
DATE CULTIVATION IN THE COACHELLA VALLEY, CALIFORNIA

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The date palm (*Phoenix dactylifera*) is one of man's oldest cultivated plants. The earliest records mentioning palm culture indicate that the date had been domesticated before 3000 B.C. in Mesopotamia (Nixon, 1959), although it has been suggested that date culture might reach as far back into antiquity as 5000 B.C. (Popenoe, 1924).

Open to more speculation is the establishment of the place of date-palm domestication. The task is made especially difficult because apparently no wild dates are in existence today (De Candolle, 1886; Fischer, 1880; Polunin, 1960; Popenoe, 1924). Those date palms that have been found growing untended in isolated regions have probably resulted from seeds having been discarded by man in his wanderings through the deserts. Of the areas that have been suggested as possible centers of domestication of the species *P. dactylifera*—Egypt, Mesopotamia, Arabia and India—the Indian center appears to be the least likely. Date palms in India are probably the result of diffusion from an earlier center. While it has been fairly well established that date cultivation originally took place somewhere in the deserts of Southwest Asia or possibly North Africa, the exact location is still open to great speculation (Mahmud, 1958).

The Arabs had the date palm from early times, and from the 7th to the 12th century A.D. they introduced commercial date cultivation into North Africa. Dates had been grown in Africa before this time, but the commercial exchange of oases dates for grain from the coast had to await the Arab conquest. The Moors brought the date with them to Spain, where, in spite of unfavorable growing conditions, it was planted extensively (Swingle, 1901).

The species *P. dactylifera*, not native to North America, was first introduced in the New World as a result of the Spanish conquests. Spanish missionaries carried date seeds with them first to the West Indies, but cultivation was restricted there due to unfavorable climatic conditions. During the late 17th and early

18th centuries, the missionaries planted date seeds of inferior Spanish varieties around the missions of Mexico, and by the latter half of the 18th century, date cultivation had spread to the missions of southern California (Mahmud, 1958). Some of these original palms, or their offshoots, dating from the late 18th century still exist around the missions of southern California and northern Mexico. However, the damp climate of the coast, where most of the early missions were located, is unfavorable to date production, and the coastal areas are no longer significant date-producing regions (Nixon, 1959). Furthermore, these early dates were only of mediocre quality, and could not compare with dates of the Sahara or Arabia (Swingle, 1901).

The planting of dates around the missions continued until the early 19th century. During the latter half of the 19th century, date culture was carried on by American pioneers, who planted seeds presumably from imported Persian Gulf dates. Between 1876 and 1890, a few offshoots were imported from Egypt, Muscat, and Algeria, and were planted experimentally in the hot, interior valleys of the Southwest. In 1890, some 447 offshoots, representing 27 varieties (including the Deglet Noor), were sent from the Algerian Sahara to various areas of the Southwest (Swingle, 1901).

Cultivation in California was spurred by the establishment of a U. S. Department of Agriculture date experimental station, which was built in the Coachella Valley in 1904. Many offshoots were imported and seeds were planted both experimentally and commercially (Mahmud, 1958). In 1919, 100,000 pounds of dates were grown in California. The amount rose to one million pounds in 1926, eight million in 1936, and 48 million in 1955 (California Crop and Livestock Reporting Service, 1956). Production has been stabilized at approximately 48 million pounds since 1955 (California Crop and Livestock Reporting Service, 1962). In 1957, the Coachella Valley accounted for 85 per cent of the date acreage in the United States (Nixon, 1959).

The favorable location and physical conditions of the Coachella Valley attracted date growers to this area early in this century. The valley is a structural depression between the San Bernardino Mountains to the northeast and the San Jacinto Mountains to the southwest. In the southeast, the valley is separated from the Imperial Valley by the Salton Sea, and in the northwest, it is closed by the San Gorgonio Pass (Glendinning, 1949). The valley floor is of recent alluvium. In the north, large areas of sand dunes are found, while near the sea level contour, relatively smooth silt supports mesquite growth, which uses artesian water seeping through the clay (Mendenhall, 1909).

The climate of the valley is arid. Cut off from cyclonic storms by mountain barriers, the valley has a mean annual precipitation of 3.63 inches, usually the result of convectional activity (Climates of the States: California, 1959). As is typical with other desert regions, rainfall variation is great, and many years the area receives but a trace of rain. Temperatures are high; often among the highest in the nation. The highest officially recorded is 125 F (Glendinning, 1949), although unofficial sources increase this figure 10 degrees. Maximum daily temperatures above 100 degrees are not uncommon for seven months in the year (Coachella Division, All-American Canal System, 1950). Severe frosts are infrequent, but when they occur, they are damaging. Flash floods and sandstorms are other unpredictable sources for alarm to valley dwellers (Glendinning, 1949). Soils in the valley reflect the aridity of the climate. They are light in color, low in organic matter, but high in soluble mineral materials. If properly irrigated and drained, the soils produce a variety of crops, dates being one of the more important (Mendenhall, 1909).

The climatic conditions of the Coachella Valley are excellent for the growing of dates. Dates require prolonged summer heat without rain or high humidity during the ripening period. Date leaves are injured by prolonged periods of 20

degrees or below, but such temperatures are rare in this area (Nixon, 1959). Figure 1 shows palm density in the Coachella Valley; the darkest pattern indicates the heaviest density of dates per square-mile section. For ease of accessibility to labor and market, date groves are generally located close to the highways and near the major towns.

Dates are, however, by no means the only crop in the Coachella Valley. Of the 57,800 acres under cultivation in the valley, dates accounted for only 4,100 acres in 1960, and ranked sixth in acreage after Thompson seedless grapes, grapefruit, cotton, alfalfa, and sweet corn. However, the date crop brought the valley its largest single source of income from agricultural produce: \$7,208,000. The average value of an acre of dates is approximately \$18,000; in terms of value per acre, dates rank fifth after tomatoes, chili peppers, bell peppers and peas (Asker, 1960).

In order to understand the methods of cultivating dates, picking the fruit, and marketing the product, a typical date farm was studied intensively (fig. 2). The farm studied was one of four sections of land owned by the Codekas brothers of Indio. It is located approximately 1.5 miles west of the town of Coachella. The 30 acre farm supports approximately 1500 palms. Buildings on the farm include the house of the caretaker and his family, a garage, and a packing shed no longer used. Ten orange trees are interplanted with dates; this is a practice not uncommon in the valley.

The schedule of operation of the Codekas farm indicates the amount of work that is required in date cultivation. In March the long sharp thorns which stick out from the leaves must be removed to allow workmen to operate near the palm. When this process is completed, pollination can take place. Date palms must be artificially pollinated, since pollination by natural means is not efficient to a large-scale operation. The strands of pollen, which are borne on the male trees, must be cut and tied next to the female flowers shortly after the blossoms have opened. An alternate method is to collect male pollen on a small powder puff and dust the female flowers with the pollen. On the Codekas farm, 20 male trees supply ample pollen for the grove. By early summer, as the fruit becomes heavy on the branches, the bunches must be supported by tying them to an adjacent leaf or leaves. The bunches must then be thinned. Early in August, as the fruit begins to ripen, danger of damage from rain and birds becomes great. Therefore the bunches are covered by a water-proof bag. A second thinning is accomplished at this time. Picking begins in mid September and may continue until as late as mid February. All the fruit does not ripen at once, and several pickings on the same bunch are necessary. After picking, the dead palm fronds are removed (Nixon, 1959).

Dates are usually grown from offshoots, since the seeds do not reproduce true. A number of varieties are grown in the valley, but the Deglet Noor, an Algerian variety, is the most common and accounts for approximately 90 per cent of the dates grown in the valley. The palms are spaced 10 yards apart, so that an acre of land will support about 50 palms (Tate and Hilgeman, 1958).

Proper irrigation procedures are highly important in date cultivation, since the dates require the equivalent of about 100 inches of rainfall per year. Basin type irrigation is quite common. The groves must be flooded every 7 to 14 days in the summer—less often in the winter—and approximately 8 acre-feet of water per year are necessary for plant requirements and to leach soluble salts (Nixon, 1959). Water can be obtained in many areas only a few feet beneath the surface, but usually this water is too saline for irrigation purposes. Most of the water for irrigation is supplied by the Coachella Main Canal, a branch of the All-American Canal which uses Colorado River water diverted by the Imperial Dam. On the Codekas farm, water for domestic use comes from a deep well, and irrigation water comes from one of the distribution laterals connected to the Main Canal. Proper drainage is important to keep the salts down, and tile must often be used (Coachella Division, All-American Canal System, 1950).

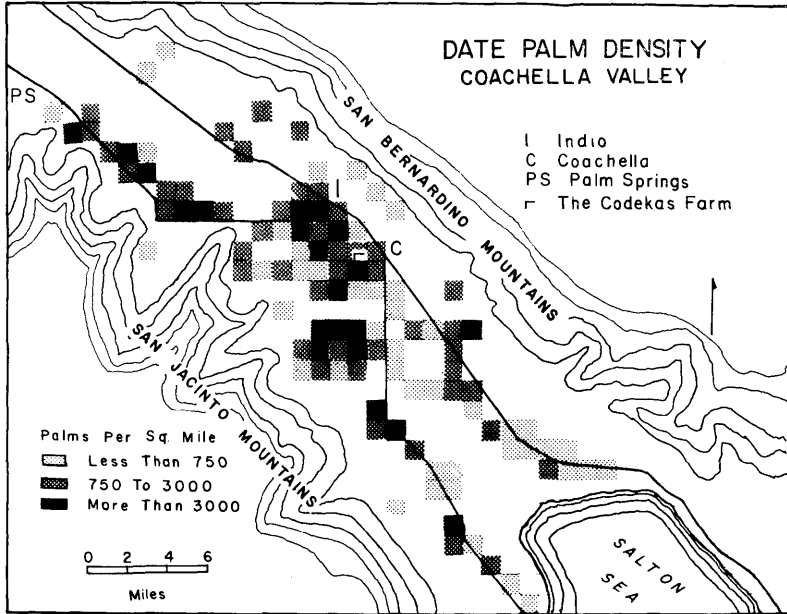


Figure 1

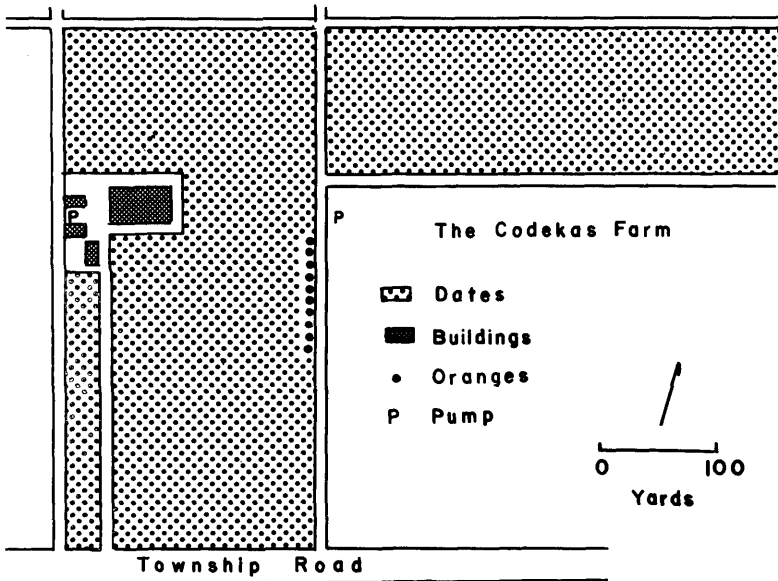


Figure 2

The amount of work that is required to plant the palms, irrigate the groves, care for the trees, and harvest the fruit, indicates that dates are a labor-intensive crop. Labor is supplied by Mexican nationals, who come from as far away as Yucatan, but mainly from Durango, Jalisco, and Michoacan. The workers for the most part do not live on the land—on the Codekas farm, one Mexican and his family took care of the grove—but live in frame-house settlements on the outskirts of the towns. The average wage for date workers is \$1.29 per hour.

After the dates are picked, they are marketed in three ways. Approximately 60 per cent of the crop is sold to the California Date Growers Association co-operative packing plant in Indio (Cal-Date). The plant, which is the largest date packing plant in the world, employs 400 local people and processes 20 million pounds of dates per year. After the dates are processed and packaged, they are sent mainly by truck, but also by rail, to distributing centers all over the nation. Cal-Date ships dates to most of the countries of Western Europe (except France and Italy), and to South America. Dates are also marketed locally through small date shops located along the major highways. These shops attract tourists passing through the valley and vacationers from the Salton Sea and Palm Springs area. Many of the farmers have mail order services and ship fancy packages of specialty items, such as dates stuffed with nut meats; dry, chewy Thoory dates; and the delicious Medjool date, which sells for as much as \$2.25 per pound.

As is the case with many towns in California, Indio is expanding its urban area into rich agricultural land. Many residential sections have recently been built on formerly productive date land. Some of the palms are kept for decoration, but they are unproductive. The importance of the date to the town of Indio is well appreciated by the local citizens. In February of each year, Indio sponsors a date festival, which features, among other things, date judging, camel races, and Arabian dances. The Arabian influence is also reflected in the names of such establishments as the Ali Baba theatre and the Caravan lounge. These offer an interesting contrast to the establishments which cater to the Mexican laborers and have Spanish names.

The date industry in the United States was hurt during the 1950's by cheap imported Iraqi dates. Americans are not date-conscious, valley farmers complain, and are willing to buy dates of lower quality because they are less expensive than the good ones. The use of dates in cake mixes has helped local producers, but government subsidies have been necessary to protect date growers. A bill recently passed through Congress, which will require imported dates to meet the same sanitation requirements as local-grown dates, should curtail date imports. Valley farmers are hopeful that when the new bill goes into effect, date production in the Coachella Valley will increase greatly (Stalnaker, 1961).

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