National Conference on Promotion of Seaweed Cultivation

For Prelims: Seaweed, Medical Food of the 21st Century, Kelp forests, Red algae, Blue algae, Major Seaweed Beds in India, Commercialised Seaweed Products in India.

For Mains: Distribution and Significance of Seaweeds, Seaweed Cultivation in India.

Source: PIB

Why in News?

Recently, the National Conference on Promotion of Seaweed Cultivation was held in **Koteshwar (Kori Creek), Kutch, Gujarat.**

- It aimed at implementing seaweed cultivation on a pan-India basis, emphasizing the promotion of seaweed cultivation to diversify marine production and enhance fish farmer income.

What are Seaweeds?

- **About:** Seaweeds are **macroscopic, multicellular, marine algae.** They come in a variety of coluors, including **red, green, and brown**.
  - They are referred to as the **'Medical Food of the 21st Century'.**
- **Distribution:** Seaweeds are found mostly in the **intertidal region,** in shallow and deep waters of the sea and also in estuaries and backwaters.
  - Large seaweeds form dense underwater forests known as **kelp forests**, which act as underwater nurseries for fish, snails and sea urchins.
- **Seaweed Species in India:** India boasts approximately 844 reported seaweed species in its seas.
  - Some specific species, such as **Gelidiella acerosa, Gracilaria spp., Sargassum spp., Turbinaria spp., and Cystoseira trinodis** are cultivated for the production of agar, alginates, and liquid seaweed fertilizer.

Note

Agar is obtained from **red algae** and is used as thickening and gelling agent in jellies, puddings, jams etc, whereas alginate is obtained from **brown algae** and used as thickener and stabilizer in **ice cream, sauces, and dressings.**

- Despite having **46 seaweed-based industries in India,** particularly 21 for Agar and 25 for Alginate production, their operational efficiency is hindered by the shortage of **raw materials.**

- **Major Seaweed Beds in India:** Abundant seaweed resources are found along the Tamil Nadu and Gujarat coasts, as well as around **Lakshadweep and the Andaman & Nicobar Islands.**
  - Notable seaweed beds exist around Mumbai, Ratnagiri, Goa, Karwar, Varkala, Vizhinjam, and Pulicat in Tamil Nadu, Andhra Pradesh, and Chilka in Orissa.

- **Significance:**
  - **Bio-indicator:** They act as **bio-indicator by absorbing excess nutrients** and signalling marine chemical damage caused by waste from agriculture, industries, and households, often leading to **algal blooming.**
    - They play a vital role in **restoring ecosystem balance.**
  - **Food Source:** Seaweed is a nutritional powerhouse, rich in **vitamins, minerals, and dietary fibre.**
    - It Is used in various food products, from **sushi and salads** to snacks and thickeners.
    - Many seaweeds **contain anti-inflammatory and anti-microbial agents.** Seaweed is the **best source of iodine.**
  - **Bioproducts:** Seaweed extracts are used in a wide range of products, including **cosmetics, pharmaceuticals, and bioplastics.** They offer sustainable alternatives to conventional options.
  - **Carbon Capture:** Seaweed **absorbs carbon dioxide from the atmosphere as it grows,** making it a potential tool in the fight against **climate change.**
    - Studies suggest cultivating and sinking seaweed could effectively store long-term carbon.
  - **Livelihoods:** Seaweed farming provides income and empowers coastal communities, particularly **women and small-scale farmers.**
    - It requires minimal investment and offers relatively quick returns.
  - **Other Benefits:** Seaweeds are utilized for various purposes, including laxatives, pharmaceutical capsules, goiter **treatment,** cancer therapy**, bone replacement,** and cardiovascular surgeries.
    - Anecdotal evidence also suggests that the **ancient Egyptians** may have used them as a treatment for breast cancer.
- **Related Government Initiatives:**
  - **Seaweed Mission:** This initiative aims to commercialize seaweed farming and processing for value addition. It also aims to increase cultivation along India's **7,500-kilometer coastline.**
  - **Commercialisation of Seaweed Products:** The **Indian Council of Agricultural Research(ICAR)-** Central Marine Fisheries Research Institute (CMFRI) has successfully commercialized two seaweed-based nutraceutical products, **CadalminTM Immunalgin** extract (CadalminTM IMe) and **CadalminTM Antihypercholesterolemic** extract (CadalminTM ACe).
    - These products, developed with **eco-friendly 'green' technology,** aim to boost anti-viral immunity and combat high cholesterol or dyslipidemia (imbalance of cholesterol).
  - **Multi-Purpose Seaweed Park** in Tamil Nadu.