DAILY CURRENT AFFAIRS ANALYSIS

02 MAY 2025

1 - Himalayan forest fires:

GS III

Environmental Conservation related issues:

- **Forest fires: what are they?**

- **About:**

- It is also known as a bush fire, vegetation fire, wildfire, or any other uncontrolled, unplanned burning of plants in a natural environment, such as a forest, grassland, tundra, or brush land. It spreads according to the wind and topography and consumes the natural fuels.
- For a wildfire to ignite, it requires three essential elements: fuel, oxygen, and heat source.

- Surface Fire: A forest fire can start out as a surface fire, moving over the ground as the flames engulf the surface litter (dry grasses, twigs, and dying leaves, among other things) on the forest floor.
- Subterranean Fires: These are low-intensity fires that burn the organic stuff beneath the surface and the surface litter on the forest floor. Over the mineral soil in most densely forested areas is a thick layer of organic materials.
- These fires typically burn for a few metres below the surface and spread completely underground.
- This kind of fire spreads very slowly, making it difficult to detect and contain in most situations.
- They might burn for months at a time, destroying the soil's vegetative cover.
- Ground Fire: These types of fires occur in the organic fuels beneath the surface, such as the organic soils found in bogs and swamps, the tundra or taiga of the Arctic, and the duff layers beneath forest stands.
- The lines separating land fires and subsurface flames are blurry.
- Sometimes, underground flames that are still smouldering turn into ground fires.
- This fire destroys root systems and other materials that are either above or below the surface, destroying the layer of organic matter in different stages of decay as well as the herbaceous growth that covers the forest floor.
- Since they have the ability to totally kill vegetation, they are more destructive than surface fires. Surface fires are more frequently the source of ground fires, which burn by smouldering combustion beneath the surface.

- **What Causes Did the Himalayan Region's Forest Fires Occur?**

- **Absence of precipitation and snow:**

- The area is arid because there hasn't been any snowfall or rainfall over the winter. Precipitation and snowfall are essential for preserving soil moisture and averting an extremely dry forest floor.

- **Dry Conditions:**

- Forest fires are made possible by the soil's and vegetation's lack of moisture. When coupled with dry soil, dried leaves can serve as fire fuel.
- Forests are drying out as a result of rising temperatures, which may be related to climate change. Elevated temperatures lead to a rise in evaporation rates, which consequently reduces soil moisture levels.

- **Human Actions:**

- Forest fires can be started by human activity, such as burning something uncontrollably or recklessly throwing cigarettes.
- Inadequate management of the forest department's controlled burning might potentially exacerbate the problem.

- **Species of Trees at Risk:**

- The likelihood of forest fires is increased by the presence of combustible and fire-prone tree species, such as Chir pine.
- Chir pine covers about 15% of the forest area in Himachal Pradesh.

- **Extended Dry Period:**

- A protracted dry spell that lasts for several months without any rain or snow increases the risk of wildfires in the area.
- What Forest Fire Relief Initiatives Are Being Implemented by the Government?
- In order to reduce forest fires, the National Action Plan for Forest Fires (NAPFF) was launched in 2018 with the intention of empowering, educating, and enabling forest fringe communities and encouraging them to work with state forest departments.
- The sole government-sponsored initiative aimed at helping states combat forest fires is the Forest Fire Prevention and Management Scheme (FPM).

- **The Way Ahead:**

- Advanced fire detection and monitoring systems, such as those based on satellite technology, must be put in place in order to enable quick responses to possible forest fires and to provide early warnings.
- Involve the neighbourhood in efforts to avoid fires and manage forests. Organise awareness campaigns to inform locals about fire safety, responsible forest management, and the dangers of uncontrolled burning.
- Adopt sustainable forest management techniques with an emphasis on preserving biodiversity, encouraging vegetation that resists fire, and minimising the amount of highly flammable tree species.

Source → The Hindu

2 - Modified Genetic Mustard:

GS III

Indian Agriculture related issues:

- **The Need for Edible Oil in India:**

- In 2020–21, India's total edible oil consumption was 24.6 million tonnes, compared to 11.1 million tonnes of local availability.
- 13.45 million tonnes (or 54% of the overall demand for edible oil) were imported in 2020–21 at a total estimated cost of ₹1,15,000 crore. The main sources of these imports were palm oil (57%), soybean oil (22%), sunflower oil (15%), and a tiny amount of canola quality mustard oil.
- A total of 155.33 lakh tonnes (or 55.76%) of the edible oil demand in 2022–2023 was satisfied by imports.
- With 40% of its vegetable oil consumption coming from palm oil, India is the largest importer of this product.
- Half of India's yearly requirement of 8.3 MT of palm oil is supplied by Indonesia.
- To increase the country's domestic output of palm oil, India launched the National Mission on Edible Oil-Oil Palm in 2021.

- **Genetically Modified (GM) Crops: What Are They?**

- Genetically modified crops (GM crops) are made from plants whose genes have been purposefully altered, usually by introducing genetic material from another organism, to give them new characteristics like higher yield, resistance to disease or drought, or better nutritional value.
- Previously, India had only authorised the commercial production of Bt cotton, a genetically modified crop. However, the Genetic Engineering Appraisal Committee (GEAC) has suggested that GM mustard be used commercially.

- **GM Mustard: What Is It?**

- Dhara Mustard Hybrid-11 (DMH-11) is a transgenic mustard that was created locally. It's a genetically altered variety of mustard that's herbicide-tolerant (HT).
- The Indian mustard variety "Varuna" and the East European mustard variety "Early Heera-2" were crossed to produce DMH-11.
- It has two alien genes—"barnase" and "barstar"—that were isolated from the soil bacterium Bacillus amyloliquefaciens in order to develop commercial mustard hybrids with excellent yields.
- The GEAC has acknowledged and approved the use of DMH-11, which has demonstrated yields that are roughly 28% higher than the national check and 37% higher than the zonal checks.
- The "bar gene" protects hybrid seed's genetic purity.

- **What is the Committee for the Appraisal of Genetic Engineering (GEAC)?**

- Within the Ministry of Environment, Forests, and Climate Change (MoEF&CC) is the Genetic Engineering Appraisal Committee (GEAC).
- It is in charge of evaluating, from an environmental perspective, activities involving the widespread use of dangerous microbes and recombinants in research and industrial production.
- The committee is also in charge of reviewing applications for the release of genetically altered (GE) products and organisms into the environment, including field tests for research purposes.
- The Special Secretary/Additional Secretary of MoEF&CC chairs the GEAC, while a representative from the Department of Biotechnology (DBT) co-chairs the meeting.
- It now has 24 members and convenes once a month to examine applications in the aforementioned fields.

Source → The Hindu

3 - Ganga Sagar Mela for National Status, Bangla for Classical Language:

GS I

Indian Culture related issues:

- **Gangasagar Mela: What is it?**

- The Gangasagar Mela, which falls in the middle of January during Makar Sankrati, is thought to be the second-biggest pilgrimage event in India, after the Kumbh Mela.
- This yearly event honours the mythical King Bhagirath's descent of the Ganges to Earth and brings millions of people to Sagar Island, where the Ganges and Bay of Bengal meet.

- **Advantages of Being a National:**

- Increasing governmental financing and infrastructural development would result from giving the Mela national status, which might promote tourist and economic activity in West Bengal.

- **Other Important Indian Melas:**

- Kumbh Mela: Held four times every twelve years, the celebration alternates between four pilgrimages on the four holy rivers in Nashik, Haridwar, Ujjain, and Allahabad.
- Every six years, the Ardha (half) Kumbh Mela is conducted in just two locations: Haridwar and Allahabad.
- Additionally, every 144 years there is a Maha Kumbh.
- Pushkar Mela: Every year, in the Rajasthani town of Pushkar, a five-day fair featuring camels and livestock is held.
- It's among the biggest cattle fairs in the world.
- Hemis Gompa Fair: Held annually for three centuries, the Hemis Gompa Fair is a 300-year-old celebration held in the frigid Ladakh region in northern India.
- The celebration of Guru Padmasambhava's birth anniversary is honoured at the Hemis Monastery.

- Rising water levels and beach erosion close to the Kapil Muni temple on Sagar Island have presented problems for the Ganga Sagar Mela recently. Even with tetrapods to counteract erosion and dredging, the situation is still uncertain.

- **Classical languages: what are they?**

- The Indian government decided to establish a new language category known as "classical languages" in 2004.
- It established the standards for granting designation as a classical language in 2006. As of right now, the six languages are recognised as classical languages.

- **Standards:**

- High antiquity of early writings and historical accounts dating back 1,500–2,000 years.
- possession of a corpus of antiquated books or manuscripts that have been valued by generations as cultural treasures.
- existence of a unique literary heritage that was not appropriated from another speaking community.
- There may also be a discontinuity between the classical language and its later forms or its offshoots, given that the classical language and literature are separate from contemporary.
- **Advantages:**

- A language that has been designated as classical receives funding for the establishment of a centre of excellence for its study and becomes eligible for two significant awards given to distinguished scholars.
- Additionally, a request may be made to the University Grants Commission to establish a specific number of professional chairs for classical languages for researchers of distinction in the field, starting at least in Central Universities.

Source → The Hindu

4 - Genesis of Multiple Sclerosis:

GS II

Health related issues:

- **What Are the Most Important Findings?**

- Then, these ancient genomes were compared to contemporary DNA from the UK Biobank, which included over 24,000 individuals born outside of the country and over 410,000 self-identified "white-British" individuals.
- One startling finding has to do with Multiple Sclerosis, an autoimmune illness that is a persistent brain and spinal cord disease.
- Researchers have discovered a major migration event that occurred approximately 5,000 years ago at the beginning of the Bronze Age. The Yamnaya people, who were herders of livestock, migrated into Western Europe from what is now southern Russia and modern-day Ukraine.
- They possessed genetic characteristics that, at the time, were advantageous and protected against illnesses that might result from their cattle and sheep.
- These same variations increased the incidence of Multiple Sclerosis over the millennia as sanitary conditions improved.

- **What is the definition of multiple sclerosis?**

- The chronic autoimmune illness known as multiple sclerosis (MS) is a disorder in which the body unintentionally assaults itself. The central nervous system (CNS) is impacted.
- The myelin sheath, a covering that protects nerve fibres in the brain and spinal cord, is attacked and damaged by the immune system in multiple sclerosis (MS), which results in a variety of symptoms.

- **Signs:**

- An individual may experience trouble voiding their bladder or experience abrupt or frequent urination.
- gastrointestinal issues, exhaustion, vertigo, and spinal cord injury to nerve fibres.
- Since the disease's symptoms are widespread, few individuals identify it at an early stage, and it frequently takes years for a person to be diagnosed because a precise cause or trigger cannot be identified.

- **Reasons:**

- Although the precise cause of the illness is uncertain, the following factors may be involved:
- Genes may carry the effects of hereditary factors.

- **What is DNA, or deoxyribonucleic acid?**

- The organic molecule known as deoxyribonucleic acid (DNA) has a complicated structural structure.
- The strands of DNA molecules are composed of an extended sequence of monomer nucleotides. It is set up in the form of a double helix.
- In 1953, Francis Crick and James Watson discovered that DNA is a double-helix polymer.
- It is necessary for the genetic characteristics of living things to be passed down from one generation to the next.
- Nuclear DNA is the term for the DNA that is mostly found in the nucleus of cells.

Source → The Hindu