

California Olive Oil Industry Survey Statistics 2004

University of California Cooperative Extension, Sonoma County

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History and Introduction

The Spanish missionary priests were the first in California to make olive oil from trees planted around their missions. Many of those missions still have some of the original 'Mission' variety trees on the grounds and some still have remnants of old mills that they used to make oil. The first commercial production of olive oil in California was from the Camulos mill in Ventura in 1871. By 1885, California olive growers were producing oil from approximately 2,000 acres and several mills, but the industry never increased to any significant size due to strong economic competition from European imports and seed oils.

The "California Style" firm, black olive, was invented in the northern Sacramento Valley in the early 1900's and a new planting boom started with a combination of the old Mission variety and new table varieties such as Manzanillo, Ascolano, Sevillano (Gordal) and Barouni. The table fruit industry ultimately grew to over 35,000 acres with about 70% of the production in the southern San Joaquin Valley counties (Tulare 57%, Madera 8%, Fresno 4%) and the remaining 30 % in the northern Sacramento Valley counties (Tehama 15%, Glenn 11%, Butte 2% and other foothill counties). Most of these plantings were made at the traditional density of about 75 to 100 trees per acre. The olive oil industry existed for many years almost exclusively as a salvage operation for undersized or damaged table fruit. No new plantings of oil varieties or production of any European style oils occurred until 1990 when several small-scale producers in Northern California began to plant Italian varieties.

A new demand for olive oil in the high quality "gourmet" sector prompted the planting of several small orchards and the development of several new olive oil mills, first in the north coast counties of Napa, Sonoma, Alameda, Marin, Mendocino, and Lake. New small-scale plantings then quickly spread to the south coast counties of San Luis Obispo, Monterey, and Santa Barbara. These orchards were planted primarily to Italian varieties such as Frantoio, Leccino, Pendolino, Taggiasca and Coratina at spacings ranging from 250 to 300 trees per acre. Orchards planted at this density are referred to as high-density.

There was a simultaneous movement to rejuvenate old, abandoned orchards in these same coastal counties, as well as in the Sierra Foothill counties of Calaveras, Nevada, Amador, and El Dorado. Some historians believe that at one time there were approximately 2,000 acres of various unknown varieties planted in the more rugged parts of Napa and Sonoma Counties. At one time there were approximately 5,000 commercially viable acres of Mission variety trees in the foothill areas of Butte County; most of those plantings are still there, but many are semi abandoned or part of pastureland and woods. There are estimated to be hundreds of acres of old

trees that were planted in the late 1800's and early 1900's all through the Sierra Foothills that are no longer pruned, fertilized or irrigated. Several small old plantings of olives can also be found throughout the southern coastal area of California.

The most recent influence in the California olive oil industry started in 1999 with the planting of the first super-high-density orchard designed to accommodate over-the-row mechanical harvesters. This has started a significant planting boom of new orchards primarily in the Central Valley. These orchards use very specific clonal selections of Arbequina, Koroneiki, and Arbosana varieties planted at a super-high-density of 650 to 900 trees per acre.

The University of California Cooperative Extension (UCCE) Farm Advisor's office in Sonoma County has conducted informal phone interviews of olive oil processors over the last ten years to develop some idea of the size of the industry and significant trends. Informal notations were also made of the number and size of new plantings, or abandoned orchards that were rejuvenated, from conversations with county Agricultural Commission field staff and UCCE Farm Advisors throughout the state. Other trends have been noted in the number of commercial mills in operation and the increase in the number of olive oil brands in the marketplace. Almost all of the information in the past about the California olive oil industry was generated from those estimates without conducting a formal survey.

The last ten years has seen enormous change in the California olive oil industry. It has gone from a handful of producers to several hundred today. Most are small-scale producers, but some are very large, and there is interest in this crop statewide. Many new orchards have been planted, new varieties have been introduced from Europe, and several new processing plants have been established. The consumer has gone from a choice of relatively few California-produced olive oils to a large and varied selection of labels and styles.

The industry has become much more sophisticated with the establishment of a California Olive Oil Council (COOC) marketing program using a quality certification seal that is based on standards established by the International Olive Oil Council (IOOC). The UCCE helped the industry develop a sensory taste panel to evaluate quality in compliance with the IOOC standard. Many California producers are making excellent quality oils that are winning awards all over the world and are being presented at food shows to buyers across the nation. A recent Consumer Reports magazine article recognized two California olive oils as superior to several oils imported from Europe.

Survey Methodology

This survey was funded by the COOC to determine the size of the California olive oil industry and document production trends over the last few years. We consulted with the United States Department of Agriculture (USDA) National Agricultural Statistics Service California Statistical Office in Sacramento for advice on collecting the data we sought. Over the last six months we obtained mailing lists from all of the Agricultural Commissioners and UCCE offices in each county known to have some olive oil production. We also researched producers on the internet to find people in the olive oil business that were not on our mailing lists from other sources. We

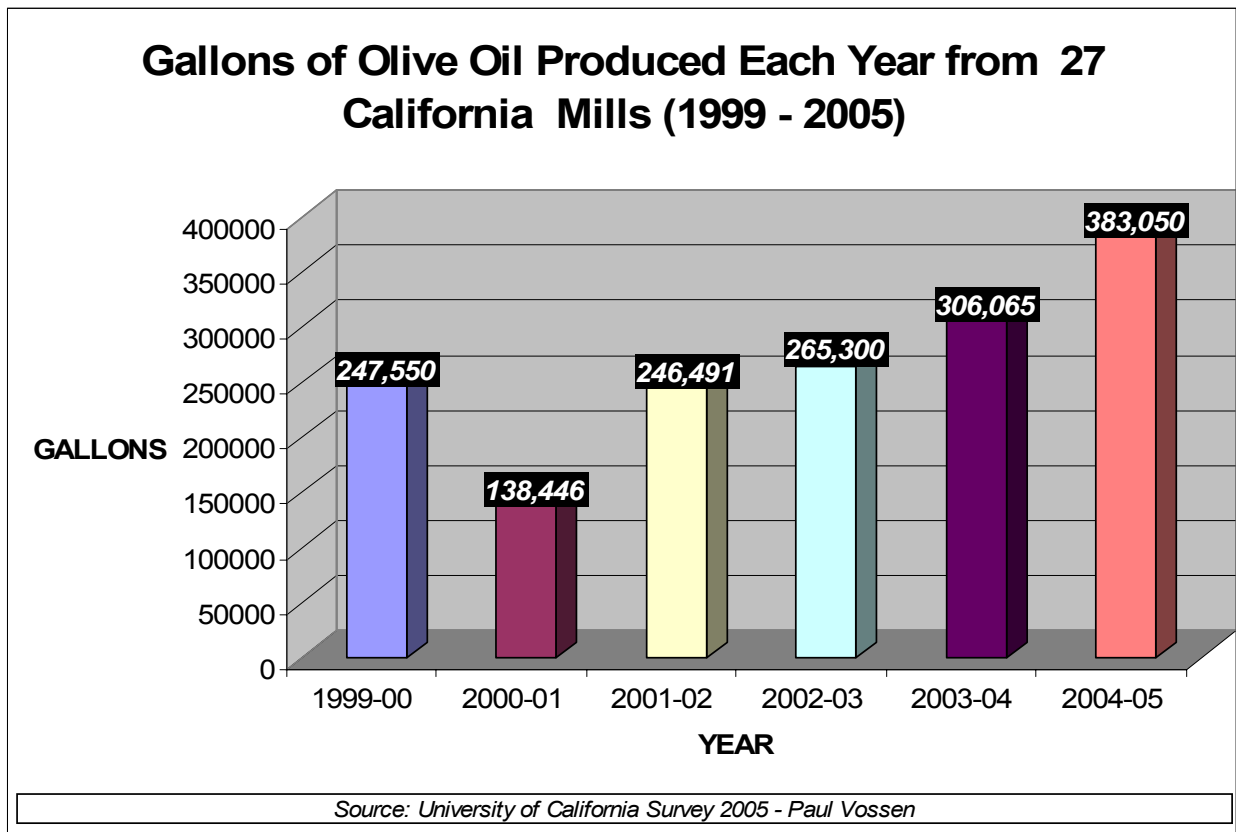
held personal interviews with producers in several of the key production areas to find growers, processors, and nurseries that may have been overlooked. We mailed a survey to over 2,000 people on these mailing lists plus all of the current and past COOC members.

The survey was designed to give as complete a snapshot of the industry as possible. It had three parts, addressing nurseries, growers and processors. By sending all three parts to each person or company we contacted, we received information that might otherwise have been missed: an orchard at a business that is primarily a nursery, for example. The survey inquired about plans for future plantings as well as about production in the past. This survey followed University of California protocol regarding research involving human subjects. Information gathered in the survey was to remain anonymous, confidential, and the surveys were to be destroyed once the survey is complete. Finally, we contacted every known producer by phone, fax, or email who had not previously returned the survey. This approach has garnered a positive response from a very high percentage of the producers in California.

In any survey work such as this, there is never a complete response by all the growers, processors, or nurseries. With the limited number of nurseries (17) selling oil olive trees and the small number of mills (27) processing olives into oil, however, we have a very high degree of confidence in the data generated from those sectors of the industry, since we received a response from all of them. We ultimately received data on all of the known olive oil growers in the state using lists provided by county Agricultural Commissioners and UCCE Farm Advisors. Some data is not complete, however, and had to be estimated, especially from the counties of Tulare, Glenn, Tehama, and Butte, because the amount of fruit that is diverted to oil from the table industry is so variable. In years when fruit prices are higher due to low crop volume and larger sized fruit, it almost all goes into processing for table fruit. In heavy cropping years, when prices are low, or when fruit is undersized or becomes damaged by olive fruit fly, more gets diverted to oil processors.

We believe that we reached about three-fourths of the olive oil growers in those counties and had to estimate the missing numbers, acreage, and production figures based on cross references with the amount of oil produced in the mills nearby. The mills were used as a reference point for gallons of oil produced that was calculated back to acreage and traditional fruit yields from those types of orchards. In some areas a significant amount of oil is produced from fruit that is harvested by Mexican farm laborers or labor contractors seeking work in the months of November, December and January. We contacted some of the businesses known to do this work with our surveys by mail and in phone conversations, but the response rate was poor. Estimates therefore were included for these orchards. Anecdotal evidence from numerous sources cited the existence of old abandoned orchards throughout the entire state, but little reliable data was obtained regarding these orchards. Abandoned olive orchards may number as much as an additional 2,000 to 5,000 acres in California. Since these orchards are not harvested, they have not been included in our results.

Figure 1.



Processing Mills

There are 27 operating mills of significant size in California, producing from about 100 to over 100,000 gallons of olive oil annually. Most (60%) of the processors can be classified as very scale processors producing less than 5,000 gallons per year and only 7% of the state's olive oil. The medium sized producers (18%) that are making between 5,000 and 15,000 gallons of oil per season produce 13% of the olive oil. The bulk of the production, 80%, comes from the remaining 22% of the producers in their larger scale mills.

California's 27 mills produced 247,550 gallons of olive oil in 1999-00, 138,446 gallons in 2000-01, 246,491 gallons in 2001-02, 265,300 gallons in 2002-03, 306,065 in 2003-04, and 383,050 gallons in 2004-05 (figure 1).

Olive oil production in California has increased by an average of about 20% per year over the last nine years. The only year that there was a decline in production was in 2000-01 due to a statewide reduction in crop caused by poor weather conditions in an "off" alternate bearing

YEAR	GALLONS	% CHANGE
1996-97	123,000	-
1997-98	200,000	+ 62%
1998-99	236,000	+ 18%
1999-00	247,550	+ 5%
2000-01	138,446	- 44%
2001-02	246,491	+ 78%
2002-03	265,300	+ 8%
2003-04	306,065	+ 15%
2004-05	383,050	+25%

Source: Paul Vossen mill interviews and UC survey 2005

year. Production the following year (2001-02 showed the largest single year increase of 78% above the previous year (table 1). Production should continue to increase each year over the next five years or more as non-bearing acreage comes into production.

Growers

TABLE 2. CALIFORNIA GROWERS, ACRES, AVERAGE SIZE, RANGE in SIZE, and PRODUCTION by REGION in 2005							
<i>Region</i>	<i># growers</i>	<i>% growers</i>	<i># acres</i>	<i>ave. size</i>	<i>range</i>	<i>% acres</i>	<i>% production</i>
<i>North Coast</i>	268	51	1,535	5 acres	1-175	24.9	18
<i>Central Coast</i>	59	11	376	6 acres	1-40	6.1	3
<i>South Coast and So Cal</i>	17	3	70	14 acres	1-20	1.1	1
<i>Sacramento Valley</i>	94	18	3,216	30 acres	1-450	52.1	54
<i>San Joaquin Valley</i>	39	7	707	23 acres	1-245	11.5	21
<i>Sierra Foothills</i>	51	10	264	8 acres	1-50	4.3	3
<i>Total</i>	528	100	6,168	14 acres	1-450	100	100

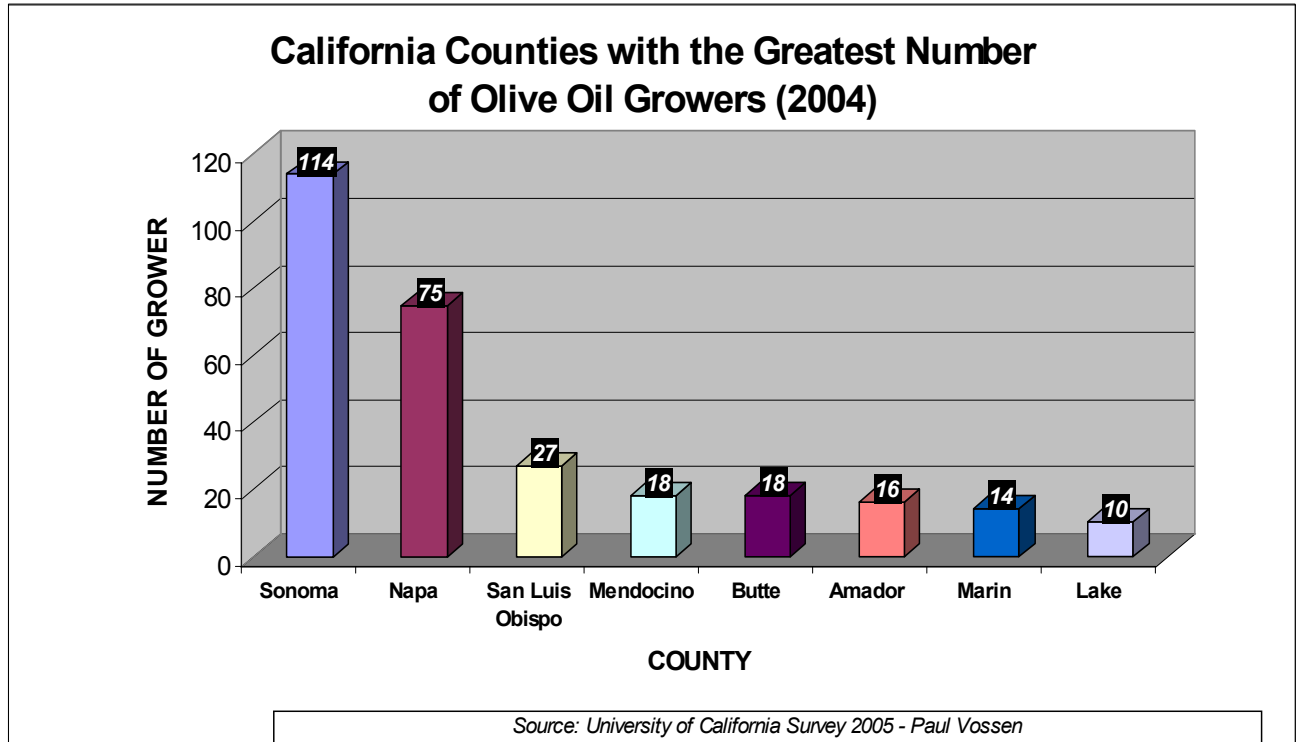
There are 528 reported olive oil growers in 38 California counties in 2005. The number of growers in each county ranges from 1 to 114. The top eight counties have 52% of the growers, so the numbers are fairly evenly split over most of the remaining counties. The average number of growers per county is 14. The counties with the most growers are Sonoma (114), Napa (75), San Luis Obispo (27), Mendocino (18), Butte (18), Amador (16), Marin (14), and Lake (10) (see figure 2). Growers in those eight counties represent 42% of the states' acreage and 50% of the oil. Dividing up the 38 counties reporting olive oil production into six geographic regions provides an interesting perspective on how the amount of production and number of growers are situated within the state of California (table 2).

The North Coast (Alameda, Contra Costa, Lake, Marin, Mendocino, Napa, Santa Clara, and Sonoma) has the largest number of growers 268 (51%) and 1,535 acres (25%), with the smallest average sized oil olive orchards (5 acres each). Many growers in this area have less than one acre to just a few acres. This area has 18% of the state's 2004-05 production and most of the orchards are non-bearing or just starting to come into production. The vast majority of the orchards are planted to Italian varieties such as Frantoio, Leccino, and Pendolino in the high-density system (250 to 300 trees/acre). Many wineries also have small olive plantings for oil, often incorporated into landscaping.

The Central Coast (Monterey, San Benito, San Luis Obispo, and Santa Barbara) has 59 growers (11%), 376 acres in oil olives, which is 6% of California's acreage and 3% of the oil production of 2004-05. Its characteristics are similar to the North Coast with an average orchard size of 6 acres.

The South Coast and Southern California (LA, Riverside, San Diego, and Ventura) has 17 growers (3%) and 70 acres, which is 1% of the states' olive oil acreage with an average size of 14 acres each and 1% of the production of 2004-05.

Figure 2.

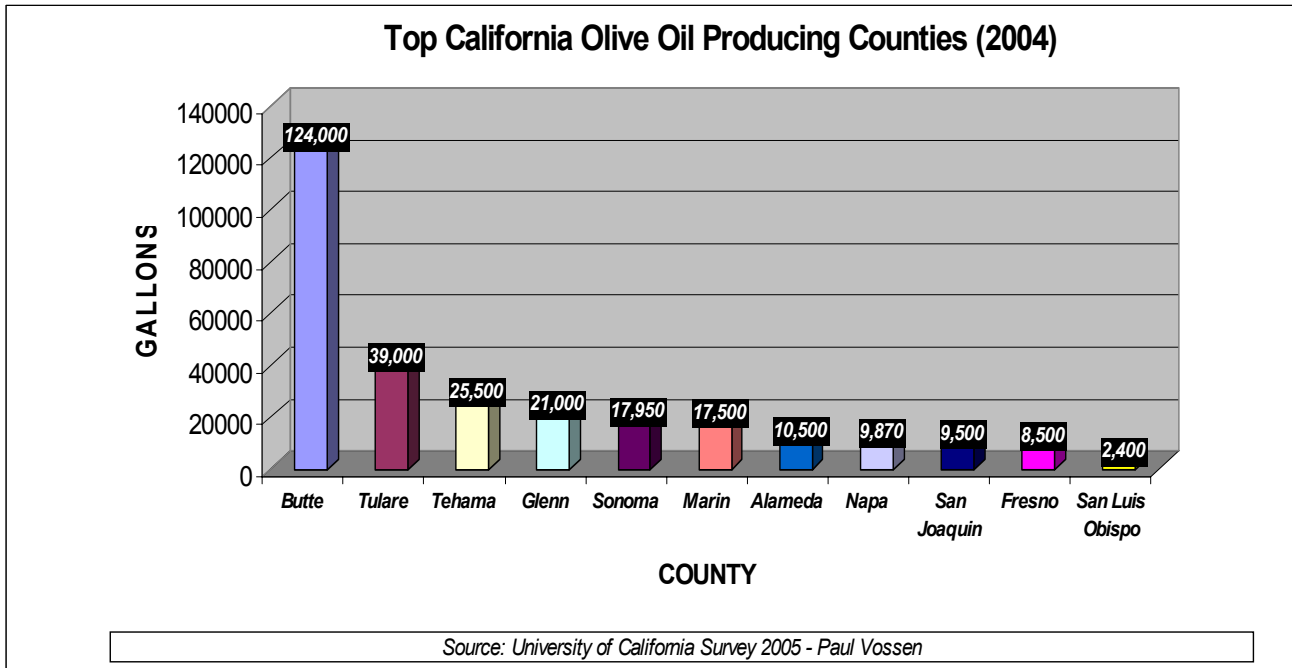


The Sacramento Valley (Butte, Glenn, Sacramento, San Joaquin, Shasta, Solano, Sutter, Tehama, Yolo, and Yuba) has 94 growers (18%) with the largest number of acres (3,217), which is about half (52%) of California’s land planted to oil olives with the largest average sized farms. It also produces over half of the states’ olive oil (54%). This is a traditional olive growing area with many old widely spaced orchards (100 trees/acre) planted to Mission, Ascolano, Sevillano, and Manzanillo varieties. It was also the first region to plant orchards in the super-high-density system (670 to 900 trees/acre) with Arbequina, Arbosana, and Koroneiki varieties. Some of those orchards are now in full production.

The San Joaquin Valley (Fresno, Madera, Merced, San Joaquin, Stanislaus, Tulare) has 39 growers (7%), 707 acres (11%) of the acreage, and 21% of the production. This region has the second largest average sized orchards with several new growers that have planted into the super-high-density system.

The Sierra Foothills (Amador, Calaveras, El Dorado, Nevada, Placer, Tuolumne) has 51 growers (10%), 264 acres (4%), and 3% of California’s production. This region has a mix of many widely-spaced small-scale orchards of old varieties and small new plantings of primarily Italian varieties.

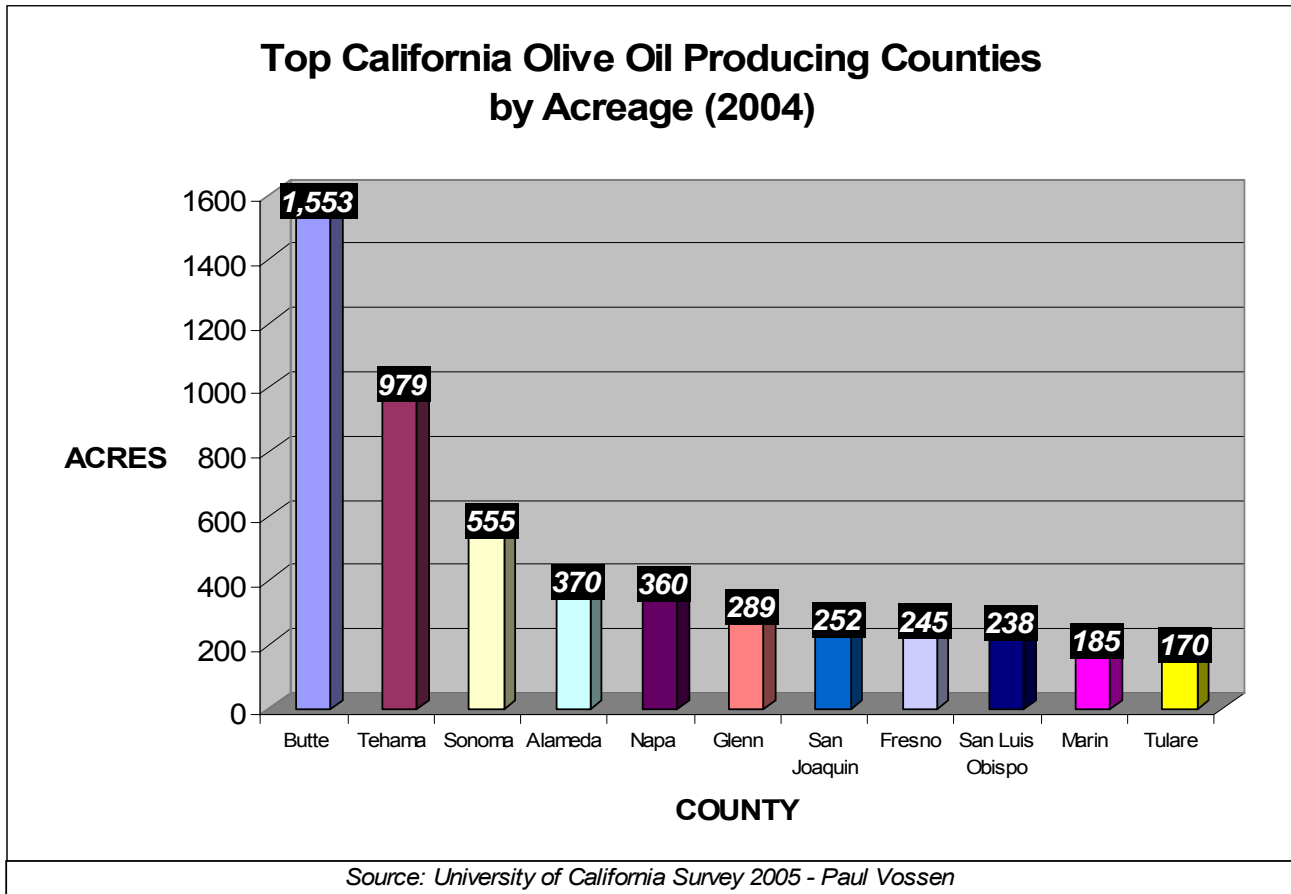
Figure 3.



The top eleven olive oil producing counties by gallons are shown in figure 3. These counties represent about 75% of California’s total olive oil production (383,050 gallons) and have 19 of the 27 major processing mills. The leading county is Butte with 124,000 gallons of oil production followed by Tulare with 39,000 gallons, Tehama with 25,500 gallons, Glenn with 21,000 gallons, Sonoma with 17,950 gallons, Marin with 17,500 gallons, Alameda with 10,500 gallons, Napa with 9,870 gallons, San Joaquin with 9,500 gallons, Fresno with 8,500 gallons, and San Luis Obispo with 2,400 gallons of oil produced in 2004-05. The leading olive oil producing counties have many mature table fruit variety orchards in full production that have traditionally provided a significant amount of California’s olive oil. Butte County was also the first to plant significant acreage into the super-high-density system, which is reflected in its production.

In 2004 California had 6,168 acres in oil olives. Figure 4 shows the top 12 olive oil producing counties by acreage in California. Butte with 1,553 acres and Tehama with 979 acres have both old mature orchards as well as significant new acreage planted to the super-high-density system. Sonoma County with 555 acres, Alameda with 370 acres, and Napa with 360 acres have many newly planted orchards that are non-bearing or just beginning to come into production, planted primarily with Italian varieties in the high-density system. Many are associated with wineries. Glenn County with 289 acres has mostly mature table olive orchards reported as now harvested for processing into oil. San Joaquin with 252 acres and Fresno with 245 acres have small plantings of old mature table olive orchards, some of which go to oil production, but most of the acreage is newly planted super-high-density orchards. San Luis Obispo County with 238 acres is mostly planted to Italian varieties and most of those orchards are just coming into production. Marin County with 185 acres has mostly newly planted orchards that are still non-bearing or just coming into full production. Most of those orchards are planted to Italian varieties.

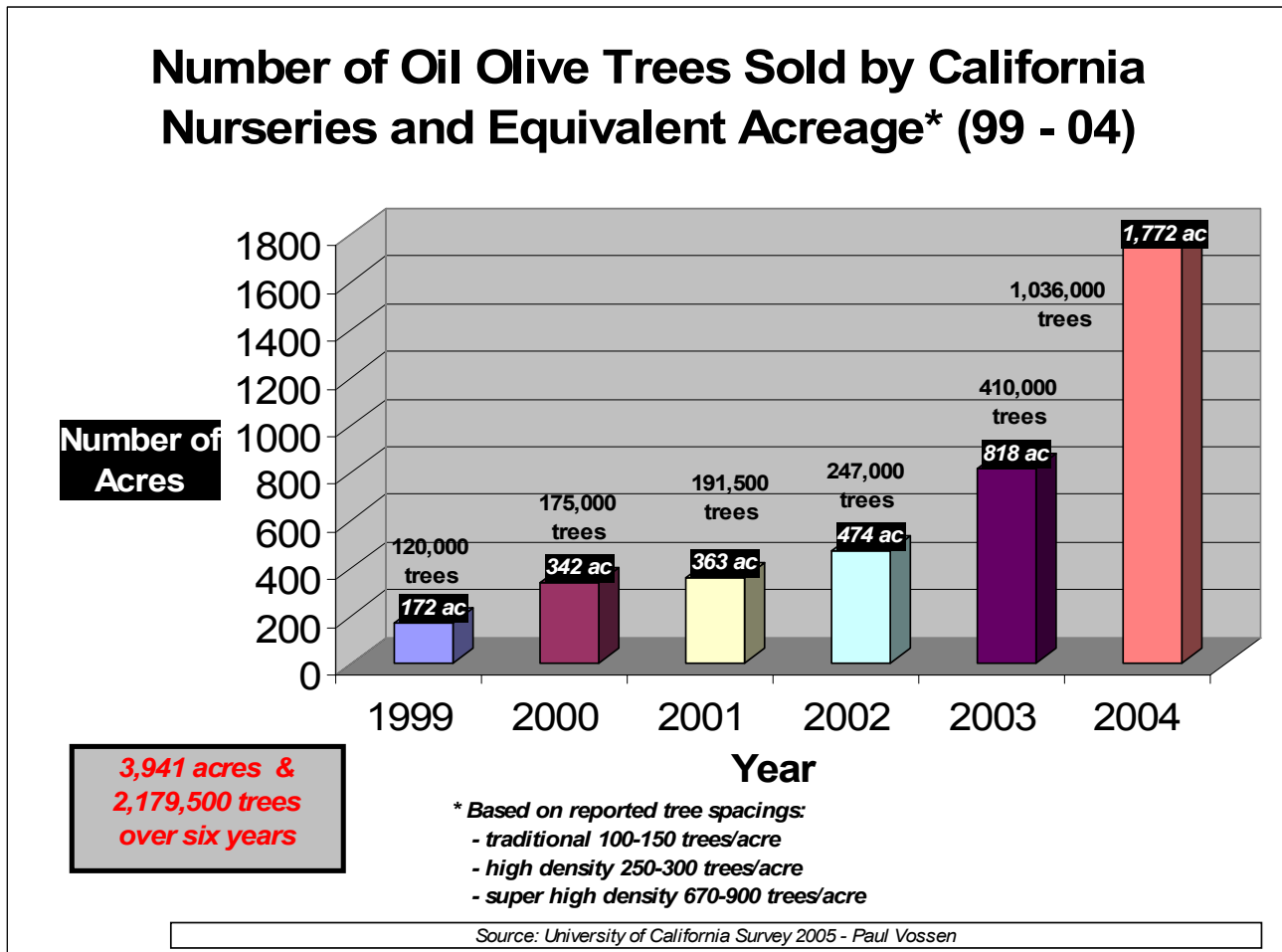
Figure 4.



Tulare County has 170 reported acres going toward oil production. This is primarily a table fruit producing area with most of the acreage in Manzanillo variety trees. The amount of fruit diverted to oil varies from year to year and depends on the table fruit market.

Of all the 6,168 olive oil acres reported in 2004, 66% is classified as organically grown and 34% as conventionally grown. The organic production can be broken down into 16% certified organic, 9% in transition to certified organic, and 41% being grown with organic methods, but without certification.

Figure 5.

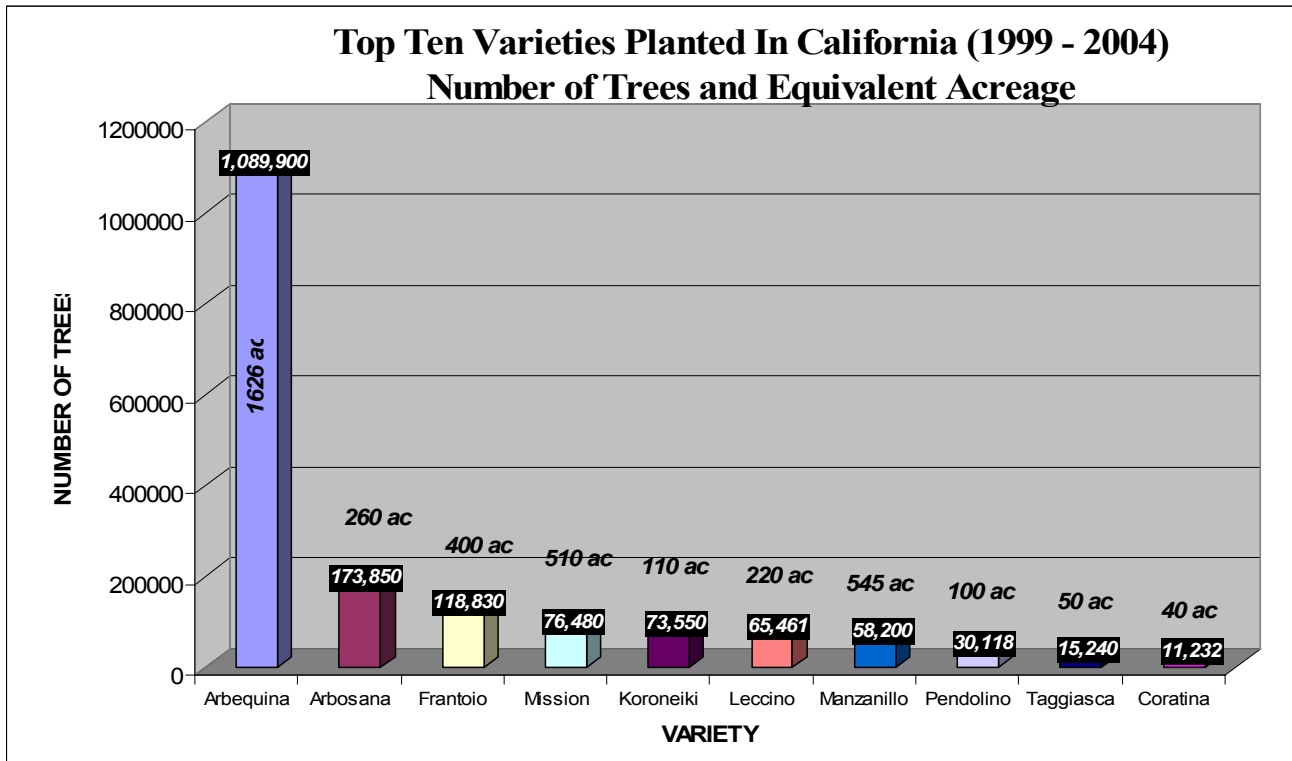


Nurseries

For this survey there were 17 nurseries reporting. These represent all of the significant tree sales in California. About 2.75 million oil olive trees are planted in California. Most older (traditional) acreage, prior to 1990 was planted at about 100-150 trees per acre. Since then about half of the new acreage has been planted at 250 to 300 trees per acre (high-density) and the other half at a density of 600 to 900 trees per acre (super-high-density) (figure 5). Approximately 2.18 million trees have been planted in California over the last six years. When converted to equivalent acreage, based on indicated tree spacings typical of those varieties that is 3,941 acres planted from 1999 to 2004. These newly planted trees comprise 64% of the total acreage in California. It is estimated that about 70 % of that new acreage is still non-bearing or just starting to come into production. This means that the amount of oil produced in California could easily double within the next 5-7 years. The approximately 1,990 acres of super-high-density orchards planted over the last six years will come into production very quickly; the 1,940 acres of high density orchards will take an additional five years or so to reach full production. There are at least another 2,000 acres of new plantings planned for 2005, mostly in the Sacramento and San Joaquin Valleys in the super-high-density production system.

There were 120,000 trees planted in 1999 on 172 acres; in 2000 there were 175,000 trees planted on 342 acres; in 2001 there were 191,500 trees planted on 363 acres; in 2002 there were 247,000 trees planted on 474 acres, in 2003 there were 410,000 trees planted on 818 acres; and there were 1,036,000 trees planted on 1,772 acres in 2004.

Figure 6.



The varieties of olive trees planted in California have changed dramatically over the last six years. Prior to 1999 most of the trees were table varieties (Mission and Manzanillo) and Italian varieties (Frantoio, Leccino, and Pendolino), but the last six and particularly the last three years have been dominated by Spanish varieties (Arbequina and Arbosana) and the Greek variety (Koroneiki) suitable for super-high-density planting. The top ten varieties planted in California over the last six years from 1999 to 2004 were Arbequina with 1,089,900 trees planted on 1,626 acres; Arbosana with 173,000 trees planted on 260 acres, Frantoio with 118,830 trees planted on 400 acres, Mission with 76,480 trees planted on 510 acres, Koroneiki with 73,550 trees planted on 110 acres, Leccino with 65,461 trees planted on 220 acres, Manzanillo with 58,200 planted on 545 acres, Pendolino with 30,118 trees planted on 100 acres, Taggiasca with 15,250 trees planted on 50 acres, and Coratina with 11,232 trees planted on 40 acres (see figure 6).

Conclusion

Since 1996 the production of California olive oil has increased by 168%. In the past six years close to 4,000 acres of olives have been planted specifically for oil. When those trees come into full production in the next five to seven years, California could easily be producing three quarters of a million gallons (750,000) of olive oil annually. The trend towards larger scale, super-high-density plantings could drive the number of gallons up more quickly, because of the relatively short time those orchards take to reach full production. At $\frac{3}{4}$ million gallons a year, California ranks on a par with France in olive oil production in the world.

The California olive oil industry, at 6,168 acres is small compared to the major agricultural crops, but when compared to smaller specialty crops like winter pears, kiwi, or fresh market cucumbers olive oil acreage is similar. Due to the high added value of oil processing, the economic picture is even better. If each gallon of California olive oil sells for \$22.50 in the bulk market that would be a value of almost \$17 million and quite similar to winter pears, kiwi, and figs. If retail prices are used for bottled olive oil at \$113 per gallon based on 500 ml bottles at \$15 per bottle the value of the California olive oil industry would be \$84,750,000. As California's reputation for excellence in olive oil grows in the domestic and international markets, the demand will likely increase. The significant new plantings shown by this survey will be increasing the state's production in the immediate future to meet such a demand.

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