

***Artocarpus heterophyllus* Lam. (Jackfruit Tree)**

The jackfruit tree (*Artocarpus heterophyllus* Lam.) is the world's largest tree-borne fruit and belongs to the family Moraceae. It is native to the Western Ghats of India and is now cultivated widely throughout tropical Asia, Africa, and South America.



Botanical Details

Botanical name: *Artocarpus heterophyllus* Lam.

Family: Moraceae

Common names: Jackfruit, Kathal (Hindi)

Origin: Western Ghats, India

Chromosome number: $2n = 56$

Habit

Large, evergreen, monoecious tree.

Height: 10–25 m (sometimes up to 30 m).

Dense, spreading canopy with milky latex.

Root System

Strong taproot with extensive lateral roots.

Helps anchor the tree and absorb water from deeper soil layers.

Stem

Straight trunk with rough, brown bark.

Produces white latex when cut.

Wood is yellow, durable, and resistant to termites.

Leaves

Simple, alternate, leathery, glossy dark green.

Ovate to elliptic with entire margins. Juvenile leaves may be lobed.

Flowers

Monoecious (male and female flowers occur on the same tree).

Small, greenish flowers arranged in dense spikes.

Male inflorescences are slender and cylindrical.

Female inflorescences are larger and develop into fruits.

Fruit

A multiple (syncarp) fruit formed from an entire inflorescence.

Largest edible tree-borne fruit in the world.

Weight ranges from 3–50 kg, occasionally exceeding 60 kg.

Rich in carbohydrates, vitamin C, potassium, dietary fiber, and antioxidants.

Seeds

100–500 seeds per fruit.

Rich in starch, protein, and minerals.

Edible after boiling or roasting.



Ecological Importance

Carbon Sequestration

Large biomass stores considerable atmospheric carbon.

Contributes to climate change mitigation.

Biodiversity Support

Provides habitat for birds, insects, squirrels, bats, and other wildlife.

Flowers attract pollinating insects.

Fruits serve as food for many animals.

Soil Conservation

Extensive roots reduce soil erosion.

Leaf litter enriches soil organic matter.

Agroforestry

Commonly integrated with crops like turmeric, ginger, black pepper, and coffee.

Improves farm biodiversity and resilience.

Climate Adaptation

Performs well under tropical humid conditions.

Tolerates short dry periods once established.

Helps maintain local microclimate through shade and evapotranspiration.

Nutrient Cycling

Leaf fall decomposes rapidly, returning nutrients to the soil.

Supports soil microorganisms and earthworms.

Economic Importance

Food Value

Unripe fruits are used as a vegetable ("vegetarian meat").

Ripe fruits are eaten fresh or processed.

Seeds are cooked, roasted, or milled into flour.

Nutritional Value (per 100 g ripe pulp, approximate)

Energy: ~95 kcal

Carbohydrates: ~23 g

Protein: ~1.7 g

Dietary fiber: ~1.5 g

Vitamin C: ~13–14 mg

Potassium: ~450 mg

Processing Industry

Products include:

Chips

Pickles

Jam

Jelly

Candy

Ice cream

Juice

Flour and

Ready-to-eat and canned products

Timber

Durable yellow timber used for:

Furniture

Doors and windows

Musical instruments

Decorative carvings

Temple architecture

Medicinal Uses

Different plant parts are used traditionally:

Leaves: diabetes management

Bark: antimicrobial preparations

Latex: wound healing and folk remedies

Roots: treatment of skin ailments (traditional use)

Fruits: antioxidant-rich functional food

Income Generation

Provides year-round income through fruit sales.

Supports cottage industries and food processing enterprises.

Has export potential for fresh fruit and processed products.

Applications in Sustainability

Suitable for agroforestry systems.

Fruit peels and other waste can be composted or used as substrate components in mushroom cultivation after proper processing.

Seeds can be processed into nutritious flour, reducing food waste.

Wood from older trees is a renewable timber resource.

The tree contributes to sustainable farming by combining food production, carbon storage, and biodiversity conservation.

Conclusion

Jackfruit is a multipurpose tropical tree with exceptional botanical, ecological, and economic value. It provides nutritious food, high-quality timber, medicinal products, environmental services such as carbon sequestration and soil conservation, and sustainable livelihood opportunities. Because of its adaptability, productivity, and wide range of uses, jackfruit is increasingly recognized as an important species for climate-resilient agriculture and sustainable rural development.