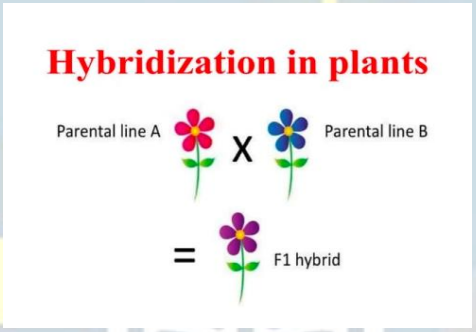
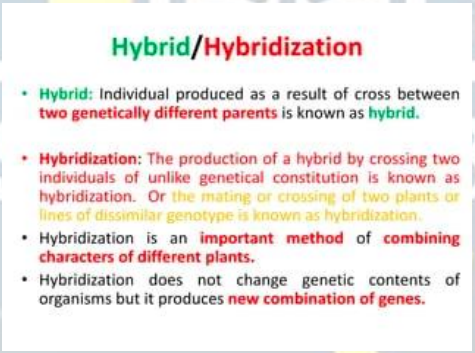
Current Affairs 28th January 2024 by Saurabh Pandey

Arabica coffee

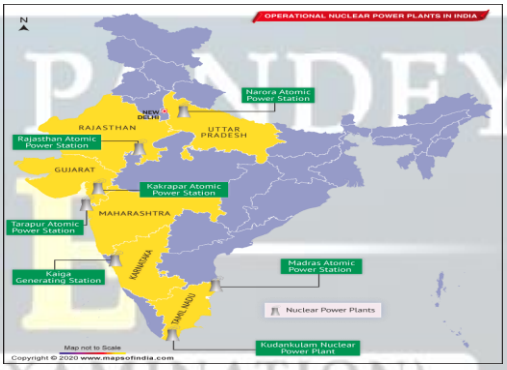


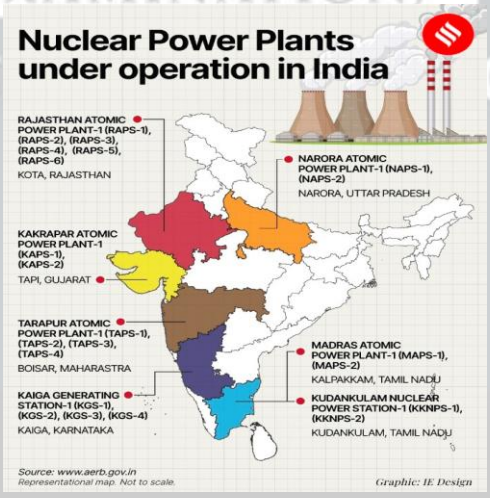


- **Based on a chromosome level assembly, a study published in Nature Communications reveals the sources of genetic diversity of Arabica coffee; the genetic diversity may contribute to its unique flavour and resistance to pathogens.**
- **About 60% of global coffee production is from the Arabica coffee species.**
- **Commercial coffee is mainly produced from Coffea canephora and Coffea arabica, known as Robusta and Arabica coffee, respectively.**
- **Arabica coffee is derived from the hybridization between the ancestors of present-day Robusta coffee and another closely related coffee species, Coffea eugeniodes.**
- **Diversity was found to increase in some Arabica coffee cultivars at specific genomic regions, due to two different sources of variation: chromosomal abnormalities and genetic segments donated by a Robusta Arabica hybrid, known as the Timor Hybrid.**
- **This hybrid has become the parental line of many modern cultivars that combine the disease-resistance trait of Robusta coffee and the unique flavour of Arabica coffee.**

The Hindu

Nuclear power plants and related issues





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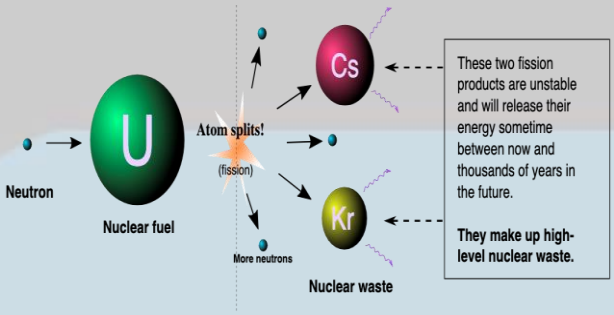
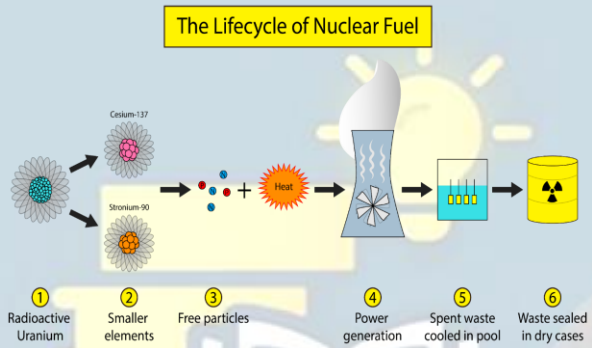
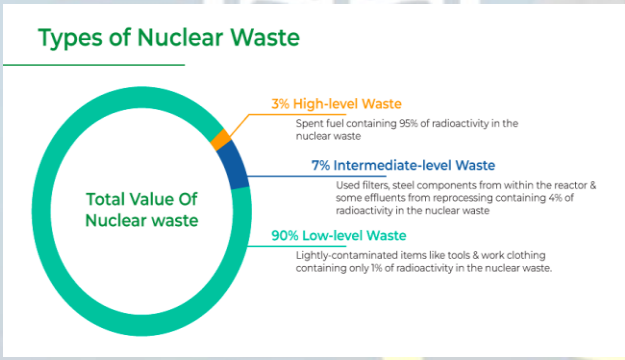


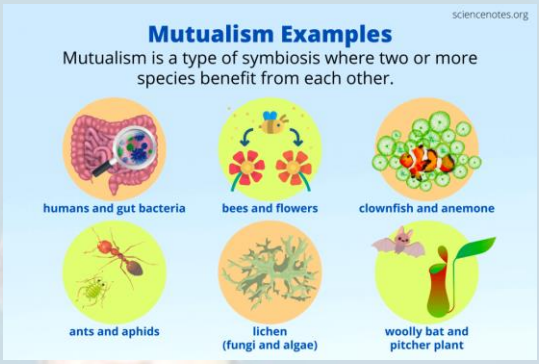




The Hindu

Mutualism

- **At a Kenyan conservancy, the invasive big-headed ant species disrupted a mutualism between native ants and acacia trees, in which the native ants protected trees from grazers in exchange for a place to live.**
- **When the invasive ants pushed out the native ants, the trees were left vulnerable to overgrazing by elephants, who browsed and broke trees at five to seven times the rate in areas with invasive ants.**
- **Due to a more open landscape, lions were left without hiding places stalk their preferred prey of zebras.**



The Hindu

Owl micro fringe

- **Owls' wings make no noise while flying, enabling them to accurately locate their prey while remaining undetected.**
- **While many studies have linked the micro fringes in owl wings to their silent flight, the exact mechanisms have been unclear.**
- **Now, a team of researchers has uncovered the effects of these micro fringes on the sound and aerodynamic performance of owl wings through computational fluid dynamic simulations.**
- **These trailing edge fringes play a crucial role in suppressing the noise produced by wing flap induced air movement.**

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- Simulations revealed that the trailing edge fringes reduced the noise levels of owl wing sand maintained aerodynamic performance comparable to owl wings without fringes.
- Researchers found that the fringes reduce the fluctuations in airflow by breaking up the trailing edge vortices, and they reduce the flow interactions between feathers at the wingtips, thereby suppressing the shedding of wingtip vortices.

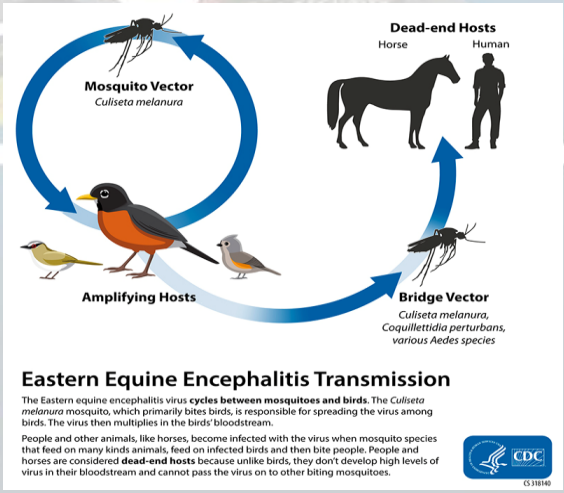
The Hindu

Western Equine Encephalitis Virus

- On December 20, 2023, the International Health Regulations National Focal Point (IHR NFP) in Argentina alerted the Pan American Health Organization/World Health Organization (PAHO/WHO) of a human case of Western Equine Encephalitis Virus (WEEV) infection.

About Western Equine Encephalitis Virus

- WEE is a rare mosquito-borne disease a used by a virus of the same name, which belongs to the genus *Alphavirus* of the *Togaviridae* family, to which the EEE and VEE viruses also belong.
- The main reservoir hosts of EEE and WEE viruses are passerine birds.
- In humans, the WEE virus can cause disease ranging from subclinical or moderate symptoms to severe forms of aseptic meningitis and encephalitis.
- The virus has the potential to spread to other areas through the migration of infected birds or even through the movement of people and animals carrying the virus.
- Given that birds act as a reservoir, they can act as amplifying hosts for viral dissemination to other countries.



WHO Risk Assessment

- The primary mode of WEE virus transmission is through the bites of infected mosquitoes, which act as vectors.
- The principal vector is *Culex tarsalis*; however, there are multiple vectors that contribute to transmission, including *Aedes melanimon, Aedes dorsalis*, and *Aedes campestris*.

- These vectors maintain the circulation of the virus in wild enzootic cycles where birds act as reservoirs of the virus.
- Humans and equines act as the final reservoirs of the virus, incapable of transmitting the virus to mosquitoes.

  People engaged in outside work or activities are at greater risk because of exposure to mosquitoes.
- Outbreaks of WEE in humans generally present as isolated cases with moderate symptoms and most infections are asymptomatic.
- Neurological manifestations include meningitis, encephalitis, or myelitis.
- Similar to other arboviral encephalitis, the encephalitis caused by WEE is characterized by fever accompanied by altered mental status, seizures, or focal neurological signs including movement disorders.
- The Hindu

- Punjab vs BSF power

- In 2021, the Government of India increased the jurisdiction of the Border Security Force (BSF) which chiefly focus on preventing transborder crimes from 15 kilometers up to 50 kilometers inside the international borders in the States of Punjab, West Bengal, and Assam.
- In Punjab, the move triggered sharp criticism from key political parties, with the State government ultimately moving the Supreme Court.

What is the allegation?

- A three judge Bench headed by the Chief Justice of India D.Y. Chandrachud will hear a complaint filed by Punjab accusing the Centre of stripping the State and its police of its powers.
- Police and law and order is a State subject under Schedule 7, List II Entries 1 and 2 of the Constitution.
- Punjab challenged the constitutional validity of the notification issued by the Centre in October 2021 extending the reach of the BSF to 50 km by invoking Section 139 of the Border Security Force Act, 1968.
- The provision authorizes the Centre to confer powers and duties on the BSF with respect to any Central Act like the Passport (Entry into India) Act, 1920, the Registration of Foreigners' Act, 1939, the Central Excises and Salt Act, 1944, the Foreigners Act, 1946, the Foreign Exchange Regulation Act, 1947, the Customs Act, 1962 or the Passports Act, 1967 or of any cognizable offence punishable under any other Central Act.

How has Punjab challenged the notification?

- Through the lawsuit filed under Article 131 of the Constitution of India, Punjab has challenged the notification issued by the Union of India, through the Ministry of Home Affairs under subsection (1) of Section 139 of the BSF.
- Punjab has submitted that the effect and the consequence of the notification amount to encroachment upon the powers of the State of Punjab by the Centre in as much as more than 80% area of the border districts.
- All major towns and cities including all the district headquarters of these border

districts of Punjab fall within the 50 km demarcation area from the India Pakistan International Border.

- The government contends that considering that more than 80% area of the major border area towns of Punjab are covered in the extended belt of 50 kms, the notification is ultra vires of the Constitution and encroaches upon Punjab's plenary authority to legislate on the issue which relates to or are necessary for the maintenance of public order and internal peace.

What are Punjab's concerns?

- The concerns of Punjab are distinguishable from the concerns of other States and Union Territories, as per the lawsuit.
- The geography of Punjab is such that the area which has been included in the extended jurisdiction of the BSF is densely populated.
- The State argues that this is not the case in Gujarat, where most of the area falls in the wastelands of Kutch and saline marshes; similarly, the extended jurisdiction in Rajasthan is desert land, permitting only sparse vegetation, and the density of population is low too.
- In the case of Punjab, the 50km area is highly fertile, heavily populated and covers most of the physical areas forming part of the border districts of Pathankot, Gurdaspur, Amritsar, Tarn Taran, Ferozepur, Fazilka etc.

The Hindu