Hyphaene thebaica (L.) Mart.

Arecaceae

LOCAL NAMES
Amharic (zembaba); Arabic (dom); English (gingerbread palm,Egyptian doum palm,doum palm); French (palmier doum); Swahili (mkoma); Tigrigna (kambash,arkobkobai)

BOTANIC DESCRIPTION
Hyphaene thebaica is a deciduous palm 10-17 m high, with a girth of 90 cm. Trunk is Y-shaped, and the tree is easily recognizable by the dichotomy of its stem forming up to 16 crowns. Bole fairly smooth but clearly showing the scars of the fallen leaves. Bark dark grey.

Leaves 120 x 180 cm, fan shaped, in tufts at the ends of branches with the blade divided into segments about 60 cm long, margins entire; leaf stalk about 60 cm long, armed with curved thorns; petiole more than 1 m long, sheathing at the base with numerous upwardly curving hooks.

Male and female flowers on separate trees. The inflorescence is similar in both sexes, up to 1.2 m long, with short branches at irregular intervals and 2-3 spikes arising from each branch. Male flowers shortly stalked, solitary in pits of the spadix, spathe-bracts encircling the spadix, pointed. Branches of female spadices stouter, in the fruiting stage marked by densely tomentose cushions after the fall of the fruit.

The female palm produces woody fruits that persist on the tree for a long time. They are 6-10 x 6-8 cm, smooth, rectangular to cubical, with rounded edges, shiny brown when ripe, about 120 g each when fresh, 60 g when dry, each containing a single seed. Seeds 2-3.5 x 3 cm, ivory in colour, trunkate at base, apex obtuse.

Hyphaene is derived from the Greek word ‘hyphaino’ (web), referring to the fibres from the leaves, which are used for weaving.

BIOLOGY
Male and female flowers are on different trees; hermaphrodite trees do occur rarely, but their fruits are smaller and sterile. In the Sudan, flowering occurs from February to April and fruiting from November onwards. First fruiting is after 6-8 years. Fruit ripens after 6-8 months, and fruiting takes place at the end of the dry season. In Nigeria, fruit appears in March and persists until the following season’s flowers appear.

ECOLOGY
H. thebaica is one of the 11 species of the genus found in Africa. Widespread in the Sahel, it grows from Mauritania to Egypt, from Senegal to Central Africa and east to Tanzania. The tree tends to grow close to groundwater but can also grow farther away. It is also found in parts of the Sahara where water occurs, in oases and wadis, and is widely distributed near rivers and streams, sometimes on rocky slopes. It does not do well in waterlogged areas; it is very resistant to bush fires. Trees occur on silty soils on river and stream banks and on rocky hilly slopes throughout the Sudan.

BIOPHYSICAL LIMITS
Altitude: 0-1400 m, Mean annual temperature: Above 28 deg. C, Mean annual rainfall: (min. 50) 100-600 mm

Soil type: Tolerant of a wide variety of soils, but it is an indicator of good soils with a high water table. It tolerates medium salinity and the optimal pH is 6.5-7.5, mostly on sand dunes.

DOCUMENTED SPECIES DISTRIBUTION

Native: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Cote d'Ivoire, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Sudan, Tanzania, Togo

Exotic: India

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.

PRODUCTS
Food: The covering of the fruit is edible and can either be pounded to form a powder or cut off in slices; the powder is often dried then added to food as a flavouring agent. Young shoots produce tasty palm cabbage; the hypocotyl is edible, and so are the immature seeds if well prepared.

Fodder: Trees are browsed to a limited extent by livestock, especially in dry periods.

Fuel: Palms are occasionally used for firewood and charcoal; leaves may also be used as fuel.

Fibre: Leaves are probably the most important part of the palm, providing the raw material used in basketry, making mats, brooms, coarse textiles, ropes, thatching and string. Root fibres obtained after 2-3 days of soaking and beating of the roots are used for making fishing nets.

Timber: Wood can be cut using an axe, but is difficult to saw due to the many fibres that constitute the wood. Timber from the male palm is said to be better than that from the female, as it is borer and termite proof, decorative and durable. It is often used for construction, providing supports and rafters for houses, water ducts and wheels, railway sleepers, planks, fence posts and raft construction.

Tannin or dyestuff: Dried bark is used to produce a black dye for leatherwear.

Alcohol: In Turkana, Kenya, the powder made from the outer covering of the fruit is added to water and milk and left to stand to make a mild alcoholic drink; in other countries, the terminal meristem is tapped for making palm wine.

Medicine: Roots are used in the treatment of bilharzia, while fruit pulp is chewed to control hypertension. Sore eyes in livestock are treated using charcoal from the seed kernel.

Other products: The hard seed inside the fruit, known as ‘vegetable ivory’, is used to make buttons and small carvings, and as artificial pearls. Ashes from the stipes of trees can be used as a substitute for salt.

SERVICES
Erosion control: Doum palm is grown on river banks to stabilize them.

TREE MANAGEMENT
Growth is known to be relatively slow, and after germination a single strip-shaped leaf is produced, with fan-shaped leaves being produced at ground level 2-3 years after germination. At this stage, a new leaf is produced every 7 days and the stem is produced after 18-20 years. This fire-resistant species is managed by coppicing and lopping. Mature trees of 6-8 years produce 50 kg of fruit/year. Palm trees that are tapped for production of wine need to be protected from browsing camels.

GERMPLASM MANAGEMENT
Seed storage behaviour is uncertain.

PESTS AND DISEASES
Wood from female palms is susceptible to attack by termites and borers.

FURTHER READNG

Abbiw D. 1990. Useful plants of Ghana. Intermediate Technology Publications and the Royal Botanical Gardens, Kew.

Anon. 1986. The useful plants of India. Publications & Information Directorate, CSIR, New Delhi, India.

Bein E. 1996. Useful trees and shrubs in Eritrea. Regional Soil Conservation Unit (RSCU), Nairobi, Kenya.

Bekele-Tesemma A, Birnie A, Tengnas B. 1993. Useful trees and shrubs for Ethiopia. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).

Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium. Handbooks for Genebanks: No. 4. IPGRI.

Keay RW. 1989. Trees of Nigeria. Claredon Press Oxford.

Lanzara P. and Pizzetti M. 1978. Simon & Schuster's Guide to Trees. New York: Simon and Schuster

Sahni KC. 1968. Important trees of the northern Sudan. United Nations and FAO.

Vogt K. 1995. A field guide to the identification, propagation and uses of common trees and shrubs of dryland Sudan. SOS Sahel International (UK).

von Maydell HJ. 1986. Trees and shrubs of the Sahel - their characteristics and uses. GTZ 6MBH, Eschborn.

SUGGESTED CITATION

Orwa C, Mutua A , Kindt R , Jamnadass R, Simons A. 2009. Agroforestree Database:a tree reference and selection guide version 4.0 (http://www.worldagroforestry.org/af/treedb/)