

The Palmyra or Toddy Palm (*Borassus flabellifer* L.)

Abstract

Morton, J.F. (1988) Notes on Distribution, Propagation, and Products of *Borassus* Palms (Arecaceae). *Economic Botany* (1988) 42(3): 420-441

The palmyra palm is a large tree up to 30m high and the trunk may have a circumference of 1.7m at the base. There may be 25-40 fresh leaves. They are leathery, gray green, fan-shaped, 1-3 m wide, folded along the midrib; are divided to the center into 60-80 linear-lanceolate, 0.6-1.2 m long, marginally spiny segments. Their strong, grooved petioles, 1-1.2 m long, black at the base and black-margined when young, are edged with hard spines.

It grows wild from the Persian Gulf to the Cambodian-Vietnamese border; is commonly cultivated in India, Southeast Asia, Malaysia and occasionally in other warm regions including Hawaii and southern Florida. In India, it is planted as a windbreak on the plains. It is also used as a natural shelter by birds, bats and wild animals.

Each palm may bear 6-12 bunches of about 50 fruits per year. An average crop of *B. flabellifer* in Ceylon is 350 fruits.

The coconut-like fruits are three-sided when young, becoming rounded or more or less oval, 12-15 cm wide, and capped at the base with overlapping sepals. The outer covering is smooth, thin, leathery, and brown, turning nearly black after harvest. Inside is a juicy mass of long, tough, coarse, white fibers coated with yellow or orange pulp. Within the mature seed is a solid white kernel which resembles coconut meat but is much harder. When the fruit is very young, this kernel is hollow, soft as jelly, and translucent like ice, and is accompanied by a watery liquid, sweetish and potable.

Toddy

The chief product of the palmyra is the sweet sap (toddy) obtained by tapping the tip of the inflorescence, as is done with the other sugar

palms and, to a lesser extent, with the coconut. The sap flows for 5-6 mo - 200 days in Ceylon - each male spadix producing 4-5 l per day; the female gives 50% more than the male. The toddy ferments naturally within a few hours after sunrise and is locally popular as a beverage; it is distilled to produce the alcoholic liquor called palm wine, arrack, or arak. Rubbing the inside of the toddy-collecting receptacle with lime paste prevents fermentation, and thereafter the sap is referred to as sweet toddy, which yields concentrated or crude sugar (gur in India; jaggery in Ceylon); molasses, palm candy, and vinegar.

Palmyra palm jaggery (gur) is much more nutritious than crude cane sugar, containing 1.04% protein, 0.19% fat, 76.86% sucrose, 1.66% glucose, 3.15% total minerals, 0.861 % calcium, 0.052% phosphorus; also 11.01 mg iron per 100 g and 0.767 mg of copper per 100 g. The fresh sap is reportedly a good source of vitamin B complex.

Seedlings

The peeled seedlings are eaten fresh or sun-dried, raw, or cooked in various ways. They also yield starch, which is locally made into gruel, with rice, herbs, chili peppers, fish, or other ingredients added. It has been proposed for commercial starch production.

Fruits

Small fruits are pickled in vinegar. In April and May in India, the shell of the seed can be punctured with a finger and the sweetish liquid sucked out for refreshment like coconut water.

Immature seeds are often sold in the markets. The kernels of such young seeds are obtained by roasting the seeds and then breaking them open. The half-grown, soft-shelled seeds for the hollow jelly-like kernels are sliced longitudinally to form attractive loops, or rings and these, as well as the whole kernels, are canned in clear, mildly-sweetened water, and exported. Tender fruits that fall prematurely are fed to cattle.

The pulp of mature fruits is sucked directly from the wiry fibers of roasted, peeled fruits. It is also extracted to prepare a product called punatoo in Ceylon. It is eaten alone or with the starch from the palmyra seedlings. The fresh pulp is reportedly rich in vitamins A and C.

Proximate analyses of leaves, fruit, seedlings, immature seed, and "seed" of *B. flabellifer* have been assembled from various sources by Atchley (1984) (see below).

Folk Medicine

There are innumerable medicinal uses for all parts of the palmyra palm. Briefly, the young plant is said to relieve biliousness, dysentery, and gonorrhoea. Young roots are diuretic and anthelmintic, and a decoction is given in certain respiratory diseases. The ash of the spadix is taken to relieve heartburn and enlarged spleen and liver. The bark decoction, with salt, is used as a mouth wash, and charcoal made of the bark serves as a dentifrice. Sap from the flower stalk is prized as a tonic, diuretic, stimulant, laxative and anti phlegmatic and amebicide. Sugar made from this sap is said to counteract poisoning, and it is prescribed in liver disorders. Candied, it is a remedy for coughs and various pulmonary complaints. Fresh toddy, heated to promote fermentation, is bandaged onto all kinds of ulcers. The cabbage, leaf petioles, and dried male flower spikes all have diuretic activity. The pulp of the mature fruit relieves dermatitis.

Chemical analysis

As % of dry matter

	DM	CP	CF	Ash	EE	NFE	Ca	P	Ref
Leaves	-	13.3	38.0	7.4	4.6	74.7	-	-	*
Fruit	-	6.5	16.1	4.8	0.8	87.9	0.22	0.24	*
Immature Seed	-	5.1	7.9	1.7	0.6	92.7	0.17	0.18	*
Shoot	-	8.9	7.2	3.3	0.7	87.2	0.06	0.46	*
Fruit	-	3.1	-	3.1	0.9	93.4	-	-	*
Seed	-	8.1	-	3.5	1.4	85.1	-	-	*

*Atchley (1984)

Reference

Atchley, A. A. 1984. Nutritional value of palms. *Principes*

28(3):138-143.