

Crop Profile for Dates in California

Prepared: January, 2000

General Production Information

- California ranks first in the nation in date production accounting for nearly 100% of all dates produced nationally (1).
- The value of California's date crop in 1996 was \$18,460,000 (1).
- In 1998, 4,900 acres produced 4.53 tons of dates per acre at a price of \$1,130 per ton (4).

Production Regions

The date palm grows in warm climates where temperatures rarely fall to 20°F, but needs hot growing seasons with max temps of 90°F and above, with virtually no rain (2). California's Coachella Valley is the date growing region in California with Riverside and Imperial counties leading in production (1).

Production Practices

The date palm, *Phoenix dactylifera*, is believed to have originated in the Persian Gulf area. In 1769, missionaries planted the first date palms in California. Dates are produced worldwide with Iraq leading in production. There are some 1,500 cultivars of dates. Of those grown in California, the major variety is 'Deglet Noor'. It was introduced to California in 1900 and constitutes about 75% of the crop (2, 3). The most valuable variety is 'Medjool', which constitutes about 20% of the acres (7).

Transplanting 3- to 5-year old suckers or offshoots is the most common means of propagating date palms. They are planted in a variety of soils, but need good soil drainage and aeration. The optimal density is about 48 palms per acre. Palms attain full production in 10-13 years and need to be watered 15 to 40 times per year (3).

During pollinating time female inflorescences are shortened, thinned, or removed to conserve energy for the following season. If bunches were not thinned, fruit quality would be lowered (3).

Most dates are picked by cutting off the entire fruit cluster. Saddles, extension ladders, and mobile steel towers with catwalks are used to reach the fruit. Since the fruit do not ripen all at the same time, multiple harvests are made for the high value Medjool dates. It is not economically feasible to have multiple

harvests for ‘Deglet Noor’ dates and so they are harvested when the majority of the dates are ripe. Dates ripen from August 20 –December 15th depending upon variety and climate and there are 6 to 8 pickings during that time (1, 7).

Pesticide Data:

Label rates, re-entry intervals and pre-harvest intervals for all chemicals listed in this document are from labels. Many of the labels are contained in the Crop Protection Reference (5) or at <http://www.cdms.net/manuf/manufac.asp>. Percent of acres treated, average number of applications, median application rate, and total lb a.i. applied are from the California Department of Pesticide Regulation (6).

Insect Pests

Banks Grass Mite

Oligonychus pratensis

The Banks grass mite causes direct damage to dates by feeding on green, immature fruit, resulting in a hardened, shriveled and cracked fruit. Late-season feeding causes rasping marks or bronzing on the fruit surface. This causes the fruit to be downgraded or culled. It is believed that a single female lands on a date bunch and initiates a colony. Colonies produce a heavy webbing while feeding and damaging the developing fruit. Dust is collected in the webbing creating an environment that retards natural control, makes it difficult to attain adequate miticide coverage, and is optimal for population growth. The colony reproduces at a rapid rate of up to a generation every seven days. Annual economic losses from Banks grass mite are estimated at \$2.5 million plus control costs (7).

Control

Non-Chemical:

Chemical:

- **Sulfur Dust** – Label has a rate of 49-122.5 lb a.i./acre and a 24-hour REI. In 1997, 712,764 lb a.i. were applied to 78.38% of the date acreage in California 4 times at a median rate of 73.5 lb a.i./acre.
- **Hexythiazox** – Section 18 registration was approved in 1998. No use data are available.

Carob Moth

Ectomyelois ceratoniae

The carob moth first appeared in the Coachella Valley in 1982. Larvae cause damage by feeding in the fruit, leaving frass and webbing behind. Damaged dates are culled. Dates are most susceptible to infestation late in the season (August to November). Typical infestation rates are about 10%, but can be as high as 40%. Summer rains increase insect pressure as the higher humidity causes fungi to grow on the surface of the fruit which attracts moths. The variety ‘Deglet Noors’ is heavily attacked by carob moth, although most other varieties are also attacked. Annual economic losses are estimated at \$1 million plus control costs (7).

Control

Non-Chemical:

Recent research has demonstrated that pheromone-based mating disruption will be effective control of carob moth. It is likely that mating disruption will not control carob moth under all circumstances, thus insecticides will be necessary to deal with out-of-control infestations (7).

Chemical:

- **Malathion Dust** – Label has a rate of up to 7 lb a.i./acre and a 7–day PHI. 12–hour REI. In 1997, 16,699 lb a.i. were applied to 62.2% of the date acreage in California 2 times at a median rate of 2.5 lb a.i./acre.

Nutidulid Beetles

Carpophilus spp.

Heptoncus luteolus

Nutidulid beetles, also known as driedfruit beetles, cause damage to dates by direct feeding and by vectoring fungal spores. The most important species on dates is *Carpophilus mutilatus*. Dates are most susceptible to beetle infestation late in the season when the fruit is ripening. Summer rains cause the beetles to attack the fruit earlier in the season. The valuable variety ‘Medjools’ is most likely to suffer heavy infestation. Annual economic losses are estimated at \$500,000 plus control costs (7).

Controls

Non-Chemical:

Research has focused on the use of mass trapping as a control strategy. Nutidulid beetle aggregation pheromone and food odors are used to attract beetles to traps placed within the orchard (7).

Chemical:

- **Malathion Dust** – Label has a rate of 3.5-4.25 lb a.i./acre and a 21–day PHI. 12–hour REI. In 1997, 16,699 lb a.i. were applied to 62.2% of the date acreage in California 2 times at a median rate of 2.5 lb a.i./acre.
- **Pyrethrins/Rotenone** – In 1997, 3 lb pyrethrins and 4 lb rotenone were applied to 4.77% of the date acreage in California 1 time at a median rate of 0.01 lb a.i./acre.

Diseases

No chemical treatments are used for diseases of bearing dates. Metalaxyl is used to control *Phytophthora parasitica* on transplants.

Weeds

Controls

Non-Chemical:

Most weed growth in date gardens is kept under control by disking the soil several times per year. Tamarisks compete for water and nutrients, but are not effectively controlled with herbicides. They are cut down and the roots dug out, where controlled.

Chemical:

Glyphosate is used on borders or areas that the disk cannot reach and for spot weed control. The major weed species are: Nutsedge, bermuda grass, pigweed, malva, watergrass, spotted spurge, burr clover and foxtail.

- **Glyphosate** – Label has a rate of 1-5 lb a.i./acre and a 14–day PHI. 12–hour REI. In 1997, 1,233 lb a.i. were applied to 26.78% of the date acreage in California 2 times at a median rate of 0.56 lb a.i./acre.
- **Oxyfluorfen** – Label has a rate of 0.5-2 lb a.i./acre and applications can be made from final harvest up to February 15 (February 1 in the Coachella Valley). 24–hour REI. In 1997, 42 lb a.i. were applied to 0.81% of the date acreage in California 1 time at a median rate of 1.73 lb a.i./

acre.

Vertebrate Pests

Gophers are the most common vertebrate pests. Ground squirrels and rats occasionally are pests.

Strychnine – In 1997, 2 lb a.i. were applied to 4.68% of the date acreage in California 2 times at a median rate of 0.01 lb a.i./acre. The bait is applied below ground and never contacts the fruit.

POST-HARVEST

The harvested dates are routinely fumigated with methyl bromide or phosphine soon after harvest.

Methyl Bromide – In 1997, 1876 lb a.i. were applied post-harvest. The application rate is 1.5 lb ai/1000 cu ft.

Contacts

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