



Agrobiodiversity for India

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This article is based on **“India’s food basket must be enlarged”** which was published in The Hindu on 29/11/2019. It talks about Agrobiodiversity and its significance for India.

Recently, the Ministry of Human Resources Development brought out school **‘Nutrition Garden’** guidelines, encouraging students to identify fruits and vegetables best suited to topography, soil and climate.

Nutrition Garden envisages providing students lifelong social, numerical and presentation skills, care for living organisms and teamwork, besides being used in the Mid-Day meal scheme.

Based on Nutrition Garden, **agrobiodiversity can be contemplated all across India**, to address India’s hunger issues.

What is Agrobiodiversity?

Agrobiodiversity is the result of the interaction between the environment, genetic resources and management systems and practices used by culturally diverse people.

- It comprises the diversity of genetic resources (varieties, breeds) and species used for food, fodder, fibre, fuel and pharmaceuticals.
- It also includes the diversity of non-harvested species that support production (soil microorganisms, predators, pollinators), and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agro-ecosystems.

Benefits of Agrobiodiversity

- Increases productivity, food security, and economic returns.
- Reduces the pressure of agriculture on fragile areas, forests and endangered species.
- Makes farming systems more stable, robust, and sustainable.

- Contributes to sound pest and disease management
- Conserves soil and increase natural soil fertility and health.
- Reduces dependency on external inputs.
- Improves human nutrition and provides sources of medicines and vitamins.
- Conserve ecosystem structure and stability of species diversity.

Significance of Agrobiodiversity for India

India's promising genetic resources include rice from Tamil Nadu (Konamani), Assam (Agni bora) and Kerala (Pokkali), Bhalia Wheat and mushroom (Guchhi) from Himachal Pradesh and rich farm animal native breeds — cattle (42), buffaloes (15), goat (34), sheep (43) and chicken (19). Since, genetic diversity of crops, livestock and their wild relatives, are fundamental to improve crop varieties and livestock breeds, this can help in the following ways:

- **In combating hunger:** India is ranked 102 in the **Global Hunger Index (GHI) out of 117** qualified countries.
Hunger is defined by caloric deprivation; protein hunger; hidden hunger by the deficiency of micronutrients.
- **Malnutrition:** Nearly 47 million or four out of 10 children in India do not meet their potential because of chronic undernutrition or stunting.
 - This leads to diminished learning capacity, increased chronic diseases, low birth-weight infants from malnourished parents.
 - The global nutrition report pegs 614 million women and more than half the women in India aged 15-49 as being anaemic.
- **Agrobiodiversity can help in** nutrition-sensitive farming and bio-fortified foods.
For instance, moringa (drumstick) has micronutrients and sweet potato is rich in Vitamin A. There are varieties of pearl millet and sorghum rich in iron and zinc.
- This will help India achieve **UN Sustainable Development Goal 2** (Zero Hunger) and the **Aichi Biodiversity Target** (focuses on countries conserving the genetic diversity of plants, farm livestock and wild relatives).

Agrobiodiversity In India

- Across the world, 37 sites are designated as **Globally Important Agricultural Heritage Systems (GIAHS)**, of which three are Indian — Kashmir (saffron), Koraput (traditional agriculture) and Kuttanad (below sea-level farming).
- In India, over 811 cultivated plants and 902 of their wild relatives have been documented.

Challenges to Agrobiodiversity

- Loss of crop genetic resources due to **adopting new crop varieties without conserving traditional varieties**. For example, Bt cotton.
- Similarly, there are concerns on **high output breeds** for production of meat, milk and eggs. Crossbreeding of foreign breeds with indigenous breeds leads to erosion of genetically diverse pool.
- Out of 2,50,000 globally identified plant species, about 7,000 have historically been used in human diets.

Today, **only 30 crops form the basis of the world's agriculture** and just three species of maize, rice and wheat supply more than half the world's daily calories.

Way Forward

- There is a need for a **comprehensive policy on 'ecological agriculture'** to enhance native pest and pollinator population providing ecosystem services for the agricultural landscape.
- **Bio-village concept:** Ecologically sensitive farming can be done by conserving crop wild relatives of cereals, millets, oilseeds, fibres, forages, fruits and nuts, vegetables, spices etc. for crop genetic diversity healthier food.
- **Providing incentives for farmers** cultivating native varieties and those conserving indigenous breeds of livestock and poultry varieties.
- **Community seed banks** should be encouraged in each agro-climatic zone.
- Developing a **national level invasive alien species policy** is required to identify pathways, mapping, monitoring, managing, controlling and eradicating invasive species.
- The **consumption pattern and culinary diversity** must be enlarged to increase India's food basket.

Drishti Mains Question

What do you understand by agrobiodiversity? Examine its significance in light of climate change, sustainable agriculture and poverty.