

INDIAN ECONOMY**GUIDELINES FOR SAFETY ASSESSMENT OF GENOME EDITED PLANTS, 2022**

Recently, the Department of Biotechnology (DBT) issued guidelines easing norms for research into Genetically Modified (GM) crops and circumventing challenges of using foreign genes to change crops profile.

Major Highlights

- The 'Guidelines for Safety Assessment of Genome Edited Plants, 2022' exempt researchers who use gene-editing technology to modify the genome of the plant from seeking approvals from the Genetic Engineering Appraisal Committee (GEAC).
 - The guidelines provide a road map for the sustainable use of genome editing technologies and applicable to public and private sector research institutions engaged in research and development and handling of genome edited plants.
- The guideline aligns and harmonises India's regulatory framework on genome editing with other mega food producing countries from Latin America, North America, Africa and Asian countries.
- **Environment ministry notification**
 - It had exempted certain types of genome-edited crops from the stringent biosafety regulations applicable to genetically-modified (GM) crops.
 - The ministry had exempted site directed nuclease (SDN) 1 and 2 genomes from rules 7-11 of the Environment Protection Act, thus avoiding a long process for approval of GM crops through the Genetic Engineering Appraisal Committee (GEAC).

Significance

- These guidelines are expected to bring transformational change in product development and commercialisation and would contribute towards increasing farmer's income.
- It will accelerate agriculture and good trade of such products.

Concerns raised by Environmentalist groups

- Environmentalist groups have opposed this exception for gene-edited crops.
- Gene editing is included in genetic engineering. Therefore, there is no question of giving exemptions to particular kinds of genome edited plants from the regulatory purview.
- Gene editing techniques involve altering the function of genes and can cause "large and unintended consequences" that can change the "toxicity and allergenicity" of plants. "
- They have demanded that these exemptions be withdrawn.

What are Genetically Modified Crops?

- Conventional plant breeding involves crossing species of the same genus to provide the offspring with the desired traits of both parents.
- The GM plants that have usually come for such scrutiny are those that involve transgenic technology or introducing a gene from a different species into a plant, for instance BT-cotton, where a gene from soil bacterium is used to protect a plant from pest attack.
- **GM crop allowed in India:**
 - Bt cotton, the only GM crop that is allowed in India, has two alien genes from the soil bacterium *Bacillus thuringiensis* (Bt) that allows the crop to develop a protein toxic to the common pest pink bollworm.
 - On the other hand, Bt cotton is derived with the insertion of an additional gene, from another soil bacterium, which allows the plant to resist the common herbicide glyphosate.
- **Bt Brinjal:**
 - In Bt brinjal, a gene allows the plant to resist attacks of fruit and shoot borer.
- **DMH 11 Mustard:**
 - In DMH-11 mustard, developed by Deepak Pental and colleagues in the South Campus of the University of Delhi, genetic modification allows cross-pollination in a crop that self-pollinates in nature.
- **Global variants:**
 - Across the world, GM variants of maize, canola and soybean, too, are available.

Advantages of GM Crops

- It can feed a rapidly increasing population because it shows dramatically increased yields.
- It can produce more in small areas of land.

- It improves production and raises the farmer's income.
- It reduces the use of pesticides and insecticides during farming that might be great moves for the betterment of the food supply.

The legal position of genetically modified crops in India

- In India, the Genetic Engineering Appraisal Committee (GEAC) is the apex body that allows for the commercial release of GM crops.
- In 2002, the GEAC had allowed the commercial release of Bt cotton.
- More than 95 per cent of the country's cotton area has since then come under Bt cotton.
- Use of the unapproved GM variant can attract a jail term of 5 years and a fine of Rs 1 lakh under the Environmental Protection Act, 1989.

Why are farmers rooting for GM crops?

- **Reduced cost of production:** In the case of cotton, farmers cite the high cost of the wedding, which goes down considerably if they grow Ht Bt cotton and use glyphosate against weeds. Brinjal growers in Haryana have rooted for Bt brinjal as it reduces the cost of production by cutting down on the use of pesticides.
- **Currently being used illegally:** Unauthorised crops are widely used. Haryana has reported farmers growing Bt brinjal in pockets which had caused a major agitation there. In June last year, in a movement led by Shetkari Sanghatana in Akola district of Maharashtra, more than 1,000 farmers defied the government and sowed Ht Bt cotton.

Issues /Concerns related to GM Crops

- **Health Hazards:** Several studies in Bt crops show that there are many potential health hazards. Itching skin, eruptions on the body, swollen faces, etc., have been reported, correlated with levels of exposure to Bt Cotton.
- **The decline in Fertility:** Farmers from various parts of the country have reported a decline in their soil productivity after growing Bt Cotton. Many groups are also studying the decline in fertility and milk yield of cattle due to GM Cottonseed cattle feed.
- **Inadequate Safety Assessments:** The current safety assessments are inadequate to catch most of the harmful effects from the GM crops. Moreover, the regulatory regime in India about GM crops has never been assessed thoroughly about the GM risk assessment in Indian conditions.
- **Pesticides Resistance:** Apprehension has been expressed that the target pest would grow resistant to the Bt toxin with time. Not enough studies on soil ecology have been done to understand the impact of Bt toxin.
- **Pricing Policy:** The pricing policy has also been questioned. Cost-recovery would be much higher for Bt seeds due to the research and marketing involved.
- **Patent & Litigation:** Moreover, Patent infringement is a big concern of agribusiness. Litigation on the part of the company about pricing and use of GM seeds is not new.

What lies ahead ?

- GM foods have the potential to solve many of the world's hunger and malnutrition problems.
- It could help in protecting and preserving the environment by increasing yield and reducing reliance upon chemical pesticides.
- At the same time, the challenges need to be addressed by governments, especially in the areas of safety testing, regulation, industrial policy and food labelling. Identified over-exploited and water-stressed areas fall in the States of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh.

IMPORTANT FACTS FOR PRELIM

1. Central Advisory Board on Archaeology

Recently, the Government reconstituted the Central Advisory Board on Archaeology (CABA) over seven years since its last meeting.

About CABA

- It is meant to strengthen contacts between the Archaeological Survey of India (ASI) and those in the field of archaeological research.
- The ASI re-constituted the board with the Culture Minister as the chairperson and including officials from the Culture Ministry and ASI, MPs, nominees of State governments, representatives of universities, scientists and experts on Indus Valley script among the members.
- It is revised for a period of three years

- The board will meet once a year and its functions would include advising the Centre on “matters relating to archaeology” referred to by its members.
- It may also make suggestions on such matters for the consideration of the Government.
- It also set up a Standing Committee of the board to be chaired by the ASI D-G.

2. Project WARDEC

Recently, The Army Training Command signed a memorandum of understanding (MoU) with Gandhinagar-based Rashtriya Raksha University (RRU) to develop a ‘Wargame Research and Development Centre’ (WARDEC) in New Delhi.

About Project WARDEC

- It will be a first-of-its-kind simulation-based training centre in India that will use artificial intelligence (AI) to design virtual reality wargames.
- It will be used by the Army to train its soldiers and test their strategies through “metaverse-enabled gameplay”.
 - In the metaverse, the players will get a realistic experience of the actual situation.
- The wargame models will be designed to prepare for wars as well as counter-terror and counter-insurgency operations.
- The centre will come up in a military zone in New Delhi.
- The RRU will join hands with Tech Mahindra to develop the centre in the coming three to four months, officials added.
 - The RRU, an institute under the Ministry of Home Affairs (MHA), specialises in national security and policing.
 - Located in Gandhinagar’s Lavad village, it is an “institute of national importance” – a status granted to it by an Act of Parliament.
- Apart from the armed forces, the BSF, CRPF, CISF, ITBP and SSB can also use the metaverse-enabled simulation exercises for better training.

Significance

- The use of AI can provide a totally immersive training experience as it can simulate a battlefield close to reality and map several eventualities in the probable event of a war.

How many countries use such wargaming drills?

- Since the 9/11 attacks, use of information technology-enabled wargaming is preferred by several countries like the US, Israel, the UK to prepare for possibilities in case of terror attacks or war.

3. New Development bank

Recently, BRICS led New Development bank announced to set up its regional office in GIFT City, India.

About New Development bank

- It is a multilateral development bank operated by the BRICS states (Brazil, Russia, India, China and South Africa).
- **Establishment:** Agreed by BRICS leaders at the 5th BRICS summit held in Durban, South Africa in 2013. It was established in 2014, at the 6th BRICS Summit at Fortaleza, Brazil.
 - It was established with an initial authorised capital of USD 100 billion.
- **HQ:** Shanghai, China.
- **Aim & Objectives:** To foster greater financial and development cooperation among the five emerging markets.
 - To mobilise resources for infrastructure and sustainable development projects in BRICS and other emerging economies and developing countries.
- **Voting method:** Unlike Asian Infrastructure Investment Bank (AIIB), voting power is based on the number of one’s subscribed share in the capital stock of the Bank, and the share of the BRICS countries can never be below 55% of the total votes.
 - Currently, each of the five NDB members has equal voting rights of 20%.
 - None of the countries has the veto power.
- In 2018, the NDB received observer status in the United Nations General Assembly, establishing a firm basis for active and fruitful cooperation with the UN.

How is NDB different from AIIB?

- AIIB has 57 countries predominantly in the Asia and Pacific region whereas NDB has five BRICS countries.

- Decision making in the NDB is more democratic, each member has one vote and decisions are taken by a simple voting method.
- Whereas voting shares in AIIB are based on the size of each member country's economy (GDP in PPP terms) and not on the basis of contribution to the bank's authorised capital. China, India and Russia are the three largest shareholders.

DAILY ANSWER WRITING PRACTICE

Q1. To what extent has the Pradhan Mantri Ujjwala Yojana (PMUY) led to LPG adoption in India leading to a shift towards clean fuel. Examine. (250 words)

Introduction

The sustained rise in the price of LPG cylinders has been burning a hole in many a household budget for more than a year now. The price of LPG refills has risen by more than 50% to over ₹900 per cylinder in November 2021 compared to around ₹600 over the past year.

With no refill subsidies in place since May 2020, there is genuine concern about many households now slipping back to using polluting solid fuels for cooking, such as firewood and dung cakes.

Body**Pradhan Mantri Ujjwala Yojana: Key features**

- Ujjwala 1.0:** Under Ujjwala 1.0, the target was to provide LPG connections to 50 million women from the below poverty line (BPL) households, by March 2020. However, in August 2018, women from seven other categories were brought under the purview of the scheme.
- In the first phase of the PMUY, 8 crore poor families, including from the Dalit and tribal communities, were given free cooking gas connections.
- The LPG infrastructure has expanded manifold in the country. In the last six years, more than 11,000 new LPG distribution centres have opened across the country.
- Ujjwala 2.0:** Under Ujjwala 2.0, an additional 10 million LPG connections will be provided to the beneficiaries.
- Government has also fixed a target of providing piped gas to 21 lakh homes in 50 districts.

Performance of Ujjwala

- So far over 9 crore connections under Pradhan Mantri Ujjwala Yojana has been released.
- PMUY beneficiaries have availed 14.17 crore free refills under the Scheme, across the country, as per the same reply filed by Union Petroleum Ministry in Lok Sabha.
- PMUY 2.0 was launched on August 10, 2021, and the target of one crore connections were provided within six months by January 2022.
- Per capita consumption of PMUY beneficiaries has increased from 01 refills in 2019-20 to 3.66 refills in current Financial Year (till February 2022).
- The release of 8 crores of LPG connections under the scheme has also helped in increasing the LPG coverage in the country from 62 per cent on May 1, 2016, to 99.8 per cent on April 1, 2021.
- The first independent impact assessment of the Ujjwala programme by IIT Kanpur researchers highlighted its benefits in terms of saving of lives and reduction in air pollution.
- Reduction in Death: Greater penetration and usage of LPG as a cooking fuel is estimated to have prevented at least 1.5 lakh pollution-related premature deaths in the year 2019 alone.
- Reduction in pollution: It also avoided at least 8 million tonnes of PM2.5 emissions in 2019 (13% reduction in air pollution deaths)

Structural impediments in Ujjwala Yojana**Cost issues:**

- A RTI application revealed that in the last financial year, 90 lakh beneficiaries of government's flagship welfare scheme Pradhan Mantri Ujjwala Yojana did not refill their cylinders. And over 1 crore beneficiaries refilled their cylinders only once.
- Consumers were paying market price for refills till the loan repayment for stove and first refill was made. This led to some consumers not going in for such refills.
- Around 30% of Indian households continue to rely on biomass as their primary cooking fuel, mainly due to high LPG prices.
 - The practice of biomass usage is predominantly concentrated in rural areas, particularly among States such as Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh, Odisha and West Bengal.
- Given the loss of incomes and livelihoods during the novel coronavirus pandemic, the ability of households to afford LPG on a regular basis has taken a further hit.

Administrative issues:

- laxity in identification of beneficiaries was noticed as 9,897 LPG connections were issued against Abridged Household List Temporary Identification Numbers (AHL TINs) where names of all family members and the beneficiary were blank in the Socio-Economic and Caste Census (SECC)-2011 list.
- Lack of input validation check in the IOCL software allowed issue of 0.80 lakh connections to beneficiaries aged below 18 years.
- issuance of connections to unintended beneficiaries.
- inadequacies in the de-duplication process: Out of 3.78 crore LPG connections, 1.60 crore (42%) connections were issued only on the basis of beneficiary Aadhaar which remained a discouragement in de-duplication.
- 59 lakh connections were released to beneficiaries who were minor as per the SECC-2011 data, which was in violation of PMUY guidelines and LPG Control Order, 2000.

Logistic issues:

- Lack of LPG cylinder bottling plants near rural areas and connectivity issues especially in the tribal areas.
- Last-mile connectivity and delivery still poses a great challenge.
- Delay of more than 365 days was noticed in installation of 4.35 lakh connections against stipulated time period of seven days.
- Adequate efforts were not made in distributing the small 5-kg cylinders for encouraging usage.

Safety and Behavioural issues:

- Safety has been another concern about distribution of LPG connection, especially to BPL families. Lack of awareness and safety amenities in beneficiary households have increased the likelihood of accidents.
- Cow-dung cakes lying around the house all the time. Hence, LPG cylinders are used on special occasions or during some kind of emergency or when it's entirely too hot to burn wood.
- The CRISIL report also noted that 37% of households in rural areas procure cooking fuel for free.
- **Agency:** Most rural women do not have a say in determining when a refill is ordered, even though the connection is in their name.

Conclusion and way forward

- The scheme should be extended to poor households in urban and semi-urban slum areas.
- **Subsidy reinstatement:** There is a need to reinstate the subsidies on LPG refill for low-income households.
 - At the current refill prices, an average Indian household would have to spend around 10% of its monthly expense on LPG to meet all its cooking energy needs.
- **Identifying true beneficiaries:** The Government can also explore diverse approaches to identify beneficiaries.
 - This may include limiting the subsidy provision to seven to eight LPG refills annually and excluding well-to-do households using robust indicators.
 - For instance, lowering the income-based exclusion limit for LPG subsidy to ₹2,50,000 a year from ₹10 lakh a year or excluding families owning a non-commercial four-wheeler vehicle can significantly reduce the number of eligible beneficiaries.
- **Home delivery of LPG:** Only half the rural LPG users receive home delivery of LPG refills, while the rest have to travel about five kilometres one way to procure a cylinder.
- **Gaps in the doorstep delivery of LPG** cylinders are also present in urban pockets, particularly in slum areas. These need to be rectified.

DAILY QUIZ

Q1. With reference to Pangong Tso Lake, consider the following statements:

1. It is a freshwater lake.
2. Only one-third of the lake lies in Indian territory.
3. Pangong Tso also supports vegetation in deeper parts of the lake.

Which of the statements given above is/are correct?

- (a) 1 and 3 only (b) 2 only (c) 1 and 2 only (d) only 1

Q2. With reference to the Indo-Pacific Economic Framework, consider the following statements :

1. It is a multilateral initiative of the members of the ASEAN for greater trade synergy.
2. It includes market access commitments such as lowering tariff barriers.

Which of the statements given above is/are correct?

- (a) **Neither 1 nor 2** (b) 2 only (c) 1 and 2 only (d) only 1

Q3. Consider the following statements

1. Switzerland is the topmost FDI investor in India.
2. Maharashtra receives the highest FDI equity inflows.
3. Currently, 100% FDI in the Insurance Sector is allowed under the automatic route.

Which of the following statements is/are correct?

- (a) **None of the these** (b) 2 only (c) 1 only (d) 3 only

Q4. With reference to Sowa-Rigpa, consider the following statements:

1. It is one of the oldest surviving and well-documented medical traditions of the world with a history of more than 2500 years.
2. It is practised only in Ladakh and Himachal Pradesh.

Which of the statements given above are correct?

- (a) Neither 1 nor 2 (b) 2 only (c) 1 and 2 only (d) **only 1**

Q5. Recently seen in the news, Caucasus mountains lies between:

- (a) Mediterranean Sea and Black Sea
- (b) Caspian Sea and Aral Sea
- (c) **Black Sea and Caspian Sea**
- (d) Baltic Sea and Black Sea

Q6. 'New Arrangement to Borrow (NAB)', is related to which of the following organisations?

- a) **International Monetary Fund**
- b) World Bank
- c) NITI Aayog
- d) New Development Bank.

Q7. In the context of D 10 countries, which of the statements given below is/are correct?

1. It is a USA proposed grouping to foster free trade with the Asian countries.
2. It is a group of three democratic countries along with the G7.
3. One of its aims is to surpass China for the supply of 5G technologies.
3. Australia, India, and Japan are the three democratic countries part of it outside G7

Select the correct answer using the codes given below:

- a) 1 and 2 only (b) 2 and 3 only (c) 3 and 4 only (d) **1 and 4 only**

Q8. 'eSagu' was often seen in the news related to –

- a) **It is a web-based personalized agro-advisory system.**
- b) It is a monitoring system for teak plants in tropical regions.
- c) It is a digital platform to sell tribal handicraft .
- d) None the above

Q9. Recently, UNESCO has designated the world's first biosphere spread across five different countries.

Which of the following countries are part of this biosphere?

1. Germany
2. Austria
3. Spain
4. Croatia
5. Hungary
6. Serbia

Select the correct answer using the code given below:

- a) 1, 2, 4, 5 only (b) 1, 2, 4, 6 only (c) 1, 3, 4, 5 only (d) **2, 4, 5, 6 only**

Q10. The 'The Poverty and Shared Prosperity' report is released by

- a) **World Bank**
- b) International monetary fund
- c) United Nation Development Program
- d) International Atomic Energy Agency