RACE IAS

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GM Mustard

Context:

- Recently, the Genetically Modified (GM) mustard Dhara Mustard Hybrid (DMH-11) was tested in the field and shown to be more productive. Production of the DMH-11 variety is not interfering with honey bees' natural pollination practices.

What exactly is hybrid mustard?

- Hybridisation involves crossing two genetically dissimilar plant varieties that can even be from the same species.
- The first-generation (F1) offspring from such crosses tend to have higher yields than what either parent can individually give.
- Such hybridisation isn't easy in mustard, as its flowers have both female (pistil) and male (stamen) reproductive organs, making the plants largely self-pollinating.
- Since the eggs of one plant cannot be fertilised by the pollen grains from another, it limits the scope for developing hybrids — unlike in cotton, maize or tomato, where this can be done through simple emasculation or physical removal of anthers.

Genetic modification (GM) of Mustard:

- Scientists at Delhi University's Centre for Genetic Manipulation of Crop Plants (CGMCP) have developed the hybrid mustard DMH-11 containing two alien genes isolated from a soil bacterium called Bacillus amyloliquefaciens.
- The first gene ('barnase') codes for a protein that impairs pollen production and renders the plant into which it is incorporated male-sterile.
- This plant is then crossed with a fertile parental line containing, in turn, the second 'barstar' gene that blocks the action of the barnase gene.
- The resultant F1 progeny is both high-yielding and also capable of producing seed/ grain, thanks to the barstar gene in the second fertile line.
- The CGMCP scientists have deployed the barnase-barstar GM technology to create what they say is a robust and viable hybridisation system in mustard.

- This system was used to develop DMH-11 by crossing a popular Indian mustard variety 'Varuna' (the barnase line) with an East European 'Early Heera-2' mutant (barstar).
- DMH-11 is claimed to have shown an average 28% yield increase over Varuna in contained field trials carried out by the Indian Council of Agricultural Research (ICAR).

What are GM Crops?

- Genetically modified crops (GM crops) are plants used in agriculture, the DNA of which has been modified using genetic engineering techniques. More than 10% of the world's crop lands are planted with GM crops.
- In most cases, the aim is to introduce a new trait to the plant which does not occur naturally in the species like resistance to certain pests, diseases, environmental conditions, herbicides etc.
- Genetic Modification is also done to increase nutritional value, bioremediation and for other purposes like production of pharmaceutical agents, biofuels etc.

Regulating Bodies concerned with GM Crops:

GEAC:

- The top biotech regulator in India is Genetic Engineering Appraisal Committee (GEAC).
- The committee functions as a statutory body under the Environment Protection Act 1986 of the Ministry of Environment & Forests (MoEF).
- GEAC is responsible for granting permits to conduct experimental and large-scale open field trials and also grant approval for commercial release of biotech crops.
- The Rules of 1989 also define five competent authorities for handling of various aspects of the rules:
    - The Institutional Biosafety Committees (IBSC),
    - Review Committee of Genetic Manipulation (RCGM),
    - Genetic Engineering Approval Committee (GEAC),
    - State Biotechnology Coordination Committee (SBCC) and
    - District Level Committee (DLC)

Cartagena Protocol:

- The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement on biosafety as a supplement to the Convention on Biological Diversity effective since 2003.
- The Biosafety Protocol seeks to protect biological diversity from the potential risks posed by genetically modified organisms resulting from modern biotechnology.

Delhi HC Verdict on 'Rooh Afza' Trademark

Context:

- Recently, the Delhi High Court, in the case of Hamdard National Foundation (India) vs Sadar Laboratories Pvt. Ltd., restrained Sadar Laboratories from manufacturing and selling beverages under the impugned trademark 'Dil Afza'. The court observed that the trademark 'Rooh Afza' is prima facie a strong mark requiring a high degree of protection as it has acquired immense goodwill.

What is a trademark?

- A trademark is a distinctive sign or indicator used by a business organisation to distinguish its products or services from those of other entities.
- It serves as a badge of origin exclusively identifying a particular business as a source of goods or services.
- Trademark infringement is the unauthorised usage of a sign that is identical or deceptively similar to a registered trademark.

- What is a strong trademark?
- A mark is said to be strong when it is well-known and has acquired a high degree of goodwill.
- The degree of the protection of any trademark changes with the strength of the mark; the stronger the mark, the higher the requirement to protect it.
    - Rooh Afza requires more protection as it is more likely to be subjected to piracy by those who seek to draw an undue advantage of its goodwill.

What is the dispute?

- The manufacturers of 'Rooh Afza' moved an appeal against the rejection of its application seeking an interim injunction against Sadar Laboratories Pvt. Ltd. for their product 'Dil Afza'. The appellant stated before the court that the trademark 'Rooh Afza' is a highly reputed mark in the market with regard to sharbat (sweet beverage).
- Furthermore, it was claimed that the design of the product 'Dil Afza' is deceptively similar to the get-up and trade dress of the appellant's product.

Court's verdict

- A Division Bench of the Delhi High Court restrained the respondent (Sadar Laboratories Pvt. Ltd.) from manufacturing and selling any product under the trademark 'Dil Afza' till the final disposal of the trademark infringement suit.
- The court held that "it is not difficult to conceive that a person who looks at the label of 'Dil Afza' may recall the label of 'Rooh Afza' as the word 'Afza' is common and the meaning of the words 'Rooh' and 'Dil', when translated in English, are commonly used in conjunction.

About Intellectual Property Right

- Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce.

- Intellectual property right (IPR) is the right given to persons over the creations of their minds: inventions, literary and artistic works, and symbols, names and images used in commerce.
- They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.
- These rights are outlined in Article 27 of the Universal Declaration of Human Rights, which provides for the right to benefit from the protection of moral and material interests resulting from authorship of scientific, literary or artistic productions.

Protection:

- IP is protected in law by, for example, patents, copyright and trademarks, which enable people to earn recognition or financial benefit from what they invent or create.
- By striking the right balance between the interests of innovators and the wider public interest, the IP system aims to foster an environment in which creativity and innovation can flourish.

Where was intellectual property first recognized?

- The importance of intellectual property was first recognized in the Paris Convention for the Protection of Industrial Property (1883) and the Berne Convention for the Protection of Literary and Artistic Works (1886).
- Both treaties are administered by the World Intellectual Property Organization (WIPO).

Intellectual property rights can be divided into two main sections:

Copyright and rights related to copyright:

- The rights of authors of literary and artistic works are protected by copyright.
- These works are books and other writings, paintings, sculptures.
- Even computer programs, films and music are included.
- It is valid for a minimum period of 50 years after the death of the author.

- Industrial property: It can be divided into 2 main sections-
- Related to signs- trademarks and geographical indications.
- Trademark:
- A trademark is a symbol, phrase, or insignia that is recognizable and represents a product that legally separates it from other products.
- A trademark is exclusively assigned to a company, meaning the company owns the trademark so that no others may use or copy it. A trademark is often associated with a company's brand.

Geographical Indications:

- Geographical Indications (GIs) recognize a good as originating in a place.
- Some specific characteristics of the good is related to its geographical origin.
- The protection may last indefinitely.

- The only point is that the sign-in question should continue to be unique and distinctive.

Industrial designs and trade secrets-

- Some types of industrial property are protected primarily for innovation and design.
- Also, protection of particular technology should be also included.
- Inventions (protected by patents), industrial designs and trade secrets are essential examples of this category.
- A trade secret is a company's process or practice that is not public information, which provides an economic benefit or advantage to the company or holder of the trade secret.
    - Trade secrets must be actively protected by the company and are typically the result of a company's research and development.

Ratnagiri's Pre-Historic Rock Art

Context:

Experts and conservationists have raised concerns over the proposed location for a mega oil refinery in Barsu village of Maharashtra's Ratnagiri district. They claim that the refinery might damage prehistoric geoglyphs found in the area.

About the Barsu-Solgaon site:

- The sites are protected by the state archaeology department and the Archaeological Survey of India (ASI).
- Recently, these sites in the Konkan region were added to a tentative list of UNESCO's world heritage sites.

- While the UNESCO listing dates these sites to be over 12,000 years old, some experts have claimed that these sites might go as far back as 20,000 years, and that this can be ascertained through carbon and geological dating.
- The Barsu-Solgaon site was proposed after the original plan to construct a refinery in Nanar village of the district was dropped in 2019.

What are geoglyphs?

- Geoglyphs are a form of prehistoric rock art, created on the surface of laterite plateaus (Sada in Marathi).
- They are made by removing a part of the rock surface through an incision, picking, carving or abrading.
- They can be in the form of rock paintings, etchings, cup marks and ring marks.
- The UNESCO listing mentions "Konkan geoglyphs." However, elsewhere, the term petroglyph (literally, "rock symbol/character") is also used.
- As per the UNESCO listing, petroglyphs and geoglyphs share similarities as both require the skills of removing parts or engraving a symbol on the rock surface.

Significance of Ratnagiri's prehistoric rock art

- Clusters of geoglyphs are spread across the Konkan coastline in Maharashtra and Goa, spanning around 900 km.
- Porous laterite rock, which lends itself to such carving, is found on a large scale across the entire region.
- Ratnagiri district has more than 1,500 pieces of such art, also called "Katal shilpa," spread across 70 sites.
- UNESCO's tentative world heritage list mentions seven sites with petroglyphs in Ratnagiri district — Ukshi, Jambharun, Kasheli, Rundhe Tali, Devihsol, Barsu and Devache Gothane, one in Sindhudurg district –Kudopi village, and nine sites at Phansamal in Goa.
- According to UNESCO, "rock art in India is one of oldest material evidence of the country's early human creativity."
- Ratnagiri's rock art is evidence of the continued existence of human settlements from the Mesolithic (middle Stone Age) to the early historic era.
- The geoglyphs also show the existence of certain types of fauna that are no longer present in the region today.
- Ratnagiri's prehistoric sites are among three Indian attractions that may soon become World Heritage Sites.
    - The other two include Jingkieng Jri, the living root bridge in Meghalaya, and Sri Veerabhadra Temple in Andhra Pradesh's Lepakshi.

Why have experts raised red flags over the refinery project site at Barsu- Solgaon?

- The committee of experts appointed by the Union Ministry of Science and Technology visited Ratnagiri last month to assess the funds required for the conservation of geoglyphs.
- Senior archaeologist said that more than 250 geoglyphs have been identified in the area where the petrochemical refinery will be built.

- He said that if the project starts at the presently proposed site in Barsu, the rock carvings will get destroyed due to construction and chemical reaction at the site.
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Mudumalai Tiger Reserve

Context:

- The Mudumalai Tiger Reserve (MTR) not only provides a crucial habitat for a variety of endangered species of birds and mammals, but is also home to 175 species of butterflies, a survey conducted for the first time in the area has revealed.

About Mudumalai Tiger Reserve:

- Mudumalai Tiger Reserve is located in the Nilgiris District of Tamil Nadu state at the tri-junction of three states, viz, Karnataka, Kerala and Tamil Nadu.
- It is a part of Nilgiri Biosphere Reserve (1st Biosphere Reserve in India) along with Wayanad Wildlife Sanctuary (Kerala) in the West, Bandipur National Park (Karnataka) in the North, Mukurthi National Park and Silent Valley in the South.
- The Reserve has tall grasses, commonly referred to as 'Elephant Grass', a variety of Bamboos, several species of endemic flora and valuable timber species.
- The Tiger and Asian Elephant are the Flagship Species of the Mudumalai Tiger Reserve, along with a wide variety of more than 260 species of birds.