Areca catechu

L.

Arecaceae

betel nut, areca nut

LOCAL NAMES
English (betelnut palm,arecanut,betel palm,betel-nut,supari palm,pinang palm); Filipino (bunga); French (arec cachou,Arequier); German (Arecapalme,Betelnußpalme); Hindi (adike,poogiphalam,adakka,supari); Italian (Avellana d'India); Malay (adakka-maram,kavugu); Sinhala (puwak); Spanish (palma catechou); Tamil (kamugu); Thai (maak mia); Trade name (areca nut,betel nut); Vietnamese (cao)

BOTANIC DESCRIPTION
Arecanut is an erect, unbranched palm reaching heights of 12-30 m, depending upon the environmental conditions. The stem, marked with scars of fallen leaves in a regular annulated form, becomes visible only when the palm is about 3 years old. Girth depends on genetic variation and soil conditions. Root system adventitious, typical of monocots.

The adult palm has 7-12 open leaves, each with a sheath, a rachis and leaflets. The leaf stalk extends as the midrib until the end of the leaf and ends as leaflets.

Male flowers very numerous, sessile, without bracts; calyx 1-leaved, small, 3-cornered, 3-parted; petals 3, oblong, rigid striated; stamens 6, anthers sagittate. Female flowers solitary or 2 or 3 at or near the base of each ramification of the spadix, sessile, without bracts; sepals permanent; staminodes 6, connate, styles scarcely any; stigmas 3, short, triangular.

Fruit a monolocular, one-seeded berry, 3.8-5 cm long, smooth orange or scarlet when ripe, with a fibrous outer layer.

The generic name is derived from the common name used by the people of the Malabar Coast in southwestern India.

BIOLOGY
Arecanut palm is a monoecious plant with male and female flowers occurring on the same spadix. Every year 3-4 inflorescences are produced. The first inflorescence on young palms may produce only male flowers. The male flowers open for a few hours, shedding pollen most in the morning; bees and other insects collect this. The average male flowering period is 2-4 weeks; after this the stigmas in female flowers become receptive for 3-4 days. The sweet-scented male flowers are visited by bees and other insects for nectar, but insects have not been observed visiting the female flowers. It is thought that most of the flowers are wind pollinated.

Fruits (Trade winds fruit)

Ornamental trees (Rafael T. Cadiz)

Habit of fruiting (Rafael T. Cadiz)

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ECOLOGY
Arecanut almost always exists in cultivation; therefore, conditions of its natural habitat are difficult to assess. It however thrives in areas of high rainfall. Although tolerant to moderate elevations on mountains, it generally does best in low altitudes. Being a shade-loving species, arecanut always does well when grown as a mixed crop with fruit trees.

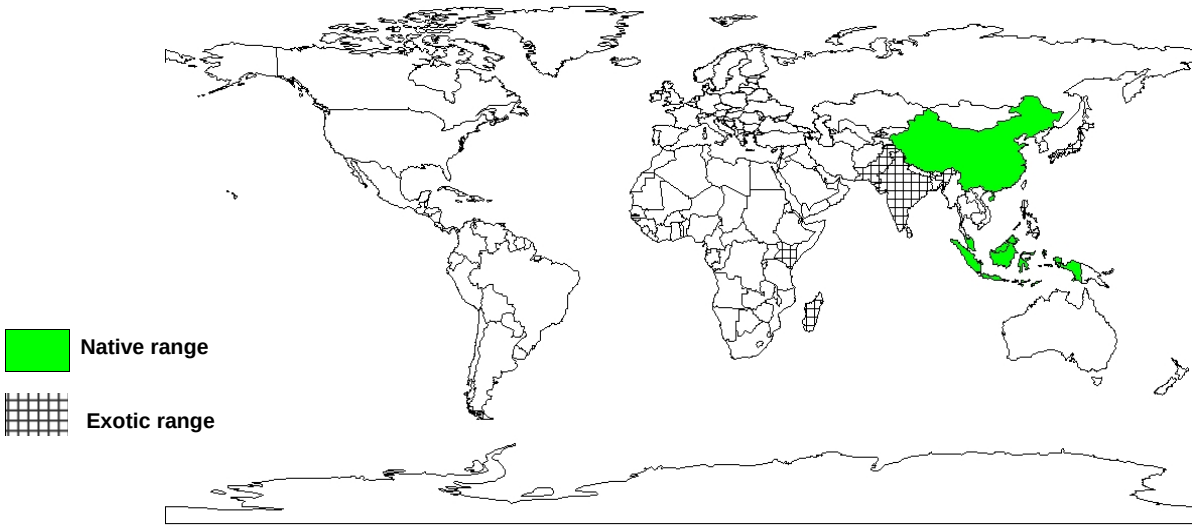
BIOPHYSICAL LIMITS
Altitude: 0-1 000 m, Mean annual temperature: 14-36 deg. C, Mean annual rainfall: 750-4 500 mm

Soil type: Soil should be deep to ensure a well-developed root system with high organic carbon content and a pH range from acidic to neutral.

DOCUMENTED SPECIES DISTRIBUTION

Native: China, Indonesia, Malaysia

Exotic: Fiji, India, Japan, Kenya, Madagascar, Pakistan, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Tanzania, US



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

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PRODUCTS
Fibre: The husk fibres are predominantly composed of cellulose with varying proportions of hemi-cellulose, lignin, pectin and protopectin. Based on various tests, it has been proposed that the husk fibre could be used in making such items as thick boards, fluffy cushions and non-woven fabrics. Trial experiments have shown that satisfactory yield and quality of brown wrapping paper could be prepared from blends of arecanut and bamboo or banana pseudostem pulp.

Timber: Arecanut stem forms a useful building material in the villages, and it is widely used throughout southeast Asia for a variety of construction purposes. The timber can also be used in making a variety of utility articles such as rulers, shelves and waste paper baskets. Nails made from areca stem are widely used in the furniture industry.

Tannin or dyestuff: Long before the nature and properties of tannins were determined, the tannins in arecanut were being used for dyeing clothes, as adhesives in plywood manufacture, and for tanning leather for home use in southeast Asia and the Pacific Ocean countries. The tannins are obtained as a byproduct in preparing immature betelnuts for chewing.

Lipids: The nut contains 8-12% fat that has characteristics comparable with hydrogenated coconut oil. It contains both saturated and unsaturated fatty acids. Arecanut fat can be extracted by using hexane as a solvent, and the fat can be made edible by refining it with an alkali. Simple blending of arecanut fat with butterfat followed by inter-esterification gives good products, acceptable in confectioneries.

Alcohol: Innoculated with Saccharomyces cerevisiae, the leaves of arecanut can be used as a fermentation stimulant in industrial alcohol production.

Poison: The arecanut decoction as well as arecoline and its salts have been found to be effective on various helminth infections such as those caused by Taenia spp.

Medicine: Arecanut is used against anaemia, fits, leucoderma, leprosy, obesity and worms. In combination with other ingredients, it is also a purgative and an ointment for nasal ulcers. Kernels of green and mature fruits are chewed as an astringent and stimulant, often with the leaves or fruit of betel pepper (Piper betle) and lime.

Other products: Arecanut husk can be a good source of furfural. Possibilities of producing activated carbon from the husks have been investigated, and yields of 25-28% have been recorded.

SERVICES
Soil improver: The arecanut leaves are a good source of organic manure, containing nitrogen, phosphorous and potassium.

Ornamental: In Florida and Hawaii, arecanut is used as an ornamental tree.

Intercropping: Experimental evidence indicates that intercropping with arecanut is not harmful to the main crop. When intercropped with black pepper, it acts as a live standard for training the pepper plants. Banana, cardamom, cowpea, paddy, pineapple, sorghum, vegetables and yams are also grown by farmers as intercrops with arecanut.

TREE MANAGEMENT
The spacing for arecanut, a function of soil depth and fertility, varies from 1.25 x 1.25 m to 3.6 x 3.6 m. During the hot weather, young seedlings should be protected from direct sunlight. Artificial shade of arecanut leaves or coconut leaves are often used. Raising a banana shade crop is even better as this supplements the farmer's income. Arecanut is sensitive to drought, and therefore irrigation is essential in areas with prolonged dry spells. Green manuring using leaves and cattle manure has been applied with success in areas with poor soils.

GERMPLASM MANAGEMENT
Seed storage behaviour is uncertain. Despite reports of sensitivity to desiccation, predrying is widely practised in nursery cultivation to promote germination. For example, a report of 52% germination after 21 days drying suggests that A. catechu may not show recalcitrant seed storage behaviour. There are about 63 seeds/kg.

PESTS AND DISEASES
Pests causing major crop losses include leaf-feeding mites such as cholam mite (Oligonynchus indicus) and palm mite (Raoiella indica). Others are spindle bug (Carvalhoia arecae), inflorescence caterpillar (Tirathaba mundella) and root grub (Leucophlis lepidophora). Diseases resulting in heavy economic losses include anaberoga (foot rot), bacterial leaf stripe disease, bud rot, inflorescence die-back, koleroga (rotting disease), stem bleeding, sun scorch and yellow leaf disease.

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SUGGESTED CITATION

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