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## DATE PALM CULTIVATION PRACTICES AND HEALTH BENEFITS

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# DATE PALM CULTIVATION PRACTICES AND HEALTH BENEFITS

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## INTRODUCTION

**D**ate palm (*Phoenix dactylifera*), Arecaceae palm tree is grown for its delicious edible fruits. These are a type of fruit that is both delicious and healthy. They are mostly grown in the Middle East and various African nations, with Iran being the largest exporter. Date palm are grown in irrigation-enabled dry desert zones. Date farming may be profitable in areas with long hot dry summers, mild winters, and no rain throughout the fruit ripening season. They can withstand high temperatures and a lack of water. Fruit cracking is caused by the presence of moisture in the fruit, hence low humidity is desirable throughout the fruit growth period. Date farming may be done on a variety of soil types with varied levels of mineral nutrients and organic matter. The trees have ability to withstand saline soils and may be found on all five continents. Most

farmers use traditional date farming practises, with no appropriate tree and fruit bunch management. As a result, inferior quality fruits are produced. The use of fertilisers, trimming, and fruit thinning will result in high-quality fruits with a high market value. Many individuals are becoming interested in date palm planting in India. Many Date Orchards have already been in cultivation in Tamil Nadu, Karnataka, Andhra Pradesh, Gujarat, Maharashtra, and Rajasthan.

## PHYSICAL DESCRIPTION

The date palm may reach a height of around 23 metres (75 ft). Its stem, which is emblazoned with clipped stubs of old leaf bases, leads to a crown of beautiful, gleaming, pinnate leaves around 5 metres (16 feet) long. Floral spikes grow from the axils of leaves that have sprouted the previous year. Date plants follow dioecious pattern of flowering that is, male and female flowers are produced on different plants. Under cultivation practices, the female flowers are artificially pollinated. It is a one-seeded fruit, or drupe, that is normally rectangular but can vary greatly in form, size, colour, quality, and consistency of flesh depending on the culture and variety. A single bunch weighing 8 kg (18 pounds) or more may contain over 1,000 dates.

Suckers, offshoots that appear mostly towards the base of the stem in the early years of the palm's existence, are used for propagation. Offshoots used for commercial plantings, are removed and planted when they are three to six years old with bearing own roots. Palm trees begin to fruit in 4 to 5 years and achieve full bearing in 10 to 15 years, giving 40 to 80 kg (90 to 180 pounds) or more yields per tree. Palms may survive up to 150 years, but their fruit yield reduces and

trees are replaced at a younger age in commercial culture.

survive and flourish, the average minimum temperature is 20° C. A temperature of



**Tree**



**Fruits**



**Leaves**



**Flowers**



**Figure: Date palm Tree, fruit, leaves and flower and types of dates**

## CULTIVATION

Date cultivation requires climatic conditions such as long summer days, high temperatures, and warm winters without frost. These circumstances promote optimal tree development, blooming, and fruiting. To

around 35° C is necessary for pollination. Date palms can withstand frigid winters with no frost and only mild rain. A low relative humidity, an absence of rain, and hot temperatures with warm nights are required during flowering and fruit setting.





## **SOIL REQUIREMENT FOR GROWING DATES**

Dates may be cultivated in any type of soil with no special requirements. They can tolerate salinity and can survive at pH of 8 to 11. Soils with adequate moisture retention, aeration, and drainage such as sandy loamy soils are ideal for optimal growth and better fruit harvest. Date farming should be avoided on soils containing calcium carbonate.

## **PROPAGATION OF DATES PLANTS**

Date palms are perpetuated by seedlings, offshoots, and vegetative propagation. When plants are propagated by seed it is not known if they are male or female palms until they start flowering. In the nursery, seeds from the finest types are sown in plastic bags. During the monsoon season, young seedlings should be moved to the agricultural field. This will be a time-consuming and labour-intensive technique of propagation. Offshoot propagation involves separating offshoots from the mother tree and transplanting them to the main area. Offshoots occur throughout the early years of a tree's existence; a mature tree will bear offshoots once a year. A tree can develop two offshoots in a year provided the soil conditions, irrigation, and fertiliser are maintained properly. Removal of older leaves is done with caution to protect the terminal bud. Six months before to separation, a mixture of farmyard manure, sand, and dirt is put at the base of the branch.

## **SPACING OF DATES PLANTS:-**

Separated offshoots from mature trees or the best fruiting female seedlings are transferred from nursery to the main fields. Pits of 1 x 1 x 1 m are dug in the main field at intervals ranging from 7 x 7 m to 10 x 10 m. Pits dug at a spacing of 8 x 8 m are recommended and excellent, as they can

accommodate around 156 trees per acre. Before planting offshoots, the pits are exposed to sunlight for two weeks. A mixture of 20 kg farmyard manure, 2% methyl parathion dust, 2 kg castor cake, sand, and sawdust should be thoroughly mixed and applied to each pit. Offshoots should be protected from heat and cold by providing daily irrigation for about five to six weeks until proper roots are developed. In the farm, about 3 to 5% of the male plants are planted at equal distances from the female plants.

## **IRRIGATION REQUIREMENT**

Young shoots are irrigated on alternate days. In a date farm, drip irrigation must be used on a regular basis. Even though the trees grow in dry areas and can withstand drought, appropriate irrigation will aid in the healthy growth that will yield a good crop. Excessive irrigation will destroy the roots. The old date palm trees require irrigation once a week during the summer and twice a month during the winter.

## **MANURES AND FERTILIZER DOSAGE**

During soil preparation, sufficient organic manures or farmyard manure is applied. Each offshoot pit is covered with a mixture of organic manure, dirt, sand, and other things. Nitrogen, potassium, and phosphorous are supplied at regular intervals and the dosage should be reduced as the plants mature.

## **INTERCULTURAL OPERATIONS**

### **Weeding**

Weeds take up all of the nutrients, minerals, and moisture in the soil, impeding the growth of seedlings and young plants. Weed removal tools and herbicides will slow weed development and control the weed problem on the farm.



### Pruning

Pruning in date farming includes the removal of spines and unattractive inflorescences. It is something that should be done on a regular basis. When old and unhealthy leaves are removed on time, the date farm will appear fresh and healthy. The number of inflorescences on a plant is usually determined by the number of leaves on the date tree. The removal of extra leaves will have an effect on fruit growth, quality, and maturation.

### Pollination

As the individual date palm tree are either male or female, hand pollination is advised for a successful harvest. Hand pollination is the process of placing strands of pollen grains from the male flower across the stigmas of the carpels of the female flowers. To be successful in date farming, one must learn the knack of predicting when female flowers will bloom and are ready to accept pollen grains. Three to five male trees are required for every 100 female developed trees.

### Fruit Thinning

Fruit thinning can be accomplished in three ways:

- Removing a few strands from the bunch centre,
- Reducing strand length by cutting, and
- Eliminating a number of fruits on each strand.

Fruit pruning improves fruit quality in terms of both size and nutrition. Pruning aids in the production of high-quality fruits with a high market value. It was discovered that removing one-third of the strands from the middle of a bunch produced high-quality fruits.

### Harvesting of Dates

Date fruits begin to appear after three or four years. Depending on the date variety,

the tree begins to produce fruits, which can begin as early as the sixth year. Depending on market demand, fruits can be harvested such as some harvest the fruits while they are immature, while others harvest when the fruits are half-ripe, and still others will harvest when the fruits are completely ripe. For dried and shrivelled fruits, some people may harvest fruits that are well past ripeness. With proper growing conditions and farming procedures, each tree can produce 100 to 125 kg of fruits. Though date palms take time to bear fruit in the early years, they will continue to bear fruit for the next 50 to 60 years.

### BENEFITS OF DATES

The fruit's high nutrient content contributes to its highly beneficial properties. The requirement for a balanced fruit diet cannot be met without the inclusion of dates. In the next part we will be addressing the numerous benefits that dates can have on your our health.

#### 1. Dates are Highly Nutritious:

Dates have extremely high nutritional value. The fruits are high in important vitamins and other nutrients that are beneficial to overall health. Dates are also high in fibre and carbohydrates, making them one of the healthiest dry fruits.

Water	22.50 g
Energy	275 kcal.
Protein	1.97 g
Total lipid (fat)	0.45 g
Carbohydrate	73.51 g
Fiber total Dietary	7.5 g
Ash	1.58 g
Calcium, Ca	32 g
Iron, Fe	1.15 mg
Magnesium, Mg	35 mg
Phosphorus, P	40 mg
Potassium, K	652 mg
Sodium, Na	3 mg
Vitamins	A, B,B <sub>2</sub> ,B <sub>12</sub>



<http://www.fruitlinkco.com/home/egyptian-semi-dry-dates/>

\* These values may differ from variety to variety.

Dates have a high energy level with 100g providing approximately 314 kilocalories of energy, making them an excellent source of energy. While much of the energy is in the form of sugars (such as fructose and glucose), it is high in fibre and has a low glycemic index. This suggests that eating 2-3 dates at a time is a healthy source of low-fat energy for diabetics as well. This is one of the best benefits of date fruit, as it aids with weight management and blood sugar regulating diets.

## **2. Aids Healthy Bowel Movements:**

Dates have high fibre content, which can be quite beneficial to persons who suffer from health problems caused by irregular bowel movements.

## **3. High Concentration of Antioxidants:**

Dates are well-known for their high antioxidant content. They have the highest concentration of antioxidants when compared to other dried fruits of the same category. Carotenoids, flavonoids, and phenolic acid are the antioxidants found in dates.

## **4. Reduces Risk of Cancer:**

In-depth research on dates indicated that the presence of a chemical known as beta D-glucan is particularly beneficial in increasing anti-tumor activity within the body. The high concentration of antioxidants in dates also assists in limiting the activities of free radicals (elements that can cause cancer) and so lessens the possibilities of cancer from happening.

## **5. Prevents Microbial Infections:**

Bacterial infections can occasionally be dangerous and can also cost a lot in treatment. In today's medical world, practically all microbial illnesses are treated with antibiotics, which is an expensive method of treatment that also comes with a slew of negative effects. Substituting natural items for antibiotics can be both medically and financially beneficial. Dates are one major source of natural antibiotics.

## **6. Helps Fight Diabetes:**

Diabetes Mellitus is one of the world's most frequent diseases. Diabetes is treated using synthetic medications that include a combination of oral medications and insulin supplementation. Dates have the ability to stimulate insulin production and also have various qualities that can assist limit the pace of glucose absorption from the intestine. This can go a long way toward lowering the risk of diabetes.

## **7. Works as an Anti-Inflammatory Agent:**

Inflammation is a human body's reactive mechanism that aids in the battle against various diseases, trauma, and infections. The management of inflammatory substances is critical in sustaining the patient's overall health. Dates include compounds known as phenolics and flavonoids, which are beneficial at decreasing inflammation in the body.

## **8. Protect Kidneys:**

Dates include a variety of nutrients that can help your kidneys stay healthy in stressful situations. A study on Ajwa, a variety of date found primarily in West Asia, discovered that the fruit can actively diminish the lesions produced by nephrological illnesses.





### 9. Rich in Vitamins:

Dates can supply a significant amount of Vitamin C to your body. It is an excellent substitute for vitamin supplements. Dates, whether dried or fresh, are high in vitamins B1, B2, B3, and B5. These are all critical vitamins that your body requires to function properly.

### CONCLUSION

Dates are an excellent source of key nutritive components, with a high concentration of nutrients suitable for human. It also contains a variety of therapeutic components. As a result, it would be more effective in healthcare administration.

