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### **1. Why SC couldn't agree on environmental release of GM mustard**

#### **Why in News?**

A two-judge Bench of the Supreme Court on Tuesday delivered a split verdict on whether to allow the "environmental release" of Genetically Modified (GM) mustard.

Justices B V Nagarathna and Sanjay Karol disagreed on whether the approval given by the Genetic Engineering Appraisal Committee (GEAC) to proceed with field trials following the environmental release was done properly. GEAC is the body that is responsible for approving proposals relating to genetically engineered organisms. This was the GEAC's second major push to introduce GM mustard as the first GM crop that is meant for human consumption. Bacillus thuringiensis cotton (or Bt cotton) is the only GM crop that has been approved for cultivation in India so far.

When a split decision is delivered, the case is referred to the Chief Justice of India for placing before a larger Bench. However, both judges directed the Union of India "to evolve a National Policy with regard to GM crops", and to consult experts, farmer representatives, and state governments during the process.

#### **Story of GM mustard**

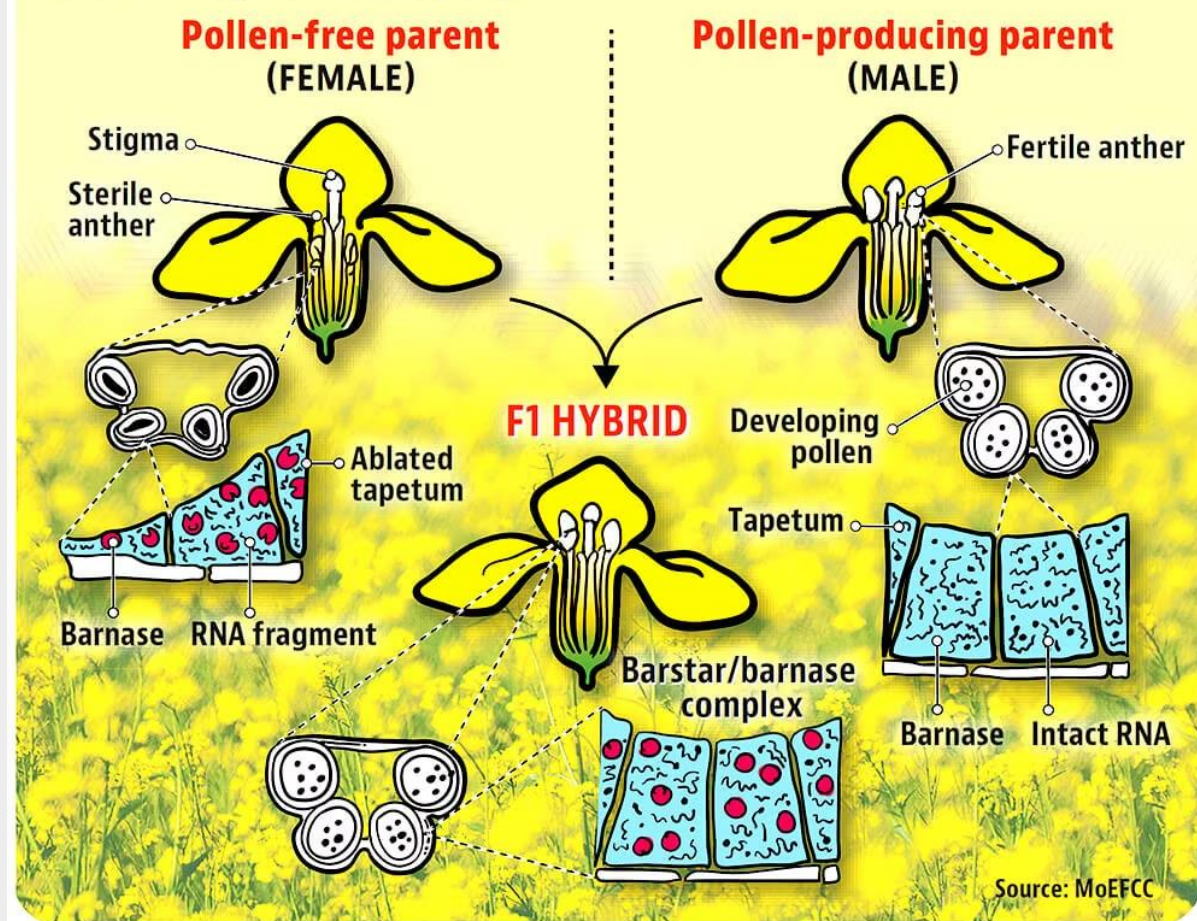
On September 15, 2015, the Centre for Genetic Manipulation of Crop Plants (CGMCP) at the Delhi University sought the GEAC's approval for the environmental release of a genetically engineered hybrid mustard called DMH-11 (commonly known as GM mustard).

Mustard flowers contain both female (pistil) and male (stamen) reproductive organs, which makes the plant largely self-pollinating. The GM mustard developed by the DU scientists contains two alien genes — the first, 'barnase', gene interferes with pollen production and renders the plant male-sterile, and the resulting plant is crossed with fertile mustard flowers containing the second, 'barstar', gene which blocks the action of the barnase gene. The resulting plants are meant to be high-yield variants of mustard.

Along with the proposal, the CGMCP submitted a biosafety dossier, and the GEAC created a sub-committee to examine its contents. Following some revisions, the sub-committee considered the dossier and submitted its report. In September 2016, the report was published and comments were invited.

# The science behind DMH-11

To create Dhara Mustard Hybrid-11, the team improvised on a 1990s breeding innovation pioneered in Belgium called the barnase/barstar male sterility technique. It works on the principle of removing male fertility in one parent and restoring it in the offspring



On May 11, 2017, the GEAC recommended the environmental release of GM mustard. If approved, this would allow field tests to be conducted to examine the effects of cultivating the crop.

However, after receiving several representations, the Ministry of Environment sent the proposal back to the GEAC for re-examination in March 2018. The GEAC then directed the CGMCP to examine the effect of GM mustard on honey bees and soil microbial diversity. But these tests were deferred through 2020-21.

In May 2022, gene scientist Prof Deepak Pental on behalf of the CGMCP wrote to the Minister for Environment urging him to accept the recommendation for the environmental release of GM mustard. The GEAC sought comments from various government departments, which recommended releasing GM mustard. The proposal was submitted on October 18, 2022. It was accepted by the Centre on October 25, and recommendations and conditions regarding the field tests were sent to Prof Pental.

### **Case before the SC**

Environmentalist Aruna Rodrigues and the research and advocacy organisation Gene Campaign challenged the decision to approve the environmental release of GM mustard before the Supreme Court.

In their split decision, the judges disagreed on two key aspects: first, whether the GEAC's decision-making process was legal and, second, whether it violated the "precautionary principle" for scientific innovations. The precautionary principle, a standard test in environmental litigation, is recognised as a facet of the right to a clean environment, a subset of Article 21 (fundamental right to life).

JUSTICE NAGARATHNA said that the field tests that the GEAC committed to conducting with the CGMCP did not take place. Instead, the GEAC did a "volte-face" after Prof Pental sent the letter to the Centre in May 2022, and recommended the environmental release of GM mustard regardless. This shift in stance without providing any reasons, shows there was no "application of mind" by the GEAC, which is in "gross violation of the principle of public trust", Justice Nagarathna ruled.

She also said that the GEAC did not sanction any studies on the long-term effects that GM mustard could have on future generations. The process adopted by the GEAC "has failed to take into consideration the precautionary principles while approving the environmental release of the transgenic mustard", violating both the precautionary principle and the right to a safe and healthy environment, she said.

JUSTICE KAROL held that environmental release and the following tests and trials were in line with "the development of a scientific temper" and abided by the precautionary principle. "Without field trials, the performance of the plant in the field or environmental safety of such plant cannot be known. Studies, being conducted in open environment is necessary for studying the impact on human health and biodiversity, for the performance of a GM crop is dependent on a host environment," he said.

Justice Karol held that the GEAC's process was "independent" and "reasoned". He observed that the GEAC-appointed expert committee had found that honeybees do not discriminate between other GM crops such as genetically engineered canola. He noted that the Department of Biotechnology and the Department of Agricultural Research and Education had both recommended the environmental release of GM mustard.

Relevance: GS Prelims & Mains Paper III; Science & Technology

Source: Indian Express

## **2. Why Economic Survey argues for climate adaptation, not mitigation**

### **Why in News?**

That the international framework for fighting climate change has been ineffective is evident from the fact that none of the targets set by it has ever been met. It is also well known that the system is highly inequitable. And yet, any suggestion of an alternative approach risks being seen as heresy.



The Economic Survey presented decided to risk it. Its two chapters on climate change were devoted almost entirely to pointing out the flaws and inequities in the system, and suggesting alternative pathways that incorporate, among other things, lifestyle and behavioural changes to reduce greenhouse gas emissions.

Climate change adaptation VS Mitigation		
Characteristic	Adaptation	Mitigation
Relation with climate	Adjusts society and ecosystems to endure climate change	Adjusts society and ecosystems to prevent climate change
Attitude towards climate change	Takes advantage of beneficial consequences while reducing negative consequences of climate change	Focuses on preventing climate change because of negative consequences
Relation to nonhuman environment	May adjust nonhuman as well as human elements of the environment	Focuses on human and human-caused elements of the environment

### Views of Economic Survey

The Survey noted that the “excessive preoccupation” with meeting the 1.5- or 2-degree Celsius temperature target was putting impossible pressure on developing countries, forcing them to make choices they were not ready for, and diverting their focus and resources away from the more near-term imperatives of improving the lives of their people.

It went so far as to suggest that it was possible to imagine a warmer world that was more equitable and resilient than a world in which the 1.5-degree threshold was achieved at all costs. The Economic Survey does not deny climate change. These arguments are not new, and already have wide resonance in the developing world. Just that these views would be expressed in informal groups behind closed doors, and not in a policy document of the

government. It is not clear though whether the Economic Survey was making an academic argument, or signalling of possible shift in India's energy transition trajectory.

### **Increasing resilience**

In essence, the Economic Survey's argument is that adaptation should get at least as much importance as mitigation — more so because the impacts of climate change are already unfolding, and it is becoming increasingly clear that the 1.5-degree target will be breached very soon, no matter what the world does (or not) in response. In this situation, rapid improvement in incomes and overall well-being of the people is the best insurance against climate change.

It is important to understand that while there is near consensus in the scientific community that the frequency and intensity of climate impacts increase with rise in temperature, the 1.5- or 2-degree thresholds are chosen arbitrarily — they are not natural thresholds for climate change. There are no climate impacts that get triggered only after these limits are crossed, and not before.

To those who do not subscribe to the doomsday view that climate change would destroy the world in a few years, the argument of the developing countries will make sense. Since climate impacts cannot be stopped, the world must focus on rapid development and adaptation to increase resilience, especially among communities that are at the greatest risk.

The counter-argument: at these higher temperatures, the ferocity of climate impacts would increase so much that incremental improvements in resilience would be rendered useless.

Indeed, there are uncertainties on both sides. It is in this context that it is sometimes proposed that the rich and developed countries do the mitigation work while developing countries focus on adaptation. But this is easier said than done.

### **Inequities and hypocrisy**

The Economic Survey articulates the impatience of developing countries with the developed world's hypocrisy. The United States has the largest historical responsibility, but has been the biggest laggard on emissions reductions. Its 2019 emissions were about 6% higher than in 1990, and is even now only marginally lower. The developed countries as a bloc have not fulfilled any of their emission reduction targets, or their commitments to provide finance or technology to the developing countries.

The responsibility for these failures have been sought to be passed on to the rest of the world in the form of calls for enhanced climate action. In fact, the international climate architecture has always been less about saving the planet from the consequences of climate change and more about preserving the existing world order. It has become the vehicle to perpetuate the dominance of the rich and industrialised world by mandating transitions that are more suited to them.

Relevance: GS Prelims & Mains Paper III; Environment

Source: Indian Express

### 3. Budget 2024: How will removal of indexation benefits for property sales impact real estate?

#### Why In News?

In Budget 2024, Finance Minister Nirmala Sitharaman removed the indexation benefits previously available for property sales. The FM also announced a reduction in Long Term Capital Gains (LTCG) Tax on property sales from 20% to 12.5%.

Indexation adjusts the purchase price of an investment to account for inflation, effectively reducing taxable profits. Without indexation, the taxable income from long-term capital gains increases, leading to higher tax liabilities for investors.

#### Tax calculations

Assume you bought a property for ₹5 crore. Global brokerage house CLSA has re-based this acquisition cost to 100 and used the government's Cost Inflation Index (CII) for calculating the indexed cost of acquisition under the old regime. They then compared this with the new regime (which excludes indexation) to calculate the LTCG tax at the reduced rate of 12.5% (down from 20% in the old regime).

According to the brokerage, under the new regime, the LTCG tax incidence is higher when the holding period is shorter (less than 10 years) and property price appreciation is moderate (less than 10% per annum). Conversely, for investors holding the property for a longer duration (10 years and more) and experiencing healthy property price appreciation (over 10% per annum), the LTCG tax in the new regime would be neutral or marginally beneficial.

Figure 1

#### Illustration on capital gains calculation in old vs new regime

Holding period (no. of years)	Old regime				New regime			
	2.0	5.0	10.0	20.0	2.0	5.0	10.0	20.0
Cost of acquisition	100	100	100	100	100	100	100	100
Indexed cost of acquisition*	110	126	151	321	100	100	100	100
Tax rate	20%	20%	20%	20%	12.5%	12.5%	12.5%	12.5%
<b>House price increase at 5% cagr</b>								
Market value	110	128	163	265	110	128	163	265
LT capital gains	0.6	2.0	11.6	(55.9)	10	28	63	165
LT capital gains tax	0.1	0.4	2.3	(11.2)	1.3	3.5	7.9	20.7
% change in LTCG tax in new regime vs old regime					1000%	754%	238%	NA
<b>House price increase at 7.5% cagr</b>								
Market value	116	144	206	425	116	144	206	425
LT capital gains	6	18	55	104	16	44	106	325
LT capital gains tax	1.2	3.6	11.0	20.7	1.9	5.4	13.3	40.6
% change in LTCG tax in new regime vs old regime					65%	52%	21%	96%
<b>House price increase at 10% cagr</b>								
Market value	121	161	259	673	121	161	259	673
LT capital gains	11	35	108	352	21	61	159	573
LT capital gains tax	2.3	7.1	21.6	70.3	2.6	7.6	19.9	71.6
% change in LTCG tax in new regime vs old regime					16%	8%	(8%)	2%
<b>House price increase at 12.5% cagr</b>								
Market value	127	180	325	1,055	127	180	325	1,055
LT capital gains	17	55	173	733	27	80	225	955
LT capital gains tax	3.4	10.9	34.7	146.7	3.3	10.0	28.1	119.3
% change in LTCG tax in new regime vs old regime					(2%)	(8%)	(19%)	(19%)

Source: CLSA; \* Indexed cost of acquisition in old regime is based on the Government's Cost Inflation Index (CII)

Relevance: GS Prelims & Mains Paper III; Economics

Source: Mint

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