Agrobiodiversity

Why in News?

As per the latest IPCC report, human-induced global warming of 1.1 degree Celsius has spurred changes to the earth's climate that are unprecedented in recent human history.

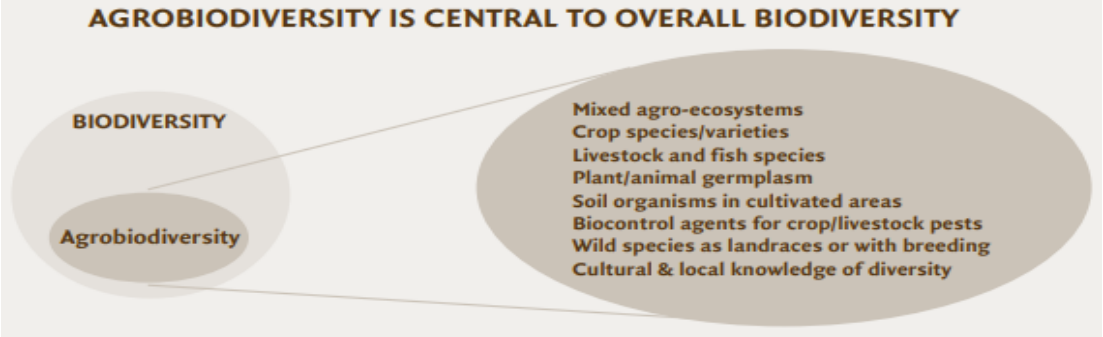
What is Agrobiodiversity?

- **Agrobiodiversity** - The variety and variability of animals, plants and micro-organisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries.
- **Components** - It comprises the diversity of
  - Genetic resources (varieties, breeds) and species used for food, fodder, fibre, fuel and pharmaceuticals.
  - Non-harvested species that support production like soil micro-organisms, predators, pollinators
  - Diversity of the agro-ecosystems.
- **Neglected Crops** - They are domesticated plant species used for food, medicine, cultural practices within local communities but not widely commodified or studied as part of mainstream agriculture.
- **Edible Crop Diversity** - As per FAO estimates, there are more than 30,000 edible plants, and over 6,000 plants consumed by human beings and around 700 are cultivated on large scale.
- **Agrobiodiversity of India** - More than 9,000 plant species including medicinal and wild flowers have been consumed for over 4,000 years of Indian civilizational history.
- **Rice Varieties** - More than 40,000 landraces or farmer varieties are developed over thousands of years by the Indian farming communities in rice crop alone.
- **ICAR Varieties** - National Bureau of Plant Genetic Resources has collected more than 4.3 lakh accessions of about 1,500 crop species mostly from farmers' fields and to some extent from wild ecosystems.

Accession is a distinct, uniquely identifiable sample of seeds representing a cultivar, breeding line or a population, which is maintained in storage for conservation and use.

- An estimated 20,000 varieties were made available during the past century to farmers for cultivation through formal institutional sources.
- **Agrobiodiversity heritage** – Globally Important Agricultural Heritage Systems (GIAHS) are agroecosystems inhabited by communities that live in an intricate relationship with their territory.

- Koraput Traditional Agriculture, Kuttanad Below Sea Level Farming System are GIAHS in India.



What are the needs of Agrobiodiversity ?

- **Ripple effect of climate Change** – It is threatening our ability to grow these staple crops in many locations as they are not well suited to grow in the challenging conditions brought by greater droughts, flooding and rising temperatures.
- **Decline in soil fertility and organic matter** – It affects the productivity of agricultural system
- **High dependency on limited crops** - $3/4^{th}$ of the food humans consume globally comes from just 12 plant and 5 animal sources.
- **Limited diet** - Just three crops wheat, rice and corn, accounting for 51 % of the calories included in the diet.
- **Food security risk** - Massive dependence on these crops poses a risk to food security due to climate vagaries and emerging pests.

What are the benefits of Agrobiodiversity?

- **Crop diversification** - Expanding the use of neglected crops can help to diversify agriculture and food systems.
- **Food diversity** – It introduces a greater variety of foods into global supplies—including more nutritious cereals, fruits and vegetables, and roots and tubers
- **Nutritional benefit** - Many neglected staple crops like Finger millet, Fonio, and teff have higher iron and amino acid contents than maize, rice, and wheat.
- **Climate resilience** – It enhances the strength to recover from the impacts of changes and extreme weather
- **Economic benefit** - Diversity of crops provides employment and alternate sources of income for farmers.
- **Reduce consumer vulnerability** – Additional agricultural production, diversification of food sources reduces food price volatility and increase consumer food price stability.

What are the challenges?

- **Threads to traditional wisdom** - Lack of documentation threatens the loss of this rich food diversity.
- **Ineffective seeds management** - Limited access to seeds due to the poor

performance of the seed multiplication and distribution system.

- **Monocropping** - The widespread practice of growing single crops over large areas reduces genetic diversity and makes crops more susceptible to pests and diseases.
- **High-yielding varieties** - The shift towards high-yielding, genetically uniform crops has led to the loss of traditional varieties and landraces.
- **Cultural shifts** - Modernization and industrialization often prioritize short-term gains over long-term sustainability.

Way Forward?

- Promotion of neglected crops and forgotten foods and collective actions at global, national and regional levels.
- Collaborations with startups and hotel management institutes are helping in standardisation of recipes and taking this culinary knowledge and heritage to modern audiences.
- Recognize farming communities and indigenous people as custodians of knowledge for sustainable transformation rather than mere beneficiaries.
- Promote women-led collectives and enterprises to grow and sell nutritious neglected crops.
- Unleashing potential of millets for sustainable food, agriculture.

Reference

[The New Indian Express | Valorisation of neglected crops and forgotten foods]

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