 makes “The Rules” applicable to genetically engineered organisms, microorganisms and cells and any substances, products or foodstuffs of which such organisms form part thereof. Rule 7 imposes a general prohibition on the import, export, transport, manufacture, process, use or sale of any genetically engineered organism or cell except with the approval of GEAC. Rule 4 designates the GEAC as the apex body for approval of large scale use and environmental release including field trials.⁵ The Committee was renamed “Appraisal” committee as against the previous title of “Approval” committee by amendment in 2010.⁶ The framework is intentionally designed as sequential and precautionary as laboratory work is overseen by the Review Committee on Genetic Manipulation; confined trials and environmental release require GEAC recommendation followed by MoEFCC acceptance. This multi-step procedure clearly reflects the legislative intent i.e., to subject novel biotechnologies to progressive risk assessment before any environmental exposure.

FACTUAL AND SCIENTIFIC CONTEXT OF DMH-11

Mustard (“Brassica juncea”) is a major rabi oilseed crop in India. Despite the success of Green Revolution in achieving cereal self sufficiency, oilseed productivity has not been on its par, with all India average yields historically ranging between approximately 1.0 to 1.5 tonnes per

³ The Environment (Protection) Act, 1986 (Act 29 of 1986), ss. 3, 6, 8 and 25.

⁴ Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms/Genetically Engineered Organisms or Cells, 1989, G.S.R. 1037(E), dated 5 December 1989 (as amended) available at <https://ibkp.dbtindia.gov.in> and FAOLEX (last visited on [22 September, 2026]).

⁵ Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms/Genetically Engineered Organisms or Cells, 1989, rr. 2, 4 and 7.

⁶ Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms, Genetically Engineered Organisms or Cells (Amendment) Rules, 2010, G.S.R. 613(E), dated 16 July 2010 (renaming “Genetic Engineering Approval Committee” as “Genetic Engineering Appraisal Committee”; w.e.f. 22 July 2010).

hectare.⁷ Official data states that average yields rose from roughly 368 kg/ha in 190-51 to around 1,428-1,461 kg/ha in recent years while yet remaining below potential.⁸ In recent years, this sustained stagnation is caused by structural dependence on edible oil imports, which have consistently accounted for over 55% of domestic consumption with absolute volumes ranging between 13.4 to 16.5 million tonnes.⁹

Public sector research focused on overcoming the self-pollination bottleneck of a mostly self pollinating crop. The Centre for Genetic Manipulation of Crop Plants (CGMCP), University of Delhi, used the barnase-barstar system to develop transgenic hybrid DMH-11 for ensuring hybrid seed production. Multi location biosafety research level trials at ICAR direction showed an average yield advantage of about 28% over mega variety Varuna (the national check)¹⁰ on the trial basis; performances at large commercial scale are not available as yet.

On 18 October 2022 the GEAC in its 147th meeting prescribed the environmental release of DMH-11 and its parental lines for seed production and testing (environmental release as per directions given in the ICAR guidelines and also as per available environmental guidelines before commercial release). MoEFCC accepted the recommendation of the 147th meeting of GEAC on 25 October, 2022. The approval was not only time limited (initially 4 years, thereafter renewable for another 4 years under Rule 13) and restricted to parental lines and hybrid seed production stages only (subject to approval by Central Insecticide Board and Registration Committee), the approval also required follow up investigations on pollinators to be done under ICAR supervision.¹¹

FACTS

Gene Campaign and others filed writ petitions challenging the regulatory process and the 2022 decisions as under (W.P.(C) Nos. 115 of 2004; 260 of 2005 and other connected matters). The

⁷ Indian Council of Agricultural Research, “Genetically modified (GM) Mustard hybrid will boost production and productivity” (31 October 2022) available at <https://icar.org.in/en/genetically-modified-gm-mustard-hybrid-will-boost-production-and-productivity-0> (last visited on [22 September, 2026]).

(References ICAR-DRMR / AICRP trial data.)

⁸ Department of Agriculture & Farmers Welfare, yield series; Commission for Agricultural Costs and Prices, Rabi Price Policy reports (various years) (Government of India).

⁹ Department of Food and Public Distribution, “Edible Oil Scenario” available at <https://dfpd.gov.in/edible-oil-scenario/en> (last visited on [22 September, 2026]).

¹⁰ Aggregated Biosafety Research Level (BRL) trial data under ICAR-DRMR supervision, as referenced in official GEAC records and parliamentary replies (Government of India).

¹¹ Minutes of the 147th Meeting of the Genetic Engineering Appraisal Committee held on 18 October 2022 (supra note 2) (conditions of four-year initial approval renewable under Rule 13, herbicide restriction to seed-production stage, and post-release monitoring).

petitions raised issues concerning the precautionary principle, adequacy of indigenous risk assessment, composition of GEAC and the distinction between limited environmental release and commercial cultivation.

THE JUDGMENT

● Justice B.V. Nagarathna's Opinion

Justice Nagarathna held the recommendations made by the Genetic Engineering Appraisal Committee (GEAC) on 18 October, 2022 and the decision of the Ministry of Environment, Forest and Climate Change (MoEFCC) on 25 October, 2022 to be flawed and liable to be quashed. She found the decision to be in non-compliance i.e., inconsistent with the precautionary principle, a lack of adequate determination of whether DMH-11 constituted a herbicide tolerant crop and the potential environmental and health risks, lacking comprehensive indigenous research and procedural deficiencies including the composition of the Committee and inadequate meaningful consultation with respective concerned stakeholders and State Governments.¹² She emphasised that the decision to release DMH-11 was violative of the right to a safe, clean and healthy environment under Article 21, which requires rigorous prior in depth analysis of irreversible risks.

● Justice Sanjay Karol's Opinion

Justice Karol concurred with the orders, stating that the GEAC is a statutory expert body and its structure and decision making process did not reflect any apparent arbitrariness or lack of due deliberation i.e., the application of the mind. The clearance was only of a conditional nature for environmental release for seed production and testing under controlled conditions. He further opined that judicial review does not extend to substituting the Court's technical opinion for that of the expert body on questions of scientific realm.¹³ He held that policy determination of prohibition of herbicide tolerant crops is a matter of decision within the executive domain.

¹² Opinion of Justice B.V. Nagarathna in *Gene Campaign & Anr. v. Union of India*, 2024 INSC 545 (23 July 2024).

Secondary analyses (for reference only): LiveLaw (<https://www.livelaw.in/top-stories/supreme-court-quashes-union-govt-approval-for-cultivation-of-genetically-modified-mustard-264202>); Bar & Bench; SCC Online Blog (27 July 2024) (last visited on 21 September, 2026).

¹³ Opinion of Justice Sanjay Karol in *Gene Campaign & Anr. v. Union of India*, 2024 INSC 545 (23 July 2024).

- Points of consensus

The following directions were issued unanimously by both judges in the impugned order:

- i) The decisions/approvals given by GM regulating bodies are subject to judicial review;
- ii) The Union of India shall prepare a National Policy on GM crops (Research, cultivation, trade and commerce) after obtaining feedback from the State governments, experts and farmers' leaders and convene a national consultation within four months from today by the MoEFCC; and
- iii) The various approvals issued in the year 2022 shall be examined by the larger Bench directed to be constituted by the CJL.¹⁴

EFFECTS OF THE JUDGMENT AND SUBSEQUENT DEVELOPMENTS

The split verdict has been out since 2024, the question of validity of the 2022 approvals is still unclear and raises the need for an additional judicial adjudication. The issue was referred to a larger Bench and in the meantime, status quo has been preserved. As a result, commercialization of DMH-11 has continued to be on hold.¹⁵

The National Policy directed by the Court has not been finalised yet despite the Court's timeline preference.¹⁶

As a safeguard against the concern of personal interest conflicts raised in the judgment, the Central government has filed a proposed amendment to the Rules, 1989. This amendment, which was notified around late 2024 to early 2025, effectively mandates GEAC members to periodically submit and register written statements of personal or professional interests and rescue themselves where any direct or indirect conflict exists. The public objections and suggestions were invited on this amendment proposal.¹⁷ However, a notification amending the

¹⁴ Operative consensus directions in *Gene Campaign & Anr. v. Union of India*, 2024 INSC 545 (23 July 2024).

¹⁵ Subsequent listings and status-quo continuation confirmed in court records and secondary reporting through 2025–2026.

¹⁶ Contemporary assessments (2025–2026) confirming non-formulation of the National Policy on GM crops directed in *Gene Campaign & Anr. v. Union of India*, 2024 INSC 545.

¹⁷ Draft Manufacture, Use, Import, Export and Storage of Hazardous Micro-Organisms/Genetically Engineered Organisms or Cells (Amendment) Rules, 2024, S.O. 5647(E), dated 31 December 2024 (inviting public comments on conflict-of-interest disclosures for expert members of committees under Rule 4; open for 60 days).

substantive part of Rules, 1989 as amended has not yet been issued as of 22 September, 2026. Thus, Rules 2,4 and 7 i.e., the sequential precautionary provisions continue to be operational.

CURRENT LEGISLATIVE AND STATUTORY POSITION (As of 22 September, 2026)

The Environment (Protection) Act, 1986 and the Rules, 1989 continue to be the main legislative framework. Genetically engineered plants cannot be released into the environment without the recommendation of GEAC and approval of the MoEFCC. Bt cotton continues to be the only GM crop to be commercialised.

The decision to conditionally approve DMH-11 in 2022 remains subject to the reference before the larger Bench; consequently, no commercial cultivation has been allowed.

Amendments, on the basis of the draft to prevent conflicts of interest, are the main legislative action undertaken after the judgment, but have not been promulgated. An integrated 'National Policy' to implement the Court's directions has also not been notified.

Therefore, the legal situation can be described as a continuation of the 1989 approach, the temporary halt of DMH-11 commercialization and the partial execution of the Court's institutional commands.

CRITICAL ANALYSIS

The 2024 split decision is yet another illustration of a common debate in administrative and constitutional law concerning the optimal level of judicial oversight of expert regulators operating in the shadow of scientific uncertainty. What emerges in the present case from Justice Nagarathna's preference for a rigid conception of the precautionary principle coupled with a participative mode of environmental governance pursuant to Article 21, vis-a-vis Justice Karol's deference to institutions and specialized statutory bodies under the Rules of 1989, is the consistent application of the established jurisprudence that courts should not act as appeals' courts of technocratic expertise.

The comprehensive interdisciplinary approach does justice in reflecting the magnitude of this tension. The cohesive understanding of the historical decline of oilseed cultivation and the economic burden of its import dependence together provide a justifiable rationale for the deployment of any productivity enhancing technology. Meanwhile, the research driven nature

of the public sector scientific processes underlying DMH-11 makes it dissimilar to a product inherently commercial in its introduction.

Nevertheless, this context serves to emphasise the very stark implications that irreversible environmental release carries in a country where mustard is both a dietary staple and a native crop requiring insect pollinators.

The nature of the EPA and the Rules of 1989 framework is designed to facilitate a graduated risk of assessment to pragmatically move past this tension. The outcome of 2022 and the judicial divide that followed represent enduring ambiguities about the extent of Indian indigenous data required, the treatment of herbicide tolerance traits and the scope of stakeholder consultation that must take place before environmental release.

The collective call for a National Policy is perhaps the most institutional outcome. It recognizes that decisions of individual GEACs, even when well intentioned and exhaustive, will not be the equivalent of an integrated, publicly debated and deliberate comprehensive collective synthesis of scientific evidence, economic objectives, agricultural realities and constitutional protections.

LEGISLATIVE COMMENT

Rules of 1989 remain the main rule for GMOs. Though the sequential model could be fit for purpose, in absence of statutory national policy it has been criticized for lack of coherence and transparency. Supreme Court's suggestion could serve as an occasion for policy makers or the legislature to specify the nature of risk assessment, indigenous content requirement, the content and nature of public and State consultation for a State and non State actors to form a perspective on different risk levels; detail the nature of assumption for risk levels and specify the treatment of trait for herbicide tolerance trait.

CONCLUSION¹⁸

The initial statutory position under the EPA and the Rules, 1989 established a precautionary

¹⁸ The views expressed above are my personal opinions based on the materials available to me and hence the reasoning. The larger Bench of the Hon'ble Supreme Court possesses far greater knowledge, institutional wisdom and constitutional responsibility. Whatever view the Bench ultimately takes will, of course, prevail. I respectfully await its decision.

framework procedure. The 2022 decision represented the high standard of regulatory approval for a GM food crop. The 2024 split verdict of the Gene Campaign does not conclusively decide the legality of the environment release of DMH-11 in 2022 as the matter is pending before a larger Bench consideration and suspended since. However, it recognizes the constitutional responsibility of regulation of GMOs and orders framing of a National Policy and prompted draft amendments on conflict of interest. As of 22 September, 2026, the core statutory framework remains unchanged. Until such a policy is framed and until the larger Bench decides on the legal propriety of the approvals, the legal status of transgenic mustard will continue to hover above the heads of crop commercialization with strong regulation. In pointing out the regulation of GM crops cannot only be a technical exercise but a constitutional one, the judgment underscores that its regulation needs to be evidence based, grounded in economic realities, plant history and Article 21's precautionary principle.