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Background and Resources

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THE BEGINNINGS: THREE MAJOR EVENTS

Commercial raisin production in California began around 1870, the result of three major events: the development of irrigation systems, transportation facilities furnished by the railroads, and the introduction and distribution of suitable vine planting material. These events, occurring coincidentally but almost simultaneously, set the stage for the development of the most prolific raisin production area in the world.

The diversion of water from the rivers and streams originating in the Sierra Nevada and the formation of irrigation districts were paramount to the development of the raisin industry (Figure 1.1). Plantings largely followed developments that diverted water from the Kings, San Joaquin, Kaweah, and Merced Rivers. Of these, the Kings River played the largest role, since its water was easy to divert as it flowed and divided southwesterly toward Tulare Lake. Irrigation companies and districts that formed in the 1870s began the organized distribution of water in what was to become an extensive canal system. Districts such as Madera, Fresno, Consolidated, and Alta continue to play key roles in supplying high-quality water to raisin vineyards and recharging the underground aquifers for pumping supplies.

The railroad came from the north in 1872, furnishing transportation to ship out the new crops, bringing in needed supplies, and promoting settlement. This was also the year that the Fresno townsite was laid out as a result of a railroad land grant given through the San Joaquin Valley Land Association (Figure 1.2). Influential members of the Association included A. Y. Easterby and M. J. Church, founding members of the Fresno Canal and Irrigation Company in 1871. Thus, water and the railroad were to become rapidly linked, although the two enterprises were first independently promoted.

The earliest recorded importation of a raisin grape variety into California was the introduction of 'Muscat of Alexandria' by Colonel Agoston Haraszthy in 1851.

Haraszthy was commissioned by the State of California to travel overseas to select and import grape planting material, which included wine, raisin, and table grape varieties. In subsequent trips he selected and imported cuttings of other raisin varieties such as 'Gordo Blanco,' 'Sultana' (round Kishmish), 'White Corinth,' and 'Red Corinth.' The seeded 'Muscat of Alexandria' was the first major raisin variety grown in California, but this was soon to change with the introduction of a seedless variety that eventually dominated the raisin industry. About 1872, William T. Thompson of Yuba City obtained grape cuttings from the Elwanger and Barry nursery of Rochester, New York, which described them as a grape from Constantinople called 'Lady Discoverly.' Local growers around Yuba City misnamed the variety 'Thompson Seedless,' an identification that has remained with the variety throughout its development and use in California (Figure 1.3). It was later identified as an Old World variety that originated in the Middle East, where it is known as 'Sultanina' or 'Oval Kishmish.'

THE MEANS: OTHER MAJOR RESOURCES

The events above would have never prompted success without three other major resources: weather, soil, and opportunistic, hard-working settlers. At first, raisins were grown over a wide area in California, from San Diego in the south to Sutter and Yolo Counties in the Sacramento Valley. However, the central and southern San Joaquin Valley was found to possess a particularly favorable climate for raisin production. The long, warm growing season is ideal for producing grapes of high sugar content; the area also has a relatively low rain risk during September, as compared to areas in Southern California, the Sacramento Valley, and the northern San Joaquin Valley.

This relatively low risk of rainfall also influenced



Figure 1.1 The distribution of canal irrigation water across a young 'Muscat of Alexandria' raisin vineyard. Fresno County, 1901. Courtesy of Maxwell Studio, Fresno.



Figure 1.2 A 14-ton load of raisins being hauled to the packing house for processing and rail shipment to markets. Fresno County, 1900. Courtesy of Maxwell Studio, Fresno.

Thompson's Seedless Grape

MAKES ABSOLUTELY

◆ SEEDLESS ◆ RAISINS ◆

The very best for Culinary Use!

This Grape has been thoroughly tested in California, having been grown and raisins made of it, in Sutter County, for the past fifteen years.

It is far superior to the Sultana, being much sweeter, a heavier cropper, more easily dried, and ripens earlier.

For rooted vines, guaranteed true to name, address,

B. G. STABLER,
YUBA CITY,
Sutter County, California.

Prices reasonable; given on application for both one and two-year old rooted vines. Will also send sample of raisins, if desired.

Described by Prof. Eisen.

In a communication to California, a Journal of Rural Industry, May No., 1890, entitled "With the Fruit Growers in Sutter County," Prof. Eisen thus refers to Mr. Stabler, and his work: "Mr. B. G. Stabler makes a specialty of dried peaches and seedless raisins, and has succeeded well with both. The principal table-grape of this vicinity is the little-known seedless grape, Lady Discovery, here known as the Thompson Seedless, he being the first to grow it. Years ago, about 1875, this gentleman saw advertised in an Eastern Catalogue a seedless grape, said to come from Constantinople, and was called the Lady Discovery. It proved to be very different from the common Sultana, being of yellow color, and of oblong shape. It is certainly strange that this singular variety of grape should have existed here so many years, and failed to attract general attention. It is an enormous bearer, heavier even than the Sultana, and ripens early in August. It makes very choice raisins for cooking purposes. The color is similar to that of the Muscatel, and makes a raisin of beautiful color. Among other specialties in the way of fruit, Mr. Stabler has a Chinese Seedling Apricot, which promises to be something extraordinary. It is not yet in bearing. * * * but think of apricot leaves six inches in diameter, and limbs many times as long and strong as those of ordinary apricot trees," etc.

Figure 1.3 Advertisement in *The Raisin Industry* (1890) by Gustav Eisen with the proverbial use of 'Thompson's Seedless' for the 'Sultanina' variety

the method of drying raisins in the San Joaquin Valley. Most other raisin producing areas have a higher rainfall risk during fruit drying, so growers there dip or spray their fruit with an emulsion to hasten drying (usually in a centralized yard or on racks) and minimize the exposure of fruit to rains. Unique climatic conditions in the San Joaquin Valley enable growers to sun-dry grapes naturally in the field, without using drying aids. The result is a uniformly dark-colored "natural" raisin that is unique in the world market.

The flood plains originating from the Sierra Nevada contain soils that are particularly well-suited to raisin production. These alluvial soils are relatively level, deep, well-drained, and fertile. Soil textures are mostly loamy sands to fine sandy loams. These textures facilitate the rapid drying of the soil surface and the ease of cultivation to form terraces for raisin drying at harvest. Their good drainage and "light" textures also allow the soils to dry rapidly if there is rain at or near harvest. At the same time, the stored water that can be held in

these deep soils is enough to sustain the vines through the eight weeks or more required for pre-harvest dry-down, soil preparation, and raisin drying and boxing.

The colony system of settlement, western migration, and foreign immigration were prominent features in fostering horticultural development in the newly irrigated lands (Figure 1.4). The colonies consisted of farming units suitably sized for fruit production which were subdivided from large tracts of land (typically 1 to 10 sections) by promoters. The developments included roads, an irrigation canal system with land parcel water rights, and long-term land mortgages. Complete communities soon developed as merchants were attracted to the area, and schools and churches were built. Many of the colonies were somewhat unique due to concentrations of settlers of similar ethnic and religious backgrounds.

Originally, most raisin farms were family operations consisting of 20 to 40 acres, often with diversification



Figure 1.4 Harvest from low, head-trained 'Muscat of Alexandria' vines onto wooden trays. The combined efforts of pioneering settlers and recent immigrants ensured the raisin industry's success. Fresno County, 1900. Courtesy of Maxwell Studio, Fresno.

Thompson Seedless Grape Acreage and Raisin Returns

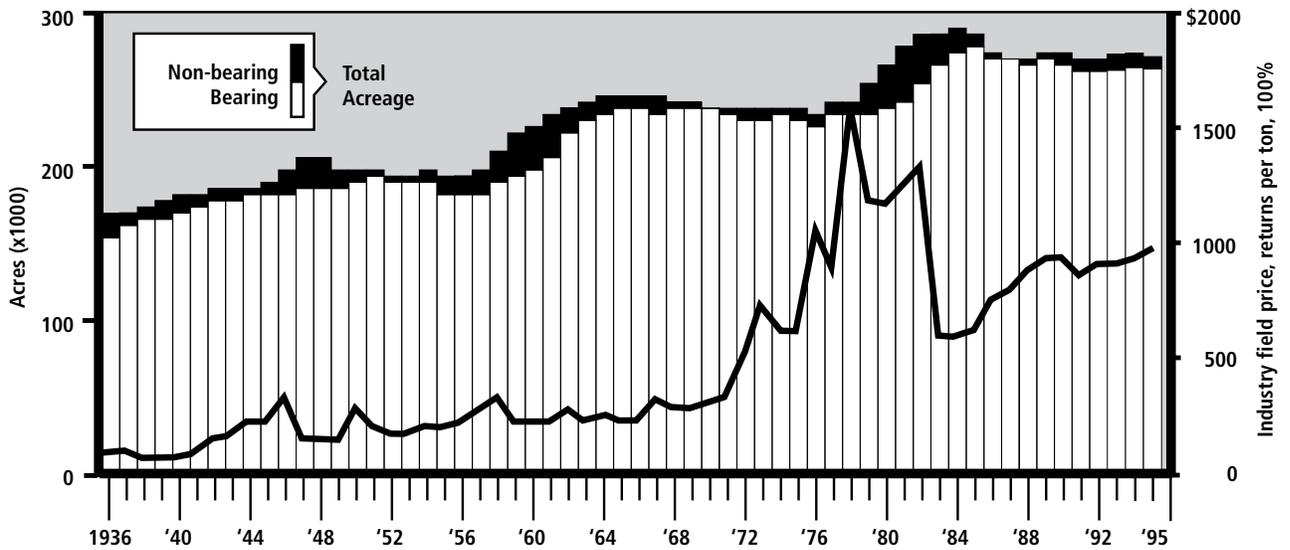


Figure 1.5 California historical acreage for 'Thompson Seedless' grapes (bar graph, scale at left), and average grower returns in dollars per ton (line graph, scale at right), for the years 1936 through 1995

in other fruit or field crops. These origins are reflected in the industry today, with many family-oriented, relatively small farms still in existence. Other major contributions to continued industry technological and economic growth have included the innovations of growers and packers, the cooperative movement, marketing orders, bargaining groups, and university and USDA research and education.

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RECENT HISTORICAL EVENTS AND VINEYARD PLANTING TRENDS

A series of economic, world war, weather, and industry organization-related events have also contributed to changes in industry growth and planting trends. These are depicted in Figure 1.5, which shows the changes in the California 'Thompson Seedless' acreage and average grower returns for raisins over a 60-year period, from 1936 to 1995.

Raisin prices were exceedingly low during the latter years of the Great Depression and up until 1942. The need for raisins to support the World War II Allied effort pushed returns from \$48 per ton in 1939 to \$312 per ton in 1946. This stimulated vine planting from 1945 to 1949. Total acreage then stabilized and even declined during the early to mid 1950s due to a post-war oversupply. The late 1950s to mid 1960s brought a prolonged period of raisin vineyard acreage expansion. Over 50,000 acres of 'Thompson Seedless' were planted between 1956 and 1964. This resulted from fairly stable raisin prices and the movement of federal cotton acreage allotments to the west side of the San Joaquin Valley, either by transfer or by sale. The shift provided irrigated row crop land that could easily be planted to permanent crops.

Acreage stabilized and again declined from 1964 to 1976. This was due to the already large 'Thompson Seedless' acreage and a new trend toward planting wine grapes rather than raisin grapes. Raisin prices also strengthened during this period, however, due to three factors: winery demand for 'Thompson Seedless' to help supply the expanding market for table (dry) wine, raisin shortages from a serious spring frost in 1972, and the formation of the Raisin Bargaining Association in 1967.

The rain disaster years of 1976, 1978, and 1982 created a period of remarkable price increases through the late 1970s and early 1980s. Rain damage losses kept returns high throughout this period, peaking at \$1,590 per ton in 1978. 1983 was a "crash" year: returns for salable raisins dropped from \$1,346 per ton in 1982 to \$590 per ton a year later. An unexpected carryover of salvaged raisins from 1982 plus the beginning of large

crops from the new plantings created a huge oversupply. The mid 1980s was a period of financial recovery, acreage decline, and the initiation of the Raisin Industry Diversion Program. The late 1980s to late 1990s have been relatively stable.

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THE INDUSTRY TODAY

At present there are approximately 290,000 acres planted to raisin-type grapes in California. Approximately 70 percent (200,000 acres) is devoted to raisin production, with the remainder used for table grapes, crushing, and canning. Over 90 percent of the raisin crop is produced from 'Thompson Seedless,' 'Zante Currant,' 'Fiesta,' 'Muscat of Alexandria,' and 'Monukka' assume minor roles. Small tonnages of table grape varieties such as 'Perlette,' 'Ruby Seedless,' and 'Flame Seedless' are also occasionally made into raisins. New introductions from foreign and U.S. grapevine breeding programs are being added to the variety mix.

California is host to approximately 4,500 raisin growers, according to industry estimates, so the average raisin production operation involves about 45 vineyard acres. Raisin packers number about 20, and commercial dehydrators 24. The 375,000 to 400,000 tons of raisins produced each year constitute about 40 percent of the world's production. Approximately 120,000 tons (30 percent of the crop) are exported, with Japan, the United Kingdom, and northern Europe as the principal markets.

Most raisin vines were originally planted on their own roots, since there was little or no pressure from soil pest nematodes and phylloxera. Many of these vineyards, some more than 100 years old, are still alive and producing well. However, the introduction and spread of nematodes and phylloxera have taken their toll, especially in sandy soils and shallow loam soils. Many vineyards on these soils have become marginal or have been removed. The loss of most of the chemical tools to combat these pests undoubtedly means that many future raisin vineyards will be grafted onto tolerant and resistant rootstocks, especially in replant situations. The total acreage of early ripening varieties such as 'Fiesta' is increasing in new plantings.

Most raisin vineyards are planted with 12 feet between rows and an east-west row orientation. This assures the best possible sunlight exposure on the drying grapes during September. The practice of field drying also limits the height and width of raisin grape trellises to avoid excessive shading of the row middles by the vine canopy. Because of these factors, 'Thompson Seedless' vineyards throughout the principal raisin

growing districts of the San Joaquin Valley are largely similar in appearance.

This scene is changing with recent developments in dried-on-the-vine (DOV) raisins. More specialized and elaborate DOV trellising is being tried and adopted by some growers. New vineyards will include a greater diversity of rootstocks, varieties, row and vine spacings, and training and trellising systems.

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