Prelim Bits 19-12-2021 & 20-12-2021 | UPSC Daily Current Affairs

Zero Budget Natural Farming

Zero budget natural farming is back on top of the Government's agenda with Prime Minister all set to highlight it at a national conclave.

- Zero Budget Natural Farming (ZBNF) is a method of chemical-free zero-till agriculture drawing from traditional Indian practices.
- It was developed by Padma Shri Subhash Palekar in the mid-1990s as an alternative to the Green Revolution's methods driven by chemical fertilizers, pesticides and intensive irrigation.
- **Inputs** - Instead of commercially produced chemical inputs, ZBNF promotes the application of **jivamrita** - a mixture of fresh cow dung and aged cow urine, jaggery, pulse flour, water and soil - on farmland.
- This fermented microbial culture adds nutrients to the soil and acts as a catalytic agent to promote the activity of microorganisms and earthworms in the soil.
- About 200 litres of jivamrita should be sprayed twice a month per acre of land; after 3 years, the system is supposed to become self-sustaining.
- Only one cow is needed for 30 acres of land, with the caveat that it must be a local Indian breed - not an imported Jersey or Holstein.
- A similar mixture, called **bijamrita**, is used to treat seeds.
- **Concoctions** using neem leaves and pulp, tobacco and green chillis are prepared for insect and pest management.
- **Benefits** - ZBNF method is meant to reduce input costs by eliminating the need for expensive fertilizers and pesticides, and also protect soil health and conserve water resources.
- This method also promotes soil aeration, minimal watering, intercropping, bunds and topsoil mulching.
- This method discourages intensive irrigation and deep ploughing.
- But this method is **against vermicomposting**, which is the mainstay of typical organic farming, as it introduces the most common composting worm, the European red wiggler (Eisenia fetida) to Indian soils.
- These worms may absorb toxic metals and poison groundwater and soil.
- To know more about Zero Budget Natural Farming, click here.

The Centre will support the States to improve ZBNF under the Paramparagat Krishi Vikas Yojana.

But, the agricultural scientists had expressed concern about a wholesale shift to unproven methods.

Reference

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Parvovirus

Nearly 2,000 dogs in Amravati city were affected by canine parvovirus virus with veterinarians cautioning pet owners against a severe outbreak.

- Canine Parvovirus (CPV) is a highly contagious viral disease that has reported a 90% mortality rate in puppies and dogs.
- It affects the intestinal tract of canines with puppies being more susceptible.
- **Symptoms** - Bloody diarrhoea, vomiting, drastic weight loss, dehydration and lethargy.
- **Spread** - The highly contagious virus spreads through direct contact with an infected dog or by indirect contact with a contaminated object, including the hands and clothing of people who handle infected dogs.
- The dogs can get exposed to the parvovirus every time it sniffs, licks, or consume infected faeces.
- **Prevention** - Parvovirus has no cure and inoculating a puppy or a dog gives them a fighting chance against the infection.
- The first dose is given at 45 days old and the second dose after 21 days.
- To properly protect canines, it is necessary to administer the vaccine to them while they are puppies and then continue to do the same every year.
- **Treatment** - Currently, there is no specific drug available to kill the Canine Parvovirus.
- Supportive care for parvovirus generally includes hospitalization with intravenous fluids, Antiemetics to stop vomiting, Correction of any electrolyte imbalances or low blood glucose.

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Reintroduction of Gharials in Beas Conservation Reserve

Punjab'a wildlife preservation wing has reintroduced the Gharials in the rivers of Punjab where it had become extinct half a century ago.

- Gharials (*Gavialis gangeticus*) or gavials are a critically endangered species of Asian crocodiles.
- Their ghara (bulbous knob on their snout) makes them very efficient fishers and also renders gharial the only visibly sexually dimorphic crocodilian.
- **Habitat** - Gharials live in clear freshwater river systems, congregating at river bends where the water is deeper. They're not well-suited for land so they generally only leave the water to bask in the sun or to nest.
- Once found from Pakistan to Myanmar, the reptile's range has shrunk to 2 countries - India, and Nepal (Narayani River).

- In India, their natural habitat is found in the northern part of India, including the,
    1. Primary Habitat - Chambal River
    2. Secondary Habitat - Ghaghra and Gandak river, Girwa river (Katarniaghat Wildlife Sanctuary in UP), Ramganga river in Jim Corbett National Park and the Sone river.

  Population of Gharials are a good indicator of clean river water.

- **Diet** - They are carnivorous in nature. While adults eat fish, their offspring also eat insects, crustaceans, and frogs.
- Conservation Efforts includes
    - Breeding Centres of Kukrail Gharial Rehabilitation Centre in Lucknow, UP.
    - National Chambal Sanctuary (Gharial Eco Park, Madhya Pradesh).

Protection Status	
IUCN Red List of Species	Critically Endangered
CITES	Appendix I
Wildlife (Protection) Act, 1972	Schedule I

- **Threats** - As Gharials prefer sandbanks as suitable habitats, wild animals as well as humans often destroy their eggs.
- Increased river pollution, dam construction, massive-scale fishing operations and floods, illegal sand mining and poaching.
- **Related Links** - Crocodilians in India (Crocodilians are a group of reptiles that includes crocodiles, alligators, caimans, and more.)

Beas Conservation Reserve

- The Beas Conservation Reserve is a 185-kilometre stretch of the River Beas located primarily in the north-west of Punjab.
- In 2019, the Reserve was declared a Ramsar site under the aegis of the 1971 Ramsar Convention on Wetlands of International Importance.
- The Reserve hosts the only known population in India of the endangered Indus river dolphin

(Platanista gangetica minor).
- Further threatened species include the endangered masheer (Tor putitora) and hog deer (Axis porcinus) as well as the vulnerable smooth-coated otter (Lutrogale perspicillata).
- In 2017, a programme was initiated to re-introduce the critically endangered gharial into the River 30 years after their disappearance.
- **Threats** - Urban and domestic pollution, and impacts of agriculture.

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Cold Wave in North India

Recently, the India Meteorological Department (IMD) has predicted a cold wave in parts of Punjab, Haryana, Chandigarh, Gujarat, Rajasthan and Uttar Pradesh over the next few days.

- **Cause** - According to IMD, the above region could witness a cold wave due to the western disturbance move as a cyclonic circulation over north Pakistan and adjoining Jammu and Kashmir.
- [Western disturbances are storms that originate in the Mediterranean region and bring winter rainfall to northwest India.]
- After this western disturbance moves, the IMD expects strong north-westerly and westerly cold winds over north India.
- **New pattern** - This wind pattern is new. Earlier, winds were calm and light all through November. This much fall in temperature needs consistent winds.

Cold Wave

- The IMD defines a cold wave qualitatively as a condition of air temperature which becomes fatal to the human body when exposed.
- Cold waves usually occur from mid-December to the end of February. Sometimes, a cold wave may set in before mid-December.
- The cold waves depend on weather systems and wind patterns from the middle latitudes, that is from Europe or West Asia, since the winds from these regions bring cold weather.
- **Factors** that bring cold waves to India include the movement of cold air masses brought about by upper-level winds.
- They can be triggered by strong westerly winds approaching northwest India and transporting cold air towards the southeast direction.
- Build up of an extended area of relatively high pressure over northwest Asia can also bring cold waves.
- **IMD's Conditions** - In 'cold wave' conditions, the minimum temperature is less than or equal to 4 degree Celsius at a weather station in the plains, and departs from the normal temperature 4.5 to 6.4 degrees below for that period.
- For hilly regions, a cold wave is declared when the minimum temperature is less than or equal to 0 degree Celsius and the minimum temperature is 4.5 degrees to 6.4 degrees below the normal.
- In 'severe' cold wave conditions, the minimum temperature is less than or equal to 10 degree

Celsius, and departs from the normal by 6.5 degrees or more, or if cold wave conditions persist for four days or more.

The 'normal' temperature is calculated for every 5 days by taking the average temperature for these days over the past 30 years.

- **Related Links** - Heat Waves, Heat Dome

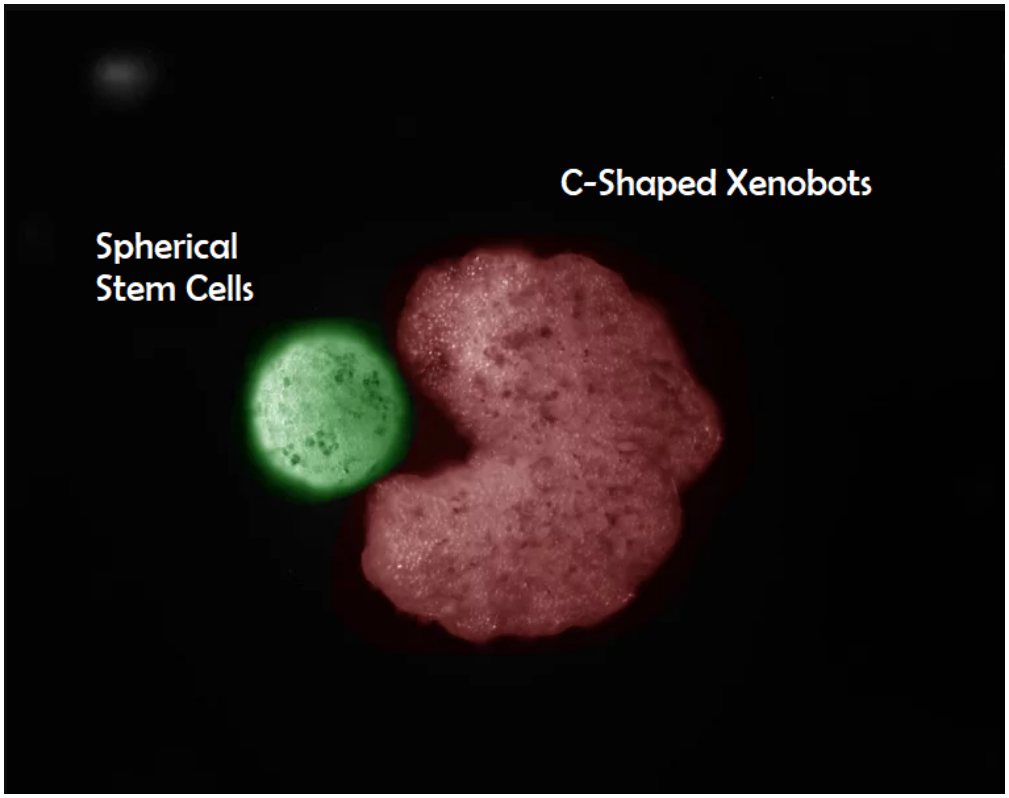
Reference

https://indianexpress.com/article/explained/explained-why-imd-has-predicted-a-cold-wave-in-northwest-india-7677262/

Xenobots

Scientists have witnessed a never-before-seen type of self-replication in world's first living robots (xenobots) created in the lab using frog cells.

- Xenobots are synthetic life forms that are designed by computers to perform some desired function and built by combining together different biological tissues.
- Xenobots are named after the African clawed frog (*Xenopus laevis*).
- The world's first Xenobots were developed in 2020 by assembling African clawed frog cells.
- These frog cells aren't genetically modified at all, but simply combined in different arrangements to produce the xenobots.
- The C-shaped Xenobots propel themselves by using tiny hair-like structures called cilia.
- These "parent" Xenobots move around their environment, they collect loose stem cells in their "mouths", over time, aggregate to create "offspring" Xenobots that develop to look like their creators.
- This reproduction happens at the molecular level, and there is no other organism that reproduces or replicates in this way.
- But, the idea of kinematic self-replication is not entirely new - it was first suggested in the late 1940s by mathematician John von Neumann.
- **Benefits** - One day these xenobots could be programmed to perform useful functions such as finding cancer cells in the human body or trapping harmful microplastics in the ocean.



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