

THE OLIVE IN CALIFORNIA

BY

ANNEMARIE E. KRAUSE

University of Illinois, Urbana.

The first settlements in California, by the Spanish Mission Fathers, laid a foundation for the agriculture of the future. Accustomed to a hot, dry summer in Spain and Mexico, they planted the Mission Garden in the Coastal Valleys with the products of the homeland. Thus:

"The introduction of the olive into Southern California took place 150 years ago when the Franciscan Fathers made the first plantings near the San Diego Mission. Since then olive growing has become widely disseminated in many parts of California, . . . although it is only within the past 30 or 35 years that the olive industry has assumed a place of importance in the commercial fruit industry of the United States."¹

CLIMATE

The olive is adapted to that climate usually known as Mediterranean. It includes in California the lowlands and lower foothills, south of latitude 40° North. The growing season of those sections producing olives is over 240 days, shown on Figure 1. The coastal sections, however, are eliminated from olive production because of fogs and cool, moist sea breezes. The average temperatures June-August inclusive are from 8-10° F. lower than the interior.

"The mean temperature between the period of blossoming and ripening should be at least 68° F. Where fall or winter frosts do not occur the average mean temperature may be somewhat less, as this allows a longer time for fruit to mature."²

The olive blossoms after the danger of spring frosts is over, which is on the average April 1. Throughout the area the first killing frost of autumn occurs on an average after November 1. Since the fruit is injured by a temperature of less than 28° F., it is desirable to harvest during October and the early part of November. The growth of the olive is thus limited by minimum temperature, "although the trees will live and bear some fruit in portions of all the southern tier of states of this country."³

¹ KINMAN, C. F.: "Olive Growing in the Southwestern United States." U. S. D. A. Farmers' Bull. 1249, p. 2.

² California Department of Agriculture, Monthly Bulletin, Vol. 4, 1915.

³ U. S. D. A. Farmers' Bull. 1249, p. 5.

The rainfall varies with latitude and altitude. In general the regions producing olives, have from 10-30 inches of rainfall coming during the cool season.

"For satisfactory production, the olive is as dependent as are other fruits upon an adequate water supply. Owing to its requirements of a hot, dry region where the black scale is not destructive and of an elevated site on rolling or sloping land for assurance against frost, irrigation is almost imperative for the regular production of abundant crops of large fruit. . . . Probably 85% of the olive orchards of California . . . are under irrigation."⁴

SOIL

The main axis of the Sierra Nevada is formed by granitic rocks, which in the northern portion of the range, as well as on the slopes, are usually overlaid by clay, slates or shales. The soil derived from these rocks is an orange colored (commonly called "red") loam, more or less clayey or sandy. This is the predominant soils of "the foothills." It is highly productive, light, warm, and well drained.

"The olive is suited to rocky foothill soils such as are found in these counties (Sacramento, Butte, Tulare) and is generally considered to produce the best quality fruit under such conditions."⁵

The rocks of the Coast Ranges opposite are predominantly of a clayey character, hence the olive is found less abundantly on the west side of the valley (Figure 1). Soils high in humus and nitrogen content are inclined to result in excessive wood growth. Trees yield only a moderate crop, and ripening is delayed, therefore loss by freezing is more probable.

TOPOGRAPHY AND DRAINAGE

The olive tree requires an area free from stagnant water. Thus slopes are desirable both from the standpoint of water, as well as air drainage. Elevation above sea level is not as important as the relation to the adjoining valley. The air drainage in a depression only a few feet from the frost free region may be so poor that olives may be rendered unfit for pickling. Where air drainage is satisfactory, the surface water drainage is usually equally so. The slopes aid irrigation as well as decreasing the cost of it.

DISTRIBUTION

The map (Figure 1) shows the distribution of the olive, which is grown throughout the central valley and in southern California in all

⁴ *Ibid.*, p. 10.

⁵ Private Communication of March 11, 1930.

warm valleys where irrigation water is available. The central valley, with 76% of the acreage, is comparatively free from early fall frosts. This is prerequisite for the ripe olive process, as the olives will shrivel and become unsuitable at a temperature slightly below freezing. Occasionally late maturing varieties are frosted; this, however, does not impair their value for oil making.

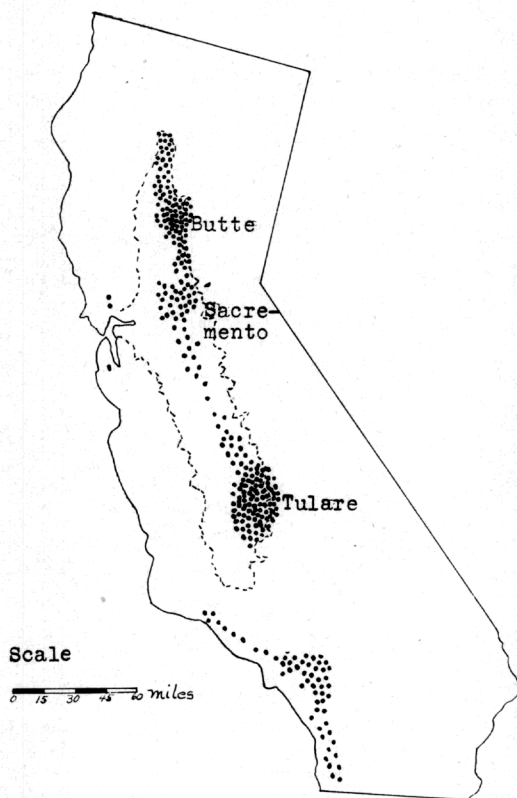


FIG. 1. Distribution of olive tree plantations in California, including trees not of bearing age. One dot represents 100 acres. The dotted line indicates the 1,000-foot contour line, and the 240-day growing season coincides with it. (Source: Cal. Crop Rep. 1928, p. 53.)

The soil seems to have been the main factor in more extensive plantings in Butte, Sacramento, and Tulare counties. Rich, red loam, warm and well drained produces a vigorous tree growth, and an olive high in oil content, especially those in the Oroville area of Butte County, which bring the premium on the market.

In Butte County the increase in acreage between 1925-1928 was 2,200 acres. An increase in irrigation facilities has taken place, opening to cultivation many acres of warm foothill land, which is also reflected in the increase of acreage in the counties adjoining Butte.

In each of the other densely planted areas, Sacramento and Tulare counties, some of the less profitable orchards have been abandoned due to poor market conditions for olives within the past few years.

The southern section, though the oldest, has been surpassed by the rest of California. The larger market for citrus fruits and the competition in use of water are probably causes of retarded development.

The area planted to olives in Jaen, the province in Spain having the greatest acreage, is 703,950 acres, or 21.8 times the acreage of all California.

"All of which might indicate that there is room for expansion of the olive industry in the Golden State; or that there are so many olives in Spain that California might as well forget her ambition to compete with the land of the Dons."⁶

PRODUCTION

The olive is generally grown from cuttings. As seedlings do not come true to variety, they are used only for stocks on which to bud or graft. The majority of olive trees in the United States have been grown by that method. Rejuvenation of trees may be brought about by top grafting, or used in changing from one variety to another. This was widely practiced in California when the demand for larger fruit, suitable for pickles, replaced the oil varieties, in the early part of the 20th Century.

The planting distance varies, depending on soils and water supply. The usual distance is 25 feet apart, although where wood growth is heavy 30-33 and often 40 feet has not proved to be too far. Light is required by every part of the tree to promote new growth, and it is only on the wood of the previous year that fruit is borne; therefore, a proper branch spread combined with adequate pruning is desirable.

Before the olive trees mature, at an age from 12 to 15 years, deciduous fruits, grapes, or annual crops may be interplanted. Peaches, apricots, and plums come into bearing early and will yield a profit while the olive trees are developing. Interplanting, however, depends on soil moisture and plant food; if either is limited, interplanting may be restricted to a narrow strip between the olive rows.

The variety of the olive to be planted depends on the conditions of the area in which it is to be grown. The productiveness and high

⁶ CRUESS, W. V.: "The Olive as Produced in Seville." California Rural Press, Vol. 107, p. 40, Jan. 12, 1924.

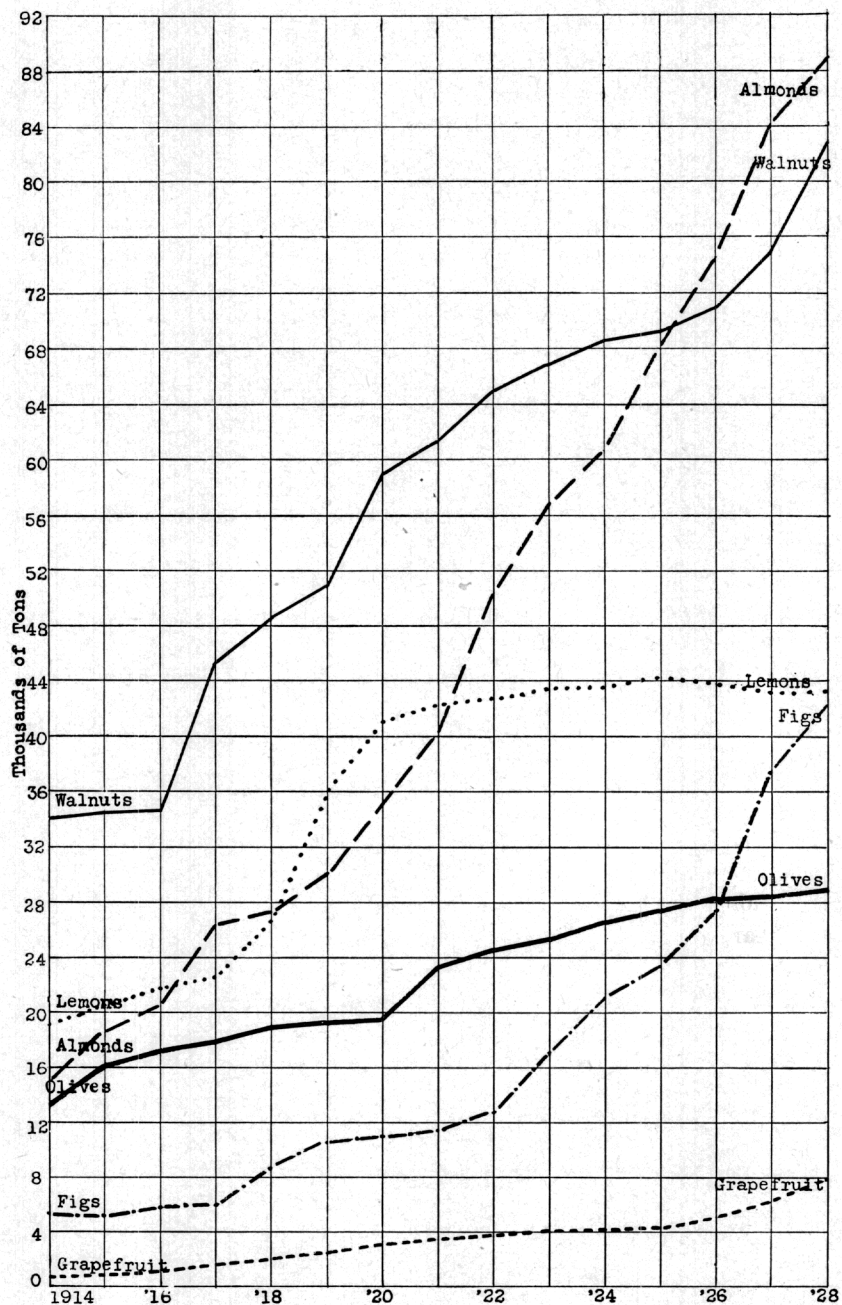


FIG. 2. Estimated bearing acreage of selected tree fruits in California (from data in Cal. Crop Rep. 1925 and 1928). The olive, though established very early in the history of agriculture in California, and though suited to the climate and the soil, has developed very slowly and is surpassed in acreage by all the other trees shown except the grapefruit.

quality of the Mission variety make it desirable for both ripe pickles and oil. The Manzanillo, somewhat larger than the Mission, ripens a little earlier; therefore, it is suited to such zones where early fall frosts might injure the later ripening Mission variety. The fruit is not as firm, requiring more care in handling. Butte County has been planted chiefly to Mission, while in Tulare County the Manzanillo thrives better. The demand for large fruit has stimulated planting of Ascolano and Sevillano, the fruits of both of which are more tender than the others, the latter especially being very easily injured by frost.

The harvest season is influenced by the variety of the fruit, but more by the locality. In the warm inland valleys the fruit matures earlier than in the southern portion of the state. Thus the first picking of the Manzanillo in the north is done in the middle of October, while in the southern districts it is about the first of November, and in places exposed to the sea breezes ripening is delayed until later.

Usually three or four pickings are necessary to obtain the maximum amount of olives of the desired color. Picking is done by hand, into baskets or buckets, the latter often containing some water to serve as a cushion for falling fruit. In very few instances are rakes used to strip the branches and fruit allowed to fall on canvas. This method may be used for oil olives, but injury to the tree is likely and a decrease in next year's crop is unavoidable.

The production of olives varies, but it is one of the habits of the tree to bear a very light crop one year and a heavy crop the next. This can be modified by pruning and cultural methods (fertilization and plowing), but it cannot be controlled. The climatic factors of late spring frosts and hot, dry winds during the time of blossoming influence production to a minor degree. As a result the total production fluctuates from year to year (Figure 3). The 1924 crop, which was only 28% of the normal production, may be attributed to severe drought, accentuated by little snowfall and consequent shortage of irrigation water. The slight increase in plantings (Figure 2) and production are probably due to an extension of the market for the ripe olive.

The manufacture of olive oil is inseparable from the ripe olive industry. Only the large fruits are utilized in pickling. With a very heavy crop the oil sizes may predominate. The quantity used for pickles and for oil varies considerably with the amount produced. During the last two years about half of the harvested tonnage was canned, while "the remainder has been shipped fresh, home-pickled, salt-cured, and used in the manufacture of olive oil."⁷

⁷ California Crop Report, 1928, p. 35.

"The production of olive oil in the United States is insignificant compared with consumption. In 1926 it amounted to only 1,383,000 pounds as compared with a consumption of 132,882,000 pounds."⁸

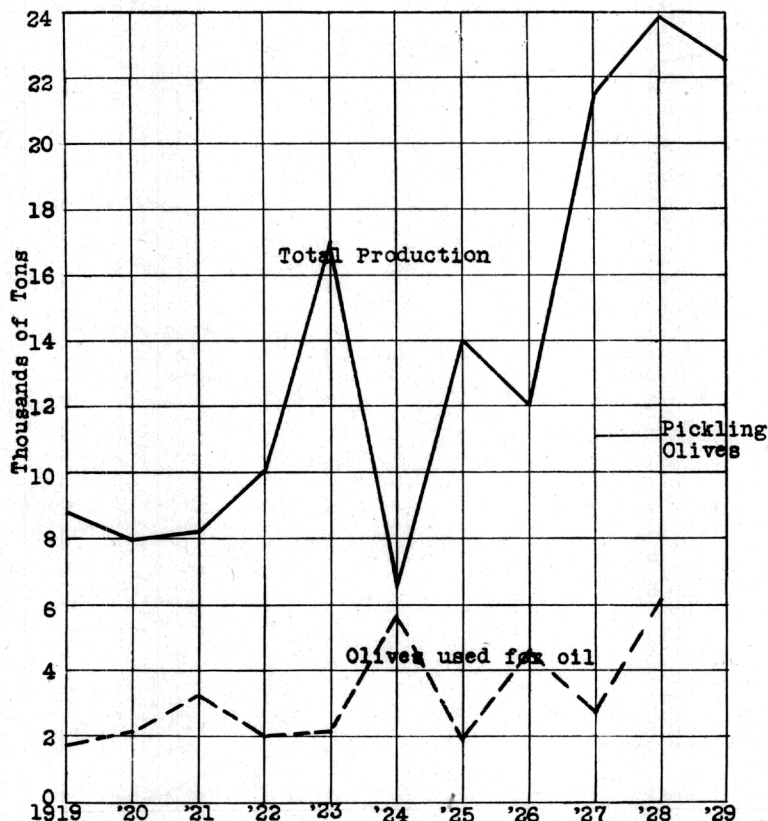


FIG. 3. The fluctuation in the amount of olives used for oil depends on the size of the fruit and the market for ripe olives. In a year of heavy production a great deal of the fruit is not picked at all, and this accounts for the apparent discrepancy between the values indicated for total production and for amount used for oil. (Sources: U. S. D. A. yearbook 1930.—U. S. Cong. Tariff Readj. 1928, vol. I, p. 709.—U. S. D. A. Bur. Agr. Econ. "Foreign Crops and Markets," vol. 16, nos. 20 and 21, May 14 and 21, 1928.)

COMPETITION

The California ripe-olive industry has no competition from European countries. A small quantity of ripe olives in salt is imported from Greece and Italy and consumed chiefly by the immigrants accustomed

⁸ U. S. Congress, House Committee, Tariff Readjustment, 1929, Vol. I, Schedule 1, Chemicals Oils, Paints, p. 665.

to them, but the imports will in all probability never compete with the American product. The danger of the olive fly increases as the fruit nears maturity; therefore, every effort is made to pick them green as early as large enough for pickling. However, the imported green olives are in competition in so far as they have established a priority claim on the American market. The ripe olive must establish its own market by its superior qualities in food value.

Under present conditions, olive oil being so closely bound up with the ripe olive industry, cannot dominate the American market. Low labor costs in Southern Europe (labor representing 60% of the total cost of production) and low ocean freight rates give those countries an enormous advantage over us, for the cost of labor in California is relatively high, as shown by the following:

"The average wage paid for orchard olive industry is \$4.00 per day and in the factories \$4-\$6 per day, compared with a wage rate in Spain ranging from 41-65 cents per day for male workers, a rate in Greece of 78 cents per day for male workers and 39 cents per day for female, a rate in Italy of 36 cents per day for female and 53 cents per day for male."⁹

In considering transportation costs, the rate on olive oil from Genoa to New York is 66 cents per hundred pounds. The all rail freight cost of delivering California olive oil in New York is \$1.28 per hundred pounds, while the rail and water rate (using the Panama Canal) is 73 $\frac{1}{4}$ cents.

"Foreign producers have an enormous price advantage over domestic producers in the sale of their products in the greatest consuming area of the United States, namely in the densely populated region of the Atlantic seaboard."¹⁰

"As a matter of fact, the foreign producer of olive oil can even ship olive oil into the state of California with duty, freight, and all other charges paid and sell the produce at prices which deny the domestic olive grower any profit whatever."¹¹

Within the country the market conditions prevailing at the time of planting will always be a factor in making the decision as to what to plant. Oranges and raisin grapes have climatic requirements similar to the olive; the latter, however, will grow on poorer soil and require less water and cultivation.

Competition of vegetable oils with olive oil is scarcely possible. Olive oil may be considered a "luxury oil" because of its high price, costing about twice as much as vegetable oils. The average American prefers the vegetable oils such as cottonseed, corn, and peanut oil, because of

⁹ U. S. Congress, House Committee, Tariff Readjustment, 1929, Schedule 7, pt. vii, p. 3,672.

¹⁰ *Ibid.*, p. 3,672.

¹¹ *Ibid.*, p. 4,582.

their bland and neutral flavors, and dislikes the olive oil because of its pronounced flavor. The consumption of vegetable oils (193,000,000 gal.) is nearly 20 times as much as that of olive oil (10,000,000 gal.).

FUTURE OF THE INDUSTRY

A comparison of Italy and California reveals a similarity of climate, mountainous topography, and plains area, and the products have much in common. However, agriculture in Italy aims to support a hungry population, while California seeks a market outside of its borders to support its agriculture.

The future of the olive industry will depend to a great extent upon the education of the American public to the superiority in taste and food value of the ripe olive, and upon making it a part of the regular diet rather than a condiment. At present about 60% of the yearly pack is consumed on the Pacific Coast.

It is improbable that the many thousands of acres of unirrigated land capable of producing olives for oil or the dry-land orchards formerly producing oil olives will be revived under present economic conditions.

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