



DFID Department for International Development

World Agroforestry Centre
TRANSFORMING LIVES AND LANDSCAPES

Fruits for the Future

Jackfruit

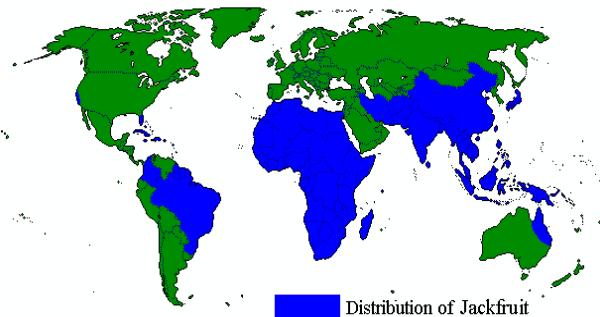
International Centre for Underutilized Crops.

Factsheet No. 6. March 2003

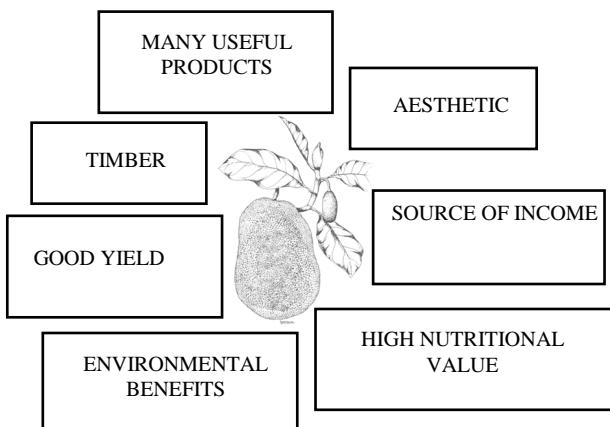


What is Jackfruit? The scientific name of the jackfruit tree is *Artocarpus heterophyllus* Lam. (Moraceae). It is often confused with the closely related species *A. integer*, and is sometimes cited as a synonym. It is a medium-sized tropical fruit tree reaching 15-20m in height. The evergreen leaves are oblong, oval or elliptic in shape, 10-15cm in length, alternate, glossy and dark green in colour. The juvenile leaves are lobed. The tree is monoecious, producing male and female flowers. The male flowers are produced amongst the leaves above the female flowers, and when mature, become covered in pollen that falls rapidly after flowering. The female flowers are borne on short twigs that develop from the trunk, branches and sometimes from below the soil level at the base of older trees. Jackfruit is the largest tree-borne fruit in the world, reaching up to 50kg in weight and 60-90cm in length. A mature tree produces up to 700 fruits per year, each weighing 0.5 to 50kg. The rind of the compound fruit is greenish yellow when fully ripe. Inside, the fruit is made up of large, yellow bulbs enclosing an oval light-brown seeds. There are 100-500 seeds in a single fruit. When fully ripe, the opened jackfruit smells of pineapple and banana. All parts of the tree

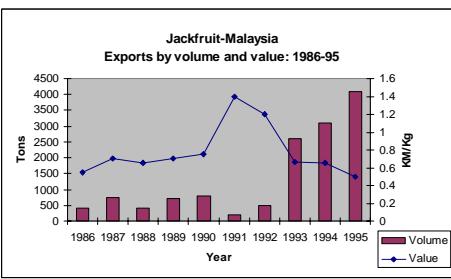
produce a sticky, white latex, but gum-free genotypes have been identified in India.



throughout the Indian sub-continent, South East Asia and Polynesia. It can also be found throughout Africa, the Caribbean and Latin America. It was introduced to northern Brazil in the mid 19th Century. The tree is also grown to a very limited extent in Florida, where it is hardier than its relative the Breadfruit (*A. altilis*).

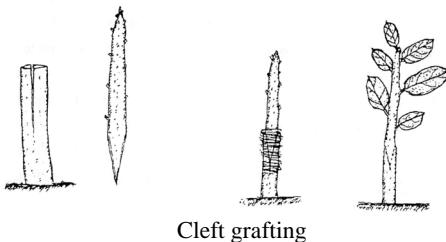


Why should you grow the jackfruit tree? The jackfruit tree is a multi-purpose species providing food, timber, fuel, fodder, medicinal and industrial products. It is a nutritious fruit, rich in vitamins A, B and C, potassium, calcium, iron, proteins and carbohydrates. Due to the high levels of carbohydrates, jackfruit supplements other staple foods in times of scarcity in some regions. It is also a relatively cheap fruit in some countries such as Bangladesh, where it has been declared the 'national fruit' because of its socioeconomic importance. The tree can be cultivated on marginal lands and does not require intensive management to provide a good crop. It can generate income for small farmers through the sale of its fruits and other products. The tree can also play a role in cropping systems and crop diversification, and has positive environmental benefits.



Source: Vinning and Moody, 1997

approximately 26,000 hectares, of which, an estimated 100,000 trees are grown in back yards and as intercrops amongst other commercial crops in south India. Jackfruit is also grown commercially in Sri Lanka over of an area of about 4,500 hectares), primarily for timber, although the fruit is much appreciated.



Cleft grafting

How do you grow jackfruit? Jackfruit is commonly grown from seed. Vegetative propagation techniques have also been used, including cuttings, air layering, budding, grafting and tissue culture, however with limited success so far. Cleft grafting has shown promising results in Asian countries, however further research is required for widespread use. Seeds from the fruits of outstanding mother trees, should be sown 3-5 days after extraction from the fruit. Seeds should be sown in individual deep polybags, as the tree has a long taproot and is sensitive to transplanting. Germination should begin about 10 days after sowing.

Seedlings should be transplanted to the field at approx. 1 year old at the start of the rainy season, with a spacing of 8-12m (100-120trees/ha). Seedlings are sensitive to root injury and should be moved within the nursery once or twice a month to prevent the roots from penetrating into the ground. Excess shoots should be removed just before or after transplanting and the leaves trimmed to reduce transpiration. Trees raised from seed start flowering at of 3-8 years. Vegetatively propagated trees produce fruit within 2-4 years if planted under favourable conditions. During the fruit-bearing stage, pruning of unproductive branches and excess shoots will facilitate fruiting and harvesting. Diseased and insect-damaged branches are also pruned regularly, and large branches in the interior are removed to allow better air circulation and light penetration. Diseases such as bacterial dieback, which attacks growing shoots, blossom/fruit rot causing rotting and premature dropping of flowers and fruits, and leaf spots are noted in some countries. Bacterial dieback can be controlled by spraying*, blossom/fruit rot is effectively controlled by copper fungicides, and leaf spots can be prevented by removal of affected parts.



What are the uses of jackfruit? The pulp of the young fruit is cooked as a vegetable, pickled or canned. Pulp of ripe fruit is eaten fresh or made into various local delicacies including chutney, jam, jelly, and paste, or preserved as candies by drying or mixing with sugar, honey or syrup. The pulp is also used to flavour ice cream and beverages, made into jackfruit honey, reduced to concentrate or powder, and used for preparing drinks. The seeds can be eaten boiled, roasted or dried and salted as table nuts, or they can be ground to make flour and blended with wheat flour for baking. Young leaves can be used as fodder for cattle and other livestock. A yellow dye can also be extracted from the wood particles and used to dye cotton. The latex which flows from all parts of the plant when injured is also used as adhesive. The resins within the latex may also have some value in varnishes. The timber is a medium hardwood with desirable characteristics in making furniture, oars, implements and musical instruments and the wood is also used in construction. It is termite proof and fairly resistant to fungal and bacterial decay. The roots of older trees are good materials for carving and picture framing. The timber is exported from Sri Lanka and India to Europe. With its dense crown and leathery broad glabrous leaves, it is an attractive tree. The trees may also serve as shade for coffee and as support for black pepper (*Piper nigrum*). Different parts of the jackfruit tree have medicinal properties. The pulp and seeds are used as a tonic, the warmed leaves have healing properties if placed onto wounds, and the latex, mixed with vinegar promotes healing of abscesses, snakebite and glandular swellings. The wood has a sedative effect and its pith is said to cause abortion. The root is used as a remedy against skin diseases and asthma, and its extract is taken in cases of fever and diarrhea.

* Pesticides/fungicides are dangerous and should be avoided wherever possible.

Further Reading

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