


# Tamarind

This article is about the tropical plant. For the South American monkey, see Tamarin.

For other uses see Tamarind (disambiguation) and Tamarindo (disambiguation)

Tamarind	
	
Scientific classification	
Kingdom:	Plantae
(unranked):	Angiosperms
(unranked):	Eudicots
(unranked):	Rosids
Order:	Fabales
Family:	Fabaceae
Subfamily:	Caesalpinioideae
Tribe:	Detarieae
Genus:	<i>Tamarindus</i> L.
Species:	<i>T. indica</i>
Binomial name	
<i>Tamarindus indica</i> L.	

**Tamarind** (*Tamarindus indica*) (from Arabic: تمر هندي, romanized *tamar hindi*, "Indian date") is a leguminous tree in the family Fabaceae indigenous to tropical Africa. The genus *Tamarindus* is a monotypic taxon, having only a single species.

The tamarind tree produces edible, pod-like fruit which are used extensively in cuisines around the world. Other uses include traditional medicine and metal polish. The wood can be used in carpentry. Because of the tamarind's many uses, cultivation has spread around the world in tropical and subtropical zones.

## Origin

*Tamarindus indica* is indigenous to tropical Africa, particularly in Sudan, where it continues to grow wild; it is also cultivated in Cameroon, Nigeria and Tanzania. In Arabia, it is found growing wild in Oman, especially Dhofar, where it grows on the sea-facing slopes of mountains. It reached South Asia likely through human transportation and cultivation several thousand years prior to the Common Era. It is widely distributed throughout the tropical belt, from Africa to South Asia, Northern Australia, and throughout Oceania, Southeast Asia, Taiwan and China.

In the 16th century, it was heavily introduced to Mexico, and to a lesser degree to South America, by Spanish and Portuguese colonists, to the degree that it became a staple ingredient in the region's cuisine.

Today, India is the largest producer of tamarind.<sup>[1]</sup> The consumption of tamarind is widespread due to its central role in the cuisines of the Indian subcontinent, South East Asia and South America, particularly in Mexico.

## Description



A tamarind seedling

The tamarind is a long-lived, medium-growth, bushy tree, which attains a maximum crown height of 12 to 18 metres (40 to 60 feet). The crown has an irregular, vase-shaped outline of dense foliage. The tree grows well in full sun in clay, loam, sandy, and acidic soil types, with a high drought and aerosol salt (wind-borne salt as found in coastal areas) resistance.

Leaves are evergreen, bright green in color, elliptical ovular, arrangement is alternate, of the pinnately compound type, with pinnate venation and less than 5 cm (2 inches) in length. The branches droop from a single, central trunk as the tree matures and is often pruned in human agriculture to optimize tree density and ease of fruit harvest. At night, the leaflets close up.



Tamarind

The tamarind does flower, though inconspicuously, with red and yellow elongated flowers. Flowers are 2.5 cm wide (one inch), five-petaled, borne in small racemes, and yellow with orange or red streaks. Buds are pink as the four sepals are pink and are lost when the flower blooms.

The fruit is an indehiscent legume, sometimes called a pod, 12 to 15 cm (3 to 6 inches) in length, with a hard, brown shell. The fruit has a fleshy, juicy, acidulous <sup>[2]</sup> pulp. It is mature when the flesh is coloured brown or reddish-brown. The tamarinds of Asia have longer pods containing six to 12 seeds, whereas African and West Indian varieties have short pods containing one to six seeds. The seeds are somewhat flattened, and glossy brown.

The tamarind is best described as sweet and sour in taste, and is high in tartaric acid, sugar, B vitamins and, oddly for a fruit, calcium.

As a tropical species, it is frost sensitive. The pinnate leaves with opposite leaflets give a billowing effect in the wind. Tamarind timber consists of hard, dark red heartwood and softer, yellowish sapwood.



*Tamarindus* leaves and pod

It is harvested by pulling the pod from its stalk. A mature tree may be capable of producing up to 175 kg (350 lb) of fruit per year. Veneer grafting, shield (T or inverted T) budding, and air layering may be used to propagate desirable selections. Such trees will usually fruit within three to four years if provided optimum growing conditions.

### Etymology

The name ultimately derives from Arabic *tamr-hindī*, meaning "date of India". Several early medieval herbalists and physicians wrote *tamar indi*, medieval Latin use was *tamarindus*, and Marco Polo wrote of

*tamarandi*.<sup>[3]</sup>

### Alternative names

The tree is most numerous in South Asia, where it is widely distributed and has a long history of human cultivation. Many South Asian regional languages have their own unique name for the tamarind fruit. In Sanskrit, it is called *thinthrinee*. In Assamese, it is called *teteli*. It is called *tetul* (তটুল) in Bengali. In Oriya, it is called *tentuli*, in Hindi it is called *imli* (इमली); in Rajasthani, it is known as *aamli* (आम्ली); in Gujarati the *amli*, and Marathi and Konkani चिचि (the chinch); in Kannada it is called *hunase* (ಹುಣಸೆ), Telugu *chintachettu* (tree) and *chintapandu* (fruit extract). In Tamil-speaking regions as such in Tamil Nadu and northern areas of Sri Lanka, the tamarind is known as *puli* (புள்ளி). In Malayalam, it is called *vaalanpuli* (വാളന്പുളി) and in

Pakistan in Urdu, it is known as *imli* (املی) and in Sindhi, it is called *Giddamrii*. In Sri Lanka in Sinhala, it is called *siyambala* (සියම්බලා). Much further west, in Turkey, it is called *demir hindi*.

In Chinese language, tamarind is called *Luówàng Zǐ*, *Suāndòu* or *Suānjiǎo* (罗望子/羅望子, 酸豆, 酸角). In Indonesia and Malaysia, tamarind is known as the *asam* (or *asem*) *Jawa* (means Javanese *asam*), which in the Indonesian and Malay languages, translates as Javanese sour [fruit] (though the literature may also refer to it as *sambaya*). In Khmer language, it is called "âm-pil" (អំពិល). In Laos, it is called *maak-kham* (ມາກກຳມ). In Malagasy, it is called *voamadilo* and *kily*. In Myanmar, it is called *magee-bin* (မဂျီဘိန်) (tree) and *magee-thee* (မဂျီထီး) (fruit). In the Philippines, tamarind is referred to as *sampaloc*, which is occasionally rendered as *sambalog* in Tagalog and *sambag* in Cebuano. The Vietnamese term is *me*. The tamarind is the provincial tree of the Phetchabun province of



Tamarind flowers



Raw tamarind fruits

Thailand, where it is called *má kǎam* (มะขาม). The Yolngu people of Australia's northeastern Arnhem Land call Tamarind *djangbang* or *jambung*.



Tamarind tree, India

In the Cook Islands in the Cook Islands Māori language (also called *Māori Kūki Āirani* or *Rarotonganis* language), *Tamarindus* is called *tamarene*.

In Ghana, it is called *dawadawa*. In Malawi, it is called *bwemba*. In Zambia (nyanja) it is called *viwawasha*. In Nigeria, it is called *tsamiya* (Hausa language) and *awin* (Yoruba language). In the Kiswahili language of east and central Africa, it is called *ukwaju*. In Somalia it is called *Hamaar*. In Sudan it is called *Aradiieb*.

In Colombia, the Dominican Republic, Mexico, Puerto Rico, Venezuela and throughout the Lusosphere, it is called *tamarindo*. In the Caribbean, tamarind is sometimes called *tamón*. In Trinidad and

Tobago and most other Caribbean countries, however, it is also called *tambran* or *tambrin*.

Tamarind (*Tamarindus indica*) should not be confused with "Manila tamarind" (*Pithecellobium dulce*). While in the same taxonomic family Fabaceae, Manila tamarind is a different plant native to Mexico and known locally as *guamúchil*.

## Cultivation

Seeds can be scarified or briefly boiled to enhance germination. They retain germination capability after several months if kept dry.

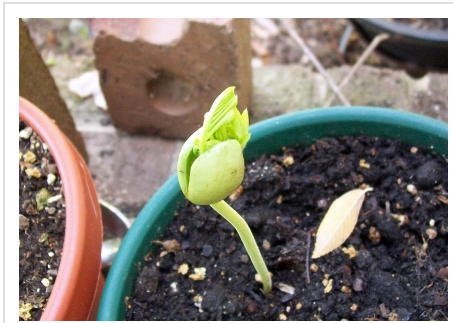
The tamarind has also long been naturalized in Indonesia, Malaysia, the Philippines, and the Pacific Islands. Thailand has the largest plantations of the ASEAN nations, followed by Indonesia, Myanmar, and the Philippines. The pulp is marketed in northern Malaya. It is cultivated all over India, especially in the Indian states of Andhra Pradesh and Tamil Nadu. Extensive tamarind orchards in India produce 275,500 tons (250,000 MT) annually.

Commercial plantations throughout tropical Latin America include Brazil, Costa Rica, Cuba, Guatemala, Mexico, Nicaragua, Puerto Rico and Venezuela.

In the United States, it is a large-scale crop introduced for commercial use, second in net production quantity to India, in the mainly Southern states due to tropical and semitropical climates, notably South Florida, and as a shade and fruit tree, along roadsides and in dooryards and parks.

## Usage

### Culinary uses



Three-day-old tamarind seedling

### Tamarinds, raw

Nutritional value per 100 g (3.5 oz)	
<b>Energy</b>	239 kcal (1,000 kJ)
<b>Carbohydrates</b>	62.5 g
<b>Sugars</b>	57.4
<b>Dietary fiber</b>	5.1 g
<b>Fat</b>	0.6 g
<b>Protein</b>	2.8 g
<b>Vitamins</b>	
<b>Thiamine (B1)</b>	(37%) 0.428 mg
<b>Riboflavin (B2)</b>	(13%) 0.152 mg
<b>Niacin (B3)</b>	(13%) 1.938 mg
<b>Pantothenic acid (B5)</b>	(3%) 0.143 mg
<b>Vitamin B6</b>	(5%) 0.066 mg
<b>Folate (B9)</b>	(4%) 14 µg
<b>Choline</b>	(2%) 8.6 mg
<b>Vitamin C</b>	(4%) 3.5 mg
<b>Vitamin E</b>	(1%) 0.1 mg
<b>Vitamin K</b>	(3%) 2.8 µg
<b>Trace metals</b>	
<b>Calcium</b>	(7%) 74 mg
<b>Iron</b>	(22%) 2.8 mg
<b>Magnesium</b>	(26%) 92 mg
<b>Phosphorus</b>	(16%) 113 mg

<b>Potassium</b>	(13%) 628 mg
<b>Sodium</b>	(2%) 28 mg
<b>Zinc</b>	(1%) 0.1 mg
Link to USDA Database entry <sup>[4]</sup>	
<ul style="list-style-type: none"> <li>• Units</li> <li>• µg = micrograms • mg = milligrams</li> <li>• IU = International units</li> </ul>	
Percentages are roughly approximated using US recommendations for adults. Source: USDA Nutrient Database <sup>[5]</sup>	

The fruit pulp is edible. The hard green pulp of a young fruit is considered by many to be too sour, but is often used as a component of savory dishes, as a pickling agent or as a means of making certain poisonous yams in Ghana safe for human consumption. Wikipedia:Citation needed

The ripened fruit is considered the more palatable, as it becomes sweeter and less sour (acidic) as it matures. It is used in desserts as a jam, blended into juices or sweetened drinks, sorbets, ice creams and all manner of snacks.

In Western cuisine, it is found in Worcestershire sauce and HP sauce.

In most parts of India, tamarind extract (dried tamarind available commercially is heated in water and strained out leaving the extract) is used to flavor foods ranging from meals to snacks. Along with tamarind, sugar and spices are added to (regional) taste for chutneys or a multitude of condiments for a bitter-sweet flavor. The immature pods and flowers are also pickled and used as a side dish. In regional cuisines, such as Rajasthan, Maharashtra (where it is called *chinchā*), Tamil Nadu (where it is called *puli*) and Andhra Pradesh, (where it is called *Chintha pandu*) it is used to make *rasam*, *amtee*, *sambhar*, *vatha kuzhambu*, *puliyogare* and chutneys and pickles. In Andhra Pradesh and Tamil Nadu, tender leaves of tamarind called *chintha chiguru* (చింత చిగురు) and *puliyankozhunthu* (புளியங்கொழுந்து), respectively, are used with lentils to make raw chutney. In the state of Andhra Pradesh "Chintha pandu" (Tamarind) is an essential ingredient in their "Pulihora" "Fish Pulusu", majority of "vegetable Pulusu curries", "Chaaru" "Pappu Chaaru" "Nilava Patchallu" and "Chethi Patchallu". Curries made of "Chintha Chiguru"(tender leaves of tamarind tree) mixed with prawns, meat or pulses ("Chintha Chiguru Royyala Koorā", "Chintha Chiguru Maamsam Koorā" or Chintha Chiguru Pappu" respectively) are great delicacies in Andhra Pradesh. In Karnataka, India, the tamarind, called *hunasaē hannu*, is used in *saaru* (lentil soup), *sambhar* or *sambar* (vegetable soup), *gojju* (sauce), and several types of chutneys. In southern parts of Kerala, mostly along the coastal belt, it is added to fish curry masalas, with ground coconut for flavoring. It is also used extensively as preservative and in pickles (thokku).

In the Chinese province of Yunnan, tamarind is used in making jam or chilled drink.

In Guadeloupe, tamarind is known as *tamarinier* and is used in jams and syrups.



Tamarind sweets in a Mexican candy boutique

In Mexico, it is used in sauces or sold in various snack forms: dried and salted; in sweet, soft clusters, or candied (see for example *chamoy* snacks). *Agua de tamarindo*, a fresh beverage made from tamarind, is popular throughout the country. *Agua fresca* beverages, iced fruit bars and *raspados* all use it as the main ingredient. Jarritos is a well-known export brand soda drink (tamarind is the second most popular flavour of the brand). Mexican tamarind snacks, such as "Batilongo", *Pelon Pelo Rico* and *Pulparindo* are available in specialty food stores worldwide. Often in Mexico, tamarind is plucked off the tree and eaten raw.

A variant of the traditional Mexican mole sauce is made with tamarind paste in addition to the more traditional ingredients of mole, such as chile ancho and chocolate. This version is not very well known outside of the city of Oaxaca.

A sour, chilled drink made from tamarind is served in Egypt.

A traditional food plant in Africa, tamarind has potential to improve nutrition, boost food security, foster rural development and support sustainable landcare.

In Jamaica, Grenada, Trinidad and Tobago, Colombia, Mexico and other Latin American countries tamarind is rolled into balls (5 cm in diameter) with white granulated sugar and a blend of spices to create *tamburan* balls.

The Javanese dish *gurame* and more so *ikan asem*, also known as *ikan asam* (sweet and sour fish, commonly a carp or river fish) is served throughout Indonesia, Malaysia and Singapore; some dishes in Manado, Sulawesi and Maluku cuisines use tamarind.

In southern Kenya, the Swahili people use it to garnish legumes and also make juices. In Somalia, it is used to give rice some sour flavour. In Lebanon, the Kazouza company sells a tamarind-flavoured carbonated beverage.

Across the Middle East, from the Levant to Iran, tamarind is used in savory dishes, notable meat-based stews, and often combined with dried fruits to achieve a sweet-sour tang.

In Myanmar, young and tender leaves and flower buds are eaten as a vegetable. A salad dish of tamarind leaves, boiled beans, and crushed peanuts topped with crispy fried onions is served in rural Myanmar. Wikipedia:Citation needed

In Madagascar, its fruits and leaves are a well-known favorite of the ring-tailed lemurs, providing as much as 50% of their food resources during the year if available.

In northern Nigeria, it is used with millet powder to prepare *kunun tsamiya*, a traditional pap mostly used as breakfast, and usually eaten with bean cake. Wikipedia:Citation needed

In the Philippines, tamarind is used in foods like *sinigang* soup, and also made into candies. The leaves are also used in *sinampalukan* soup.

In Thailand, a cultivar has been bred specifically to be eaten as a fresh fruit: it is particularly sweet and minimally sour. It is also sometimes eaten preserved in sugar with chili as a sweet-and-spicy candy. Tamarind is an essential souring ingredient in the central Thai variant of *kaeng som*, a sour curry. Pad Thai often includes tamarind for its tart/sweet taste (with lime juice added for sourness and fish sauce added for saltiness and umami). A tamarind-based sweet-and-sour sauce is served over deep-fried fish in central Thailand.

In Turkey, it is called *demirhindi*, and is consumed as a sweetened cold drink. It is also available as a fruit, but is not well known by the general population since it is not grown locally and is imported.



Tamarind balls from Trinidad and Tobago

In Vietnam, tamarind is eaten fresh or processed into a sweet, sour and sometimes spicy candy. Tamarind is also one of the main ingredients in the Vietnamese sour soup, Canh chua.



*Tamarindus indica* tree at Bhopal

### **Traditional medicinal uses**

Throughout Southeast Asia, fruit of the tamarind is used as a poultice applied to foreheads of fever sufferers. Based on human study, tamarind intake may delay the progression of skeletal fluorosis by enhancing excretion of fluoride. However, additional research is needed to confirm these results.

### **Carpentry uses**

Tamarind wood is a bold red color. Due to its density and durability, tamarind heartwood can be used in making furniture and wood flooring.

### **Metal polish**

Tamarind concentrate can be used to remove tarnish from brass and copper.

In temples, especially in Buddhist Asian countries, the fruit pulp is used to polish brass shrine statues, lamps, and other objects, removing tarnish and the greenish patina that forms. In south Indian homes and temples tamarind is widely used to clean the copper and bronze utensils. Wikipedia:Citation needed

### **Horticultural uses**

Throughout Asia and the tropical world, tamarind trees are used as ornamental, garden and cash crop plantings. Commonly used as a bonsai species in many Asian countries, it is also grown as an indoor bonsai in temperate parts of the world.

### **Research**

In hens, tamarind has been found to lower cholesterol in their serum, but not in the yolks of the eggs they laid. Due to a lack of available human clinical trials, there is insufficient evidence to recommend tamarind for the treatment of hypercholesterolemia or diabetes.



Tamarind on a place of the foundation of city  
Santa Clara, Cuba



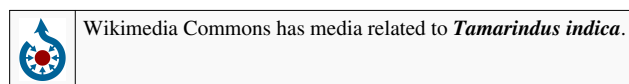
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## External links



- *Tamarindus indica* ([http://www.westafricanplants.senckenberg.de/root/index.php?page\\_id=14&id=1535](http://www.westafricanplants.senckenberg.de/root/index.php?page_id=14&id=1535)) in Brunken, U., Schmidt, M., Dressler, S., Janssen, T., Thiombiano, A. & Zizka, G. 2008. West African plants – A Photo Guide. [www.westafricanplants.senckenberg.de](http://www.westafricanplants.senckenberg.de).
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