Phoenix dactylifera

L.

Arecaceae

khajur, khaji, date palm

LOCAL NAMES
Amharic (yetemir zaf); Arabic (temer,tamar,khuriude-yális,nakhal); Bengali (khajur); Creole (datte); Dutch (dadelpalm); English (wild date palm,date,sugar palm,date palm); French (dattier,dattie,palmier dattier,datte); German (dattelpalme); Hindi (ittappuzham,khaji,salma,khajur,sendhi,khorjjuri); Italian (Palma del dattero); Spanish (dátil,datilera,palmera); Swahili (mtende); Swedish (dadelpalm); Tamil (karchuram,perichchankay); Tigrigna (temri); Trade name (khaji,khajur,date palm)

BOTANIC DESCRIPTION
Phoenix dactylifera grows to a height of over 30 m; the stem and new leaves grow from the single terminal bud at the stem apex; roots grow from the base of the trunk, sometimes 50 cm above the ground; main roots about 1.5 cm thick.

Leaves enormous, up to 7 m long with a relatively short (50 cm) rachis base or petiole; pinnate, the 50-60 pairs of leaflets long and narrow, attached to a stout central midrib or rachis. They have a normal life of 3-7 years.

Inflorescence is produced in the axil of a 1-year-old leaf; a branched spadix enclosed in a tough spathe that bursts open when the flowers are mature. Male flowers waxy and creamy with 6 stamens and no carpels; female flowers whitish, with 6 rudimentary stamens and 3 carpels.

Fruits are yellow to reddish-brown, each with a single seed up to 2.5 cm long, deeply grooved, with a very hard endosperm. There are hundreds of date cultivars, of which only about 60 are widely grown throughout the 15 major date-growing countries.

‘Phoenix’ is a very old name, used by Theophrastus, indicating that the tree was 1st introduced to the Greeks by the Phoenicians. The specific name derives from the elongated shape of the fruits, resembling the fingers of the hand, from the Greek word ‘dactylos’ (finger), and the Latin word ‘fero’ (I bear).

BIOLOGY
In 4 or 5 years, the crown clears the ground and the 1st flowering can be expected. P. dactylifera is dioecious. The many varieties are strongly out-breeding, so suckers from quality trees are in high demand for their guaranteed quality.

A tree affected by Fusarium oxysporum f.sp. albedinis showing wet feather symptoms (FAO in collaboration with CABI)

Fusarium oxysporum f.sp. albedinis cultures (FAO in collaboration with CABI)

A precocious date palm bunch from an EMBRAPA trial in Bahia, Brazil. The palms are from tissue culture clones. (Griffee P.)

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ECOLOGY
For commercial production, a long summer with high day and night temperatures, a mild winter without prolonged frost, and dry and sunny weather at pollination, flowering and fruit setting are adequate. Its high salt tolerance is largely attributable to its chloride ions exclusion ability during water absorption from saline soils this however reduces growth and results in poor quality fruits.

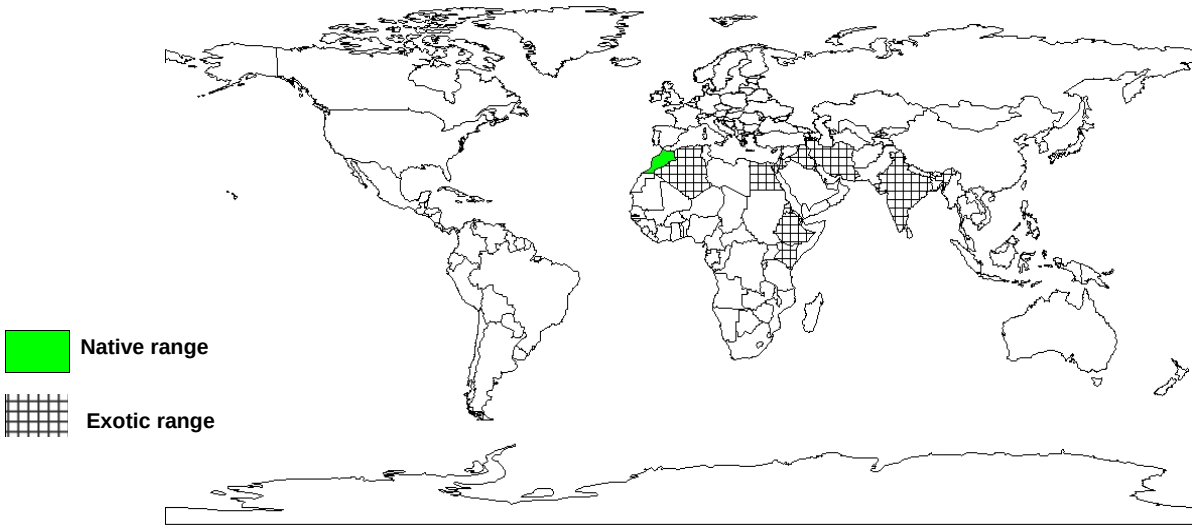
BIOPHYSICAL LIMITS
Altitude: Up to 1 500 m, Mean annual temperature: -15 to 50 deg C, Mean annual rainfall: 100-300 mm

Soil type: Though the palms are grown in soils varying from sands to clays, they should be well-drained. P. dactylifera is tolerant to salinity in the soil.

DOCUMENTED SPECIES DISTRIBUTION

Native: Morocco, Palestine

Exotic: Algeria, Egypt, Eritrea, Ethiopia, Greece, India, Iran, Iraq, Israel, Jordan, Kenya, Lebanon, Libyan Arab Jamahiriya, Namibia, Pakistan, Saudi Arabia, Somalia, Spain, Sudan, Tunisia, Turkey, US, Zanzibar



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
Food: The most important use of P. dactylifera is for its fruit, which forms the staple diet of many people in Africa and the Middle East and is as well a cash crop for export. The seeds are roasted and kernels ground as a coffee substitute. Terminal bud leaves are eaten as a vegetable. The sap can be boiled into unrefined sugar.

Fodder: The seeds (stones) when ground and softened by soaking in water are used for feeding camels, goats and horses and have successfully been substituted as a poultry feed.

Fuel: The wood can be used as fuelwood.

Fibre: The leaves are used in mats, ropes, fans and baskets; the petiole yields a fibre, which together with other suitable material is used for insulating boards.

Timber: The trunks are strong and resistant to termites, providing much valued construction timber.

Alcohol: Wherever fruiting is poor, the sap is the main product. It can be drunk fresh, fermented and drunk as toddy, or distilled and drunk as arrack. The yield of sap varies with management and site conditions, but it is in the range of 4-8 l/day.

Medicine: Dates are a demulcent, an expectorant and a laxative, and are used to treat respiratory diseases and fever. The tree yields a gum used in treating diarrhoea.

SERVICES
Erosion control: The leaves are applied in sand dune stabilization.

Shade or shelter: Old leaves of P. dactylifera are used for thatching.

Reclamation: Being a halophytic species, P. dactylifera has been used for decades for the revegetation of salt affected lands in the Mediterranean region.

Boundary or barrier or support: Dried leaves with their stiff, woody rachis are used for fencing.

Soil improver: Prunings of leaves are used as manure.

Ornamental: The genus Phoenix is one of the most widely cultivated groups of palms, its species being extensively used for bold landscape planting, as individual specimens, for avenue planting, and to a lesser extent, as potted plants.

Intercropping: P. dactylifera while young occupies a lot of space, so a decision to introduce it into cultivated fields must be taken carefully. But once mature, its wide crown grows high above the field crops, and it little affects the yield of cultivated crops. In many places, numerous palms are found in arable fields of suitable regions.

TREE MANAGEMENT
After being removed from the mother tree, the trunk suckers must be planted precisely at a spacing of 9-10 m apart in their locations. Watering is essential in the 1st 1 or 2 years, and they must be weeded. Initial growth is slow while the number of leaves increases gradually; the dead leaves are usually removed. Pollination is critical for good fruiting; therefore, pollen is usually artificially introduced to the female flowers by cutting male inflorescence and placing it strategically within the female one, which may be thinned a little to accommodate it. It is important that male trees are planted with females in ratios of about 1:50.

GERMPLASM MANAGEMENT
Seed storage behaviour is orthodox, with little loss in viability after 1 year of storage at room temperature; viability can be maintained for 8-15 years at room temperature. Seeds tolerate desiccation to 5.8% mc; no loss in viability after 3 years of subsequent hermetic storage. There are approximately 800 seed/kg.

PESTS AND DISEASES
Mites and insects (including Coleoptera, Homoptera, Isoptera and Lepidoptera) are listed as damaging to P. dactylifera. Pests include the bank grass mite (Olygonychus pratensis) in the USA, Old-World date mite (O. afrasiaticus), Iran and Iraq green scale (Asterolecanium phoenicus), palm stalk borer (Pseudophilus testaceus), and desert locust (Schistocera americana).

Several diseases have been reported in the date-growing areas, including Bayoud disease, an epiphytotic disease caused by Fusarium oxysporium. The affected fronds take on a leaden hue and then wither. Significant reduction in the amount of irrigation water and isolation of diseased trees by trenches up to 2 m deep have proved useful control measures. Khamedi disease, an inflorescence rot caused by Mauginiella scaettae affecting date-growing areas from Libya to Morocco, is another serious plantation disease. Good sanitation and efficient maintenance of date-growing areas have proved effective control measures. Other diseases include graphiola leaf spot, diplodia disease, black scorch, belaat disease, omphalia root rot, brown leaf spot and lethal yellowing.

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SUGGESTED CITATION

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