

## GEOGRAPHY

PRE-CONTEXT

### TROPICAL CYCLONE

THE HINDU, PG.NO: 1.

**News:** "Cyclone Fengal batters north T.N. coast; 3 dead in Chennai, flights hit."

#### Tropical Cyclone Formation:

- **Large sea surface with temperatures higher than 27° C** to form and sustain themselves.
- **Bay of Bengal:** has higher SSTs due to its semi-enclosed nature and shallower depths, making it more conducive to cyclogenesis.
- **Arabian Sea:** Historically less active than the Bay of Bengal but has shown increased cyclonic activity in recent years due to rising SSTs.
- **Presence of the Coriolis force enables cyclone rotation:** typically present at least 5° latitude away from the equator.
  - **India's geographic location** (approximately 8°N to 37°N) is within the latitude range.
- **Low vertical wind shear:** i.e the change in wind speed and direction with altitude. **High wind shear disrupts the vertical structure** of a developing cyclone.
- **Atmospheric instability:** where warm, moist air near the surface can rise and cool to form clouds and precipitation.
- **Divergence of air at the upper levels of the atmosphere:** allows rising air from below to be efficiently evacuated, **promoting strong updrafts.**

#### Colour-Coded weather warning system by IMD:

- **Green:** No action required. normal weather conditions.
- **Yellow:** Wait and watch. favourable conditions for severe weather.
- **Orange:** Alert. Be prepared; severe weather is likely.
- **Red:** Take action. severe weather is occurring; take immediate action to protect life and property.

#### Naming cyclones:

- Cyclones are named when they reach the cyclonic storm stage (**wind speed  $\geq 62$  km/h**).
- Names are **selected from a list contributed by countries in the region**, including India, Bangladesh, Myanmar, and others.

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## DISEASES

PRE-CONTEXT

### SICKLE CELL ANAEMIA

THE HINDU, PG.NO: 11.

**News:** "Cuttack hospital likely to be a one-stop centre for sickle cell anaemia treatment."

"India has the second-largest global burden of sickle cell disease, with over 1 million affected." — **PIB**

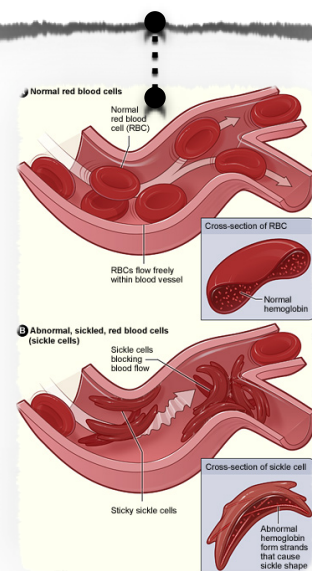
#### About Sickle Cell Anaemia:

- While healthy individuals have **disc-shaped red blood cells**, those with sickle cell disease have red blood cells that take on a **crescent or sickle-like shape**.
- **Causes:** Genetic, can be inherited if both parents carry the trait.
- It **brings down the lifespan of patient to 40 years**.
- Impacts the quality of life Eg. Frequent swelling, damage to vital organs.
- **Hydroxyurea** is a vital medicine for treating sickle cell disease.
- **No permanent cure** is available for sickle cell disease. **Gene therapy and bone marrow transplants may provide cure** but are highly expensive.

#### National Sickle Cell Anaemia Elimination Mission:

- It is **part of National Health Mission** under RMNCAH+N component.
- **Implemented by** Ministry of Health and Family Welfare in collaboration with Ministry of Tribal Affairs.
- **Eliminate sickle cell disease** as a public health problem by **2047**.
- **Primarily in tribal regions** (OD, JH, CG, MP, MH). **1 out of 10 tribal persons** is affected as per the **2011 census**.
- Provide **affordable and accessible care** to all SCD patients.
- National wide **screening camps**.
- Increase **awareness** and timely diagnosis.
- **RMNCAH+N component:** Reproductive, Maternal, Newborn, Child, Adolescent Health, Nutrition.

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## AGRICULTURE

PRE-CONTEXT

### BIOFORTIFIED CROPS

THE HINDU, PG.NO: 11.

**News:** "Seed Congress resolves to promote biofortified crops."

#### About Biofortified Crops:

- Biofortification is the *process of increasing the nutritional value of food crops* by enhancing their content of essential vitamins and minerals through *conventional plant breeding, agronomic practices, or modern biotechnology*.
- **Advantages of Biofortified Crops:** Improves nutritional status, enhances agricultural productivity, climate resilience etc.
- **Biofortified crops in India:**
  - **Millet:** Iron rich pearl millet (Bajra), finger millet, Lentil etc.
  - **Staple crops:** Zinc-Enriched wheat and rice, Protein rich maize and rice etc.
  - **Oilseeds:** groundnut (oleic acid), mustard (Erucic acid) etc.
  - **Vegetables:** potato, sweet potato (Anthocyanin) etc.
  - **Fruits:** pomegranate (Iron, Zinc, Vitamin-C).

#### Need for Biofortification in India:

- **Vitamin & micronutrient deficiency:** Eg. *Vitamin A* (impairs vision and immunity), *iron* (Anaemia), *iodine* (affects growth & cognition).
- **Alleviating Malnutrition:**
  - *Over 70% of child deaths* in India are linked to malnutrition—papers published in Lancet.
  - *Maternal Malnutrition:* 20% of women of reproductive age—*NHFS-5*.
- **Dietary diversification:** including diverse cereals, pulses, Oilseeds, vegetables, fruits to enhance nutritional status.
- **Cost-effective approach** where the nutrients reach the target people in natural form.
- **Achievement of SDG 3** (good health and well-being).
- **Biofortified varieties** are as high yielding as traditional varieties; thus, no loss is incurred to the farmers.
- **No additional cost** on preparing the enriched food grains.
- **Free fortified rice is provided under programmes such as:**
  - Targeted Public Distribution System (*PDS*).
  - Integrated Child Development Service (*ICDS*).
  - *PM POSHAN* (Earlier Mid-day Meal) in all States and UTs.
- **Fortification is done as per standards** prescribed by the *FSSAI*.

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## LIVESTOCK

PRE-CONTEXT

### H5N1 VIRUS

THE HINDU, PG.NO: 13.

**News:** "Emerging H5N1 mutations raise risk of human infections."

#### H5N1 Virus:

- Highly *Pathogenic Avian Influenza* but can *occasionally infect humans* and other animals.
- Caused *widespread global outbreak*, carried by migratory birds.
- The outbreak is estimated to have *killed millions of birds* and the virus has infected over 200 mammalian species, including humans.

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**Thank you!**