

AGRICULTURE, BIO-TECHNOLOGY

In News- Three States, Gujarat, Maharashtra and Telangana, have recently rejected a proposal, approved by the Centre’s Genetic Engineering Appraisal Committee (GEAC), to test another sort of transgenic cotton seed.

About:

- The cotton seed has been developed by the Hyderabad-based Bio seed Research India with Cry2Ai which makes it resistant to pink bollworm.
- The primary ages of transgenic cotton had been created to safeguard against a more widespread pest called the American bollworm.
- The GEAC recommendation: The Cry2Ai seed has passed preliminary, confined trials and was recommended by the GEAC to be tested in farmer’s fields in Telangana, Maharashtra, Gujarat and Haryana.
- Agriculture being a State subject means that, in most cases, companies interested in testing their seeds need approvals from the States for conducting such tests.
- Only Haryana gave permission for such tests.

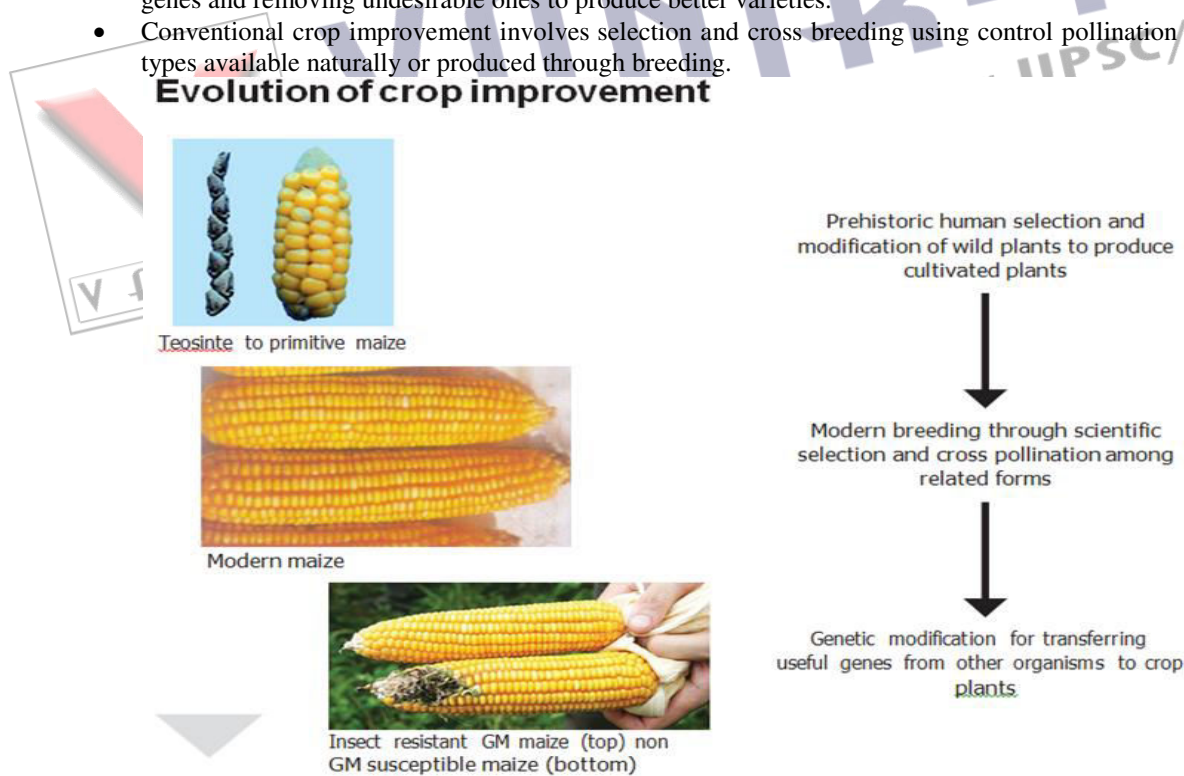
About Genetic Modification:

- A Genetically Modified Organism (GMO) is any living organism whose genetic material has been modified to include certain desirable techniques.
- Genetic modification has previously been used for the large-scale production of insulin, vaccines, and more.
- In crops, genetic modification involves the manipulation of DNA instead of using controlled pollination—the conventional method to improve crops— to alter certain characteristics of the crop.

The science behind crop Genetic modification

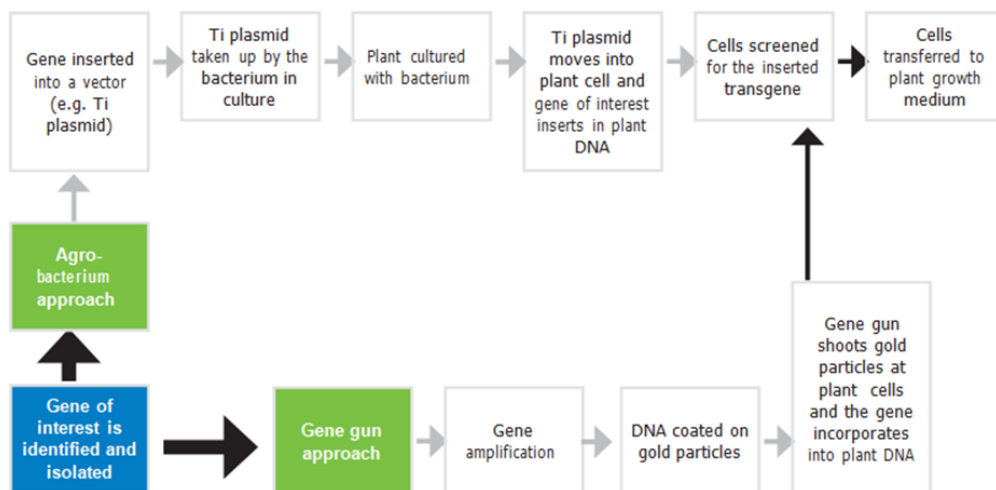
- GM technology involves direct manipulation of DNA instead of using controlled pollination to alter the desired characteristics.
- Genetic modification is one the approaches to crop improvement, all of which aim at adding desirable genes and removing undesirable ones to produce better varieties.
- Conventional crop improvement involves selection and cross breeding using control pollination of better types available naturally or produced through breeding.

Evolution of crop improvement



Developing GM crops

- Development of GM crops starts with the identification of gene of interest and isolating it from the host organism.
- The gene is incorporated into the DNA of crop plant using laboratory based gene gun or agro bacterium approaches.
- The performance of the GM crop is tested under strict laboratory and field conditions.



Advantages:

- It is useful in controlling the occurrence of certain diseases.
- It grows faster than the foods that are grown traditionally.
- Probably because of this, the increased productivity provides the population with more food.
- At times, genetically engineered food crops can be grown at places with unfavourable climatic conditions too.
- It is reported to be high in nutrients and contain more minerals and vitamins than those found in traditionally grown food.

Disadvantages:

- It may have harmful effects on the human body.
- It is believed that consumption of these genetically engineered foods can cause the development of diseases which may be immune to antibiotics.
- This cross-pollination method can cause damage to other organisms that thrive in the environment.
- The technology could be carcinogenic. It is a killer technology that kills soil, microbes, pollinators, almost all medicinal herbs and adversely affects crop diversity. It may also cause cancer in humans,

Status of transgenic crops in India

- **About:** There is an array of crops — Brinjal, tomato, maize, chickpea — in various stages of trials that employ transgenic technology.
- However, cotton remains the only transgenic crop that is being commercially cultivated in India.

Mustard hybrid:

- The GEAC, the apex technical body charged with evaluating proposals for testing genetically modified (GM) seeds, has recently approved the environmental release of Mustard hybrid DMH-11 and its parental lines.
- However, the GEAC, which is under the Union Environment Ministry, isn't the final arbiter in the case of GM crops.
- There is long-standing litigation in the Supreme Court on the permissibility of allowing transgenic food crops in farmer fields based on petitions filed by activist Aruna Rodrigues and Gene Campaign, an NGO.
- Following the GEAC approval for DMH-11, the petitioners approached the Supreme Court asking for a stay on the release of the crop because it would encourage farmers to spray herbicides, which are banned in India.
- Hearings on this case are still ongoing.
- The process of regulating transgenic crops in India:

Development of crop:

- The process of developing transgenic crops is an elaborate one as inserting transgenic genes into plants to elicit a sustained, protective response is a mix of both science and chance.

Safety assessments:

- There are multiple safety assessments done by committees before they are cleared for further tests in open plots of land which are located at either agricultural universities or plots controlled by the Indian Council for Agricultural Research (ICAR).

Commercial clearance:

- A transgenic plant can apply for commercial clearance, only after it has proven to be demonstrably better than comparable non-GM variants on claimed parameters (for instance, drought tolerance or insect resistance) without posing ecological harm to other species that may be being cultivated in the vicinity.

- Open field trials often take place over multiple crop seasons and types of geographical conditions, to assess its suitability across different States.

Way ahead

- The GEAC has asked the Department of Biotechnology (DBT) and the ICAR to “jointly organise capacity-building activities with regard to GM crops for appraising the State/UT Government(s) about the technology involved and the regulatory framework in place for evaluation of these GM crops.
- To resolve the issue of States not following approvals on testing, because of differing attitudes to GM crops, the GEAC is considering a proposal by the DBT to declare some regions across India as ‘notified testing sites.
- There are 42 such proposed sites and, if it goes through, companies and institutions wanting to conduct trials of GM crops at these locations won’t need the permission of States for trials.

The Genetic Engineering Appraisal Committee (GEAC)

About:

- It is the statutory committee constituted under the “Rules for the Manufacture, Use/Import/Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells (Rules, 1989)” framed under Environment (Protection) Act, 1986.
- Every set of applications has specific form and pre-requisite documents along with recommendations, wherever needed.
- Clearance of Genetic Engineering Appraisal Committee (GEAC) is mandatory for the environmental release of Genetically Modified (GM) crops.

Ministry: GEAC functions in the Ministry of Environment, Forest and Climate Change (MoEF&CC).

Members: The GEAC consists of a panel of plant biotechnologists and is headed by a senior official of the Environment Ministry and co-chaired by the scientist of the DBT.

PRELIM FACTS

1. Janjatiya Khel Mahotsav

- **In News-** Recently the first Janjatiya Khel Mahotsav was organized at the Kalinga Institute of Social Sciences, Bhubaneswar.
- **About-** It was a coordinated effort between the Ministry of Culture, the Odisha Government, and KIIT University.
- It witnessed the assemblage of 5,000 tribal athletes and 1,000 officials from 26 states.
- **Indigenous Sports** - ‘Sports’ being a state subject, the responsibility to promote indigenous sports in the country and conduct special training programmes for the development and promotion of traditional sports rests primarily with the respective State/Union Territory Governments. The Union Government supplements their efforts.
- Ministry of Youth Affairs and Sports runs a Central Sector Scheme, namely, the ‘Khelo India – National Programme for Development of Sports’ Scheme (Khelo India Scheme), of which one of the Components, namely, ‘Promotion of rural and indigenous/tribal games’, is specifically dedicated to the development and promotion of rural and indigenous/tribal games in the country.
- Indigenous games of Mallakhamb, Kalaripayattu, Gatka, Thang-Ta, Yogasana and Silambam have been identified for promotion under this Component.
- Further, the Ministry has also made documentaries of various indigenous games in order to show case and promote/revive them, namely, Gatka, Roll Ball, Tug of War, Kalaripayattu, Thang-Ta, Kho-Kho, Mallakhamb, Shooting Ball, Sqay, Kabaddi, Gilli Danda, Sikkim Archery, Dhoop Khel and Cowrie Khel, Paika Akhada and Chhau and Akhada Kushti, Hekko, Mizoram Games, Silabam, Lagori and Langadi.

2. National Time Release Study (NTRS) 2023 report

Context: Central Board of Indirect Taxes and Customs (CBIC) releases National Time Release Study (NTRS) 2023 report

Key details:

- Time Release Study (TRS) is a performance measurement tool.
- It aims to present quantitative measure of the cargo release time.
 - ✓ Cargo release time is defined as the time taken from arrival of the cargo at the Customs station to its out of charge for domestic clearance in case of imports and arrival of the cargo at the Customs station to the eventual departure of the carrier in case of exports.
- NTRS 2023 presents port-category wise average release time for the current year:
 - ✓ Assess the progress made towards the National Trade Facilitation Action Plan targets;
 - ✓ Identify the impact of various trade facilitative initiatives, notably “Path to Promptness”; and
 - ✓ Identify the challenges to more expeditious reduction in release time.

- NTRS 2023 recognises the distinction between: regulatory clearance (also referred as customs release), which gets completed with the grant of Let Export Order (LEO) and physical clearance which occurs on completion of logistics processes with departure of the carrier with the goods.

3. Space Industry Debris Mitigation Recommendations

Context: World Economic Forum releases guidelines for tackling growing space debris problem

Key details:

- The World Economic Forum (WEF) released a set of recommendations to mitigate the space debris problem.
- The Space Industry Debris Mitigation Recommendations was published by the WEF in collaboration with the European Space Agency to attempt and solve the problem of space debris.
- The guidelines mainly focus on how not to generate more space debris with the end-of-life operation of satellites and data sharing and traffic management in orbit for debris avoidance.
- The guidelines are not exactly rules, and they are, therefore, non-binding.

The guidelines:

✚ Post-mission disposal

- The main focus of the guidelines is on the disposal of satellites after the mission.
- The guidelines say that spacecraft operators try to get satellites removed from low-Earth orbit within five years after the end of the mission.
- In case operators are not able to maintain control of the satellite and de-orbit it, they should pursue other proven, reliable and cost-effective technologies to ensure it does not turn into space debris.

✚ Collision avoidance systems

- Also, spacecraft operators should try to reduce the probability of satellite collisions with the use of avoidance manoeuvres.
- Missions that orbit above an altitude of 375 kilometres should have an ability to actively manage the orbit.
- The guidelines encourage a propulsion-based system but other technologies could be more appropriate depending on the situation.

✚ Data sharing and traffic management

- The guidelines say that all spacecraft operators must answer all (reasonable and legitimate) requests for space traffic management coordination.
- This could be from other operators or other entities.
- Also, every satellite operator should try to proactively coordinate with other operators and entities to create operational coordination agreements and space situational awareness information-sharing.

✚ Long-term goals

- It encourages industry players to further study the objects in orbit— the population, evolution, and the interaction between them.
- This can help improve space situational awareness capabilities.

✚ Role of government:

- While most of the document focused on what can be done by the industry itself, it also lays down some ground rules that can be enforced by various governments.
- This includes asking governments to require by 2030 that all space missions have capabilities to remove satellites from orbit within five years of the end of mission.

4. Compromise settlement for wilful defaulters

Context: The Reserve Bank of India (RBI) has allowed wilful defaulters and loans accounts involved in frauds to go in for a compromise settlement with banks to settle their dues.

What is a compromise settlement?

- A compromise settlement refers to a negotiated settlement where a borrower offers to pay and the bank agrees to accept in full and final, settlement of its dues an amount less than the total amount due to them under the relative loan contract.
- This settlement involves a certain write off and/or waiver of a portion of its dues on a one-time basis.

The recent move by RBI:

- Banks can undertake compromise settlements or technical write-offs in respect of accounts categorised as wilful defaulters or fraud without prejudice to the criminal proceeding underway against such debtors.
- The central bank has also directed banks to fix a minimum cooling period of at least 12 months before making fresh exposures to borrowers who had undergone compromise settlements.
- This means a wilful defaulter or a company involved in fraud can get fresh loans after 12 months of executing a compromise settlement.

Concerns:

- It may compromise the integrity of the banking system and undermine the efforts to combat wilful defaulters effectively.

- It not only rewards unscrupulous borrowers but also sends a distressing message to honest borrowers who strive to meet their financial obligations.
- Wilful defaults have a significant impact on the financial stability of banks and the overall economy.
- By allowing them to settle their loans under compromise, the RBI is essentially condoning their wrongful actions and placing the burden of their misdeeds on the shoulders of ordinary citizens and hardworking bank employees.

Who are wilful defaulters?

- As per the Reserve Bank of India's classification, a 'wilful default' would be deemed to have occurred if the borrower has defaulted in meeting their repayment obligations to the lender even when they have the capacity to honour the said obligations.

ANSWER WRITING

Q. Discuss the Advantages and challenges related to GM Crops in India. (150 words)

- "Genetic modification" or "genetically modified" short form GM involves altering the genes of an organism, be it a plant, animal or microorganism. This can be done by altering an existing section of DNA, or inserting a gene from another organism.
- The approval of any new genetically modified crop is given on a case to case basis after thorough scientific evaluation of health and environment safety as per applicable guidelines made under Environment (Protection) Act, 1986 and Rules, 1989.
- The transgenic can help genetically modified plant to withstand pesticides, climate change; can help in faster and better growth.
- Many GM varieties are believed to be under different stages of development, but yet to mark a formal release. GM Mustard is the new GM crop in the block that is doing the rounds of constant speculation and has been cleared by the Genetic Engineering Approval Committee (GEAC), the biotech regulator in India under the Ministry of environment and forests with no such bio-safety or public health concerns.

Advantages of GM crops

- GM crops provide stronger resistance to diseases, pest, insects and herbicides along with higher tolerance to cold/heat, drought and salinity.
- This can contribute to ensuring food security for the increasing population in the higher risks of climate change.
- GM crops can offer better income opportunities to the farmers by minimising the risks and costs of pesticides.
- The nutritional content of the crops can be altered as well, providing a denser nutritional profile. For ex: The UN Food and Agricultural Organization notes that rice, genetically modified to produce high levels of Vitamin A, have helped to reduce global vitamin deficiencies.

Challenges

- The impact of growing GMO crops like GM mustard on the health of the population, the environment (the soil on which it is grown), the food chain, the groundwater, etc., is still unknown.
- GMOs carry risks of 'unintended' effects and toxicity due to changes made at genetic level which would be irreversible
- Weeds are the wild plants that soak up nutrients from the soil and do not allow crops to absorb the nutrients.
- GMOs can pose significant allergy risks. Genetic enhancements often combine proteins not contained in the original organism, which can cause allergic reactions for humans.
- GMOs also carry risk of affecting the biodiversity by compromising the gene pool of wild varieties of crops.
- GMOs also carry the financial burden for producers as seeds have to be bought new from the GM crop companies for every crop.
- They also carry ethical concerns like violation of natural organisms' intrinsic values, tampering with nature by mixing genes among species.

Conclusion:

- Even though GM crops hold the hope for future in view of climate change, food security, poverty, hunger, malnutrition etc. they are still riddled with concerns regarding their impact on environment and human health which needs a pragmatic policy initiative, research and controlled trials to allay public fears.
- India also needs to put in place a proper mechanism for research, field trials and clearance of GM crops to reap their potential benefits for future without getting caught in political quagmire.

MCQs

1. Consider the following statements.
 1. Central Board of Indirect Taxes and Customs (CBIC) releases National Time Release Study (NTRS) 2023 report.
 2. It aims to present qualitative measure of the cargo release time.Which of the statements given above is/are correct?
a) 1 only **b) 2 only**

- c) Both 1 and 2 d) Neither 1 nor 2
2. Consider the following statements.
- The Vaishvik Bhartiya Vaigyanik (VAIBHAV) fellowships programme to be implemented by the Ministry of Science and Technology.
 - VAIBHAV Fellowship Programme announced to connect Indian STEM Diaspora with Indian Higher Educational Institutions
 - It aims to encourage Indian-origin researchers to spend two months in a year at higher education institutions in the country.
- Select the correct option from the codes given below:
- a) Only 1 & 2 b) Only 3
c) Only 2 & 3 d) **1, 2 & 3 only**
3. Consider the following statements.
- The Department of Administrative Reforms and Public Grievances (DARPG) released the Centralized Public Grievance Redressal and Monitoring System (CPGRAMS) monthly report.
 - It provides a detailed analysis of types and categories of public grievances and the nature of disposal.
 - This is the 11th report on Central Ministries published by DARPG.
- Select the incorrect option from the codes given below:
- a) Only 1 & 2 b) **Only 3**
c) Only 2 & 3 d) 1, 2 & 3 only
4. Consider the following statements.
- Chikungunya is a mosquito-borne viral disease caused by the chikungunya virus (CHIKV) that causes fever and severe joint pain.
 - The disease was first recognized in 1952 during an outbreak in southern Tanzania.
 - It is a ribonucleic acid (RNA) virus that belongs to the alpha virus genus of the family Toga viridae.
 - Chikungunya is transmitted to humans by the bites of infected female mosquitoes - Aedes aegypti and Aedes albopictus.
- Select the incorrect option from the codes given below:
- a) Only 1 & 2 b) Only 3 and 4
c) Only 2 & 3 d) **1, 2, 3 and 4 only**
5. Consider the following statements.
- Dheeram is a joint project by Kudumbashree and Sports Kerala Foundation.
 - It is part of the state government's 100-day programme, aimed at empowering women through self-defence and self-confidence building.
 - Kudumbashree is the poverty eradication and women empowerment programme implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala.
- Select the correct option from the codes given below:
- a) Only 1 & 2 b) Only 3
- c) Only 2 & 3 d) **1, 2 & 3 only**
6. Consider the following statements
- The Global Hunger Report 2022 released by Concern Worldwide and Welt Hunger Hilfe.
 - India is ranked at 107 among 121 countries.
- Which of the statements given above is/are correct?
- a) 1 only b) 2 only
c) **Both 1 and 2** d) Neither 1 nor 2
7. Consider the following statements.
- The number of cyclones in the Arabian Sea is showing an increasing trend in the recent years.
 - June is one of the favorable months for the formation of cyclones in the Arabian Sea.
 - Warm seas provide favorable conditions for the development and strengthening of cyclones
- How many of the above statements are correct?
- a) Only one b) Only two
c) **Only Three** d) None
8. Consider the following statements
- Indian Navy is conducting "Julley Ladakh" an outreach programme to Ladakh to increase awareness about the service in the pristine state and to engage with youth and civil society there
 - It also aims to conduct Awareness drives at Schools/ Colleges in Ladakh region about the career opportunities Indian Navy offers including the Agnipath Scheme.
 - Showcase Nari Shakti, an initiative of Prime Minister Shri Narendra Modi, by including Women Officers and spouses.
- Select the correct option from the codes given below:
- a) Only 1 & 2 b) Only 3
c) Only 2 & 3 d) **1, 2 & 3 only**
9. Consider the following statements about NIRF.
- National Institute Ranking Framework or NIRF is the first-ever effort by the government to rank higher education institutions (HEIs) in the country.
 - The framework for assessment and scoring are based on bibliometric data.
- Which of the statements given above is/are correct?
- a) 1 only b) 2 only
c) **Both 1 and 2** d) Neither 1 nor 2
10. Consider the following statements about World Blood Donor Day.
- Every year June 14 is observed as World Blood Donor Day.
 - It is celebrated on the birthday anniversary of Karl Landsteiner who was awarded the Nobel Prize for his discovery of the ABO blood group system.
 - It was designated as an annual event by the World Health Assembly (WHO) in 2005.
- Select the correct option from the codes given below:
- a) Only 1 & 2 b) Only 3
c) Only 2 & 3 d) **1, 2 & 3 only**