

**LEC .22 DATE PALM - SOIL, CLIMATE, PLANTING, VARIETIES,
NUTRIENT AND WATER MANAGEMENT, SPECIAL CULTURAL
OPERATIONS, PHYSIOLOGICAL DISORDERS, PESTS AND DISEASES,
MANAGEMENT PRACTICES**

DATE PALM

Phoenix dactylifera

Family : Palmae

Date palm is a nutritive fruit rich in sugar and iron and predominantly seen in desert oasis. It is believed to have originated in countries around Persian Gulf such as Iraq (Mesopotamia) and Egypt. The flesh contains 60 – 65 percent sugar, 2 percent protein, 2.5 percent fibre, 0.4 per cent fat and 2 per cent mineral matter. It is a good source of easily assimilable iron (7.3 mg/100g) and hence prescribed to anemic patients along with honey.

Climatic and soil requirements :

Dates can be successfully cultivated in areas having long hot summer and mild temperature during flowering (February to April) and fruit ripening (May to August) should be 25 to 29°C. As in the case of grapes, this crop also requires specific heat units (above a base of 10°C nearly 3000 units for successful fruit maturation. There should not be any rains or high humidity during fruit maturity and ripening. Otherwise the fruits will be spoiled. The crop is susceptible to frost.

Deep sandy loam are the best suited though it is very hardy and can be grown in a wide range of soil conditions. Better water holding capacity with good drainage is desirable. It can grow in alkaline and saline soil, however, the growth and productivity are affected.

Cultivars :

Depending on the season of ripening, the cultivars are classified as early, mid and late cultivars. Though there are nearly 40 cultivars imported from Middle East and North Africa, few only were found to be promising, under Indian conditions.

Halawy :

An early variety with small fruits. At full maturity before ripening (doka stage) the fruits are yellow in colour and free from astringency.

Khadrawy :

Small to medium sized fruits; light yellow at doka stage.

Barhee :

Mid –season to slightly late cultivar with small to medium sized fruits, yellow colour and low astringency at doka stage.

Zahid :

Mid – season cultivar with small to medium sized fruits ; it is tolerant to rain and humidity.

Medjool :

A late cultivar; fruits are large, broad, oblong-ovate, orange yellow with reddish brown stippling at doka stage.

Propagation and planting :

Though it is propagated by seeds, the seedlings exhibit a very long juvenile phase nearly taking 7 – 8 years for flowering. Besides this, the population segregates for male and female plants and the resulting all female plants also may not be uniform in bearing. Hence vegetative propagation through off-shoots produced by a female mother plant of particular cultivar can be used for planting . After about 4- 6 years, 2-3 off shoots can be obtained from a mother plant for a period of 8 – 10 years. To encourage rooting, the base of off-shoots arising from the mother plant are applied with moist soil by putting a soil boxes at least for a period of one year before separation. Each matured off-shoot may weigh 25-35 kg. Planting of off-shoots can be done during late spring or early summer by cutting with a help of a specially designed chisel. Most of the basal leaves are removed and only the terminal bud with 10-12 leaves around it are retained. Depending on the soil fertility, the spacing varies from 4M – 9M. Commercially as spacing of 6

to 8 M is adopted. In India a spacing of 3 M – 4M is adopted. For effecting pollination under commercial cultivation 2-3 male plants are planted for every 100 female plants.

Irrigation, manuring and interculture :

Light and frequent irrigations have to be given immediately after planting and the basins can be mulched. Though date palm is drought tolerant, 2-3 M around root zone is to be kept moist for maximum growth. The irrigation frequency varies with season. Date palm is highly tolerant to saline water (even upto 2500 ppm). But to overcome drainage problem arising out of saline water usage, periodical leaching with food water should be done. Each palm should be applied with 50 kg of FYM, 600 g N, 100 g p and 700 g K. In date palm older leaves which are in surplus than required are normally pruned. To get optimum yield with food palm are retained. The leaf pruning is done during June. By this pruning, the bunches will be better ventilated during July and early August, which will be otherwise spoiled. The spines from the leaves around the bunches are also cut during spring to facilitate pollination.

Hand pollination is done by inserting 2-3 strands of male flowers between strands of female flowers when the female spathes have crack open. Though the dried pollen can be stored at 4-5⁰C until next season, the fresh pollen produces the best fruit. The spathes emerge during February – March and flower opening starts during March – April. Immediately, the flowers should be pollinated (2-3 days after spathes open). Pollen grains of certain varieties can advance ripening of certain varieties. So specific polliniser varieties should be identified for specific varieties of female plantation.

Fruitset :

Fruit thinning has to be resorted to so as to retain 1300 – 1600 fruits in 8-10 bunches per palm will be optimum. Bunch thinning can be done either by removal of entire strand or shortening of strands. Spraying ethephon @ 200 ppm 10 – 30 days after fruitset will help to thin fruits effectively. It also helps to overcome biennial bearing and encourage earlier ripening and to get better fruit weight and soluble sugar.

The different stages of development of fruit are as follows :

Name	Arabic name	Stage	Fruit quality
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Gandara	Chimiri	4-13 Weeks after pollination	Hard, Green Colour
Doka	Khalal	13-17 weeks after pollination	Hard, yellow pink or red may be sweet or astringent, Edible stage.
Dang	Rutab	17-21 weeks after pollination	Fruits soften at tip, edible stage.
Pind	Tamer	21-22 weeks after pollination	Fully ripe 60-84% TSS, edible stage.

Plant protection :

Termites in young plantation can be controlled by application of BHC 10% dust. Rhinoceros beetle and red palm weevil are also attacking as in coconut. The control can be achieved by dusting BHC 10 % in manure pit for former while for later injecting Monocrotophos or a fumigant like celphos will give good control. To control black headed caterpillar (*Nephantis serinopa*) which feeds on leaves hiding inside the tunnels in the folds of the leaves, root feeding with 10 ml of monocrotophos mixed with 10 ml of water per tree and releasing the predator *Gonioyis nephantidis* can be done. False smut a disease caused by *Graphida phoenicus* characterized by dark brown or black pustules full of yellow spores particularly under humid conditions can be controlled by spraying 01.% Bavistin or 0.2 % Copper oxychloride. Fruit rot can be controlled by collected and destruction of infected fruits followed by spraying indofil Z-78 (0.2%). To prevent birds damage wire gauges can be used.

Harvest, yield and processing :

Under Indian condition, since the fruit ripening period is not free of rains, the fruits have to be harvested at doka stage during June – August. The fruits harvested at doka stage have to be dipped in boiling water for 5 minutes followed by dehydration in electric oven at 50⁰C for 160 hours or in solar drier to obtain best quality ‘Chhuhara’ which is the commercial date or produce of commerce. The Chhuhara recovery would be 33 – 35%.