PLANT FACT SHEET

Artocarpus altilis (Parkinson) Fosberg

GENUS *Artocarpus* **FAMILY** Moraceae

COMMON NAMES Breadfruit

EDIBLE PARTS AND USES

Edible parts: Fruit, Seeds, Leaves, Flowers, Vegetable, Latex

The large seeds are roasted and eaten.
The flesh of the fruit is eaten cooked. It can be boiled, baked, steamed, mashed, or turned into soups, puddings, cakes and pies. Dried fruit are made into flour.
The young leaves are edible.
The male and female flowers are edible.

DESCRIPTION

A large tree up to 20-26 m in height. The trunk can be 6 m tall before branching. The trunk can be up to 1 m across. It is an evergreen tree but can lose its leaves in dry weather. The leaves are large and vary in the amount the leaves are divided. They can be entire or divided into 5 to 11 lobes. The leaves are bright green on the upper surface with yellow veins and are pale and dull on the under surface. They have very small stiff hairs underneath. Male and female flowers occur on the same tree. The male flowers are cylindrical spikes which droop and are 12-30 cm long. The female flowers are grouped in a round head. The flower head develops into the compound fruit. The fruit are large and green. They can be 20 cm across. Seeded kinds have spines, and seedless kinds have a more smooth surface. Seeded, small seeded, and non seeded types occur. There are a number of cultivars of each. Seed can be 2 cm across and with darker lines.

HABITAT

A tropical plant. It occurs in the hot, humid, tropical lowlands. The plant is purely tropical and normally below about 650m altitude, but trees grow from sea level up to about 1150 m. Seeded types are more dominant in the west of Papua New Guinea. Trees are killed by temperatures below 5°C. It probably requires an average temperature over 22°C to grow well. It tends to grow in the temperature range 16°C to 38°C. It grows on a range of soils providing they are well drained. It grows on atolls. There is some cultivar difference in drought tolerance and salt tolerance. Uniformly warm humid climates suit it best. An annual rainfall of 200-250 cm and a relative humidity of 70-80% suits. It suits hardiness zone 11-12. At ECHO.

PRODUCTION

Cultivation

Seeded forms are self sown by birds or bats, and also grown from seed. The presence or absence of seeds significantly affects the production. Seeded trees are mostly propagated by seed which needs to be sown fresh, without seed drying out. Seedless trees are propagated by root cuttings. Cuttings of roots 1.5 cm to 4 cm across and 25 cm long are suitable. Cuttings can be rooted during the wet season, in sand. They should be placed horizontally. They need to be kept moist and shaded. Using intermittent mist improves root formation and cutting establishment. Rooting hormones also assists. This process takes 10 weeks or more and then rooted cuttings should be hardened off in a sunny position for up to 3 more months before planting out into the field. Young plants do best with adequate sun and not shade. Root suckers produced naturally, or by damaging the roots, are a common method of production of new material. Marcottage or budding can also be used for propagation. The vegetatively propagated trees are therefore clones and the variation is presumably therefore somatic. Fruit set can be improved by dusting male flowers onto female flowers 3 days after they emerge.

Because trees often occur from natural seed dispersal by fruit bats and marsupials trees are often randomly spaced and common in secondary forest. A spacing of 10-13m is suitable between trees. Fruit can be 12-22 cm long and 9 - 17 cm wide. The fruit shape varies from round to oblong. Leaves vary from entire to deeply lobed and from rough to smooth and shiny. The central core and the skin are not eaten. Seeded fruit have projecting tuberances on the surface of the fruit. Seedless fruit have rounded or 5 to 6 sided processes on the surface.

Male and female flowers grow separately on the same tree. Male flowers form an oblong catkin while female flowers form a globular head. The flowers are in the axils of leaves. Both flowers normally appear at the same time. Artificial pollination has resulted in increased yields in some places. This is both an increase in fruit size and more fruit retained on the tree to maturity. The pollen in the male flower is available 10 to 15 days after emergence. It is about 3 months from flowering to fruit maturity. Seeded fruit have 30 to 90 seeds per fruit.

Trees rarely receive much attention after establishment but pruning of branches to allow easier access to fruit is sometimes undertaken. Seedless fruit are picked before maturity when the fruit is eaten by boiling. Harvesting mature fruit can be sweeter fruit but they need to be cooked by baking or roasting. Seeded fruit are normally allowed to drop and are then harvested. Seeds are boiled in salted water or roasted. A mature tree can yield up to 700 fruit per year. The seeds are about 20 % of dry matter as protein with a good nutritional balance. The essential amino acid levels are high for vegetable protein. Fresh fruit are highly perishable and need to be handled carefully and efficiently.

Pit preservation of breadfruit involves lactic acid fermentation. The fermentation needs to be undergone for 2 to 3 months to produce a palatable product. Breadfruit slices can be stored under refrigeration in a fresh marketable state at 14°C for up to 10 days. Segments can be boiled for 2 to 5 minutes then frozen at minus 15°C for at least 11 weeks.

Harvesting and Seed Production

Trees begin to bear after 3-6 years. Growth of the trees is vigorous, with fruiting starting after about 3 years. Trees grow to 10-15 m in 10-12 years. Mature trees can be 30 m high. Fruiting can occur over 5-8 months in some locations and this is partly due to varieties with overlapping fruit seasons. A tree can produce 50-150 fruit per year. A fruit can weigh 1-1.6 kg each. Large trees can give 700 fruit per year of 1-4 kg each. An average seed weighs 5 g. Fruit are harvested 65-95 days after flowering.

NOTES

There are about 50 Artocarpus species. They are in the tropics and subtropics of Asia and the Pacific.

PICTURES



Credit: Food Plants International (Bruce French)



Credit: Food Plants International (Bruce French)



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