

California Olive Oil Quality 2014–2017



A report on the Olive Oil Commission of California's Mandatory Sampling & Testing Program

REPORT HIGHLIGHTS

- ▶ The vast majority of olive oil produced in California is verified as Extra Virgin by independent lab analysis.
- ▶ Most California olive oils are accurately labeled by producers. The OOC program appears to be driving improvement in this arena.
- ▶ Independent laboratory analysis indicates that California olive oils produced by OOC members are easily meeting mandatory quality standards established through the OOC program.

EXECUTIVE SUMMARY

The overarching goal of the Olive Oil Commission of California is to ensure that olive oil produced in California is trusted and valued. The OOC, established in 2014 through legislation initiated by industry members and operating with oversight from the California Department of Food and Agriculture, is working toward this goal by verifying olive oil quality through a government sampling and testing program. Information contained in this report represents results of this mandatory sampling program during the first three years of the program's existence.

Although the OOC is new, this report indicates the program is working to make a difference in the quality of olive oil produced in the state. **Laboratory analysis confirms that most of the olive oil produced in the state is Extra Virgin** and the trend is increasing. In 2014/15 just over 90 percent of all California olive oils were found to be Extra Virgin. The percentage of Extra Virgin olive oil produced in California grew to 99 percent in 2016/17. Even more importantly, **laboratory analysis shows that California producers are accurately labeling their product.** In the first year of the OOC's existence, four samples of olive oil examined were not consistent with the grade on the label. In 2015/16, just two samples could not be consistent with grade on the labels and in 2016/17 all samples were consistent with the grade on the labels.

This is very good news for consumers. Recent media reports on olive oil fraud have resulted in confusion among consumers regarding how to select and buy good quality olive oil. Many production areas around the world are working to resolve this important issue. The OOC represents the growing California olive oil industry's commitment to improving the consumer's olive oil buying experience. The hope is that California can establish trust and credibility among consumers as well as with retail and food service buyers. Ultimately, this trust will increase the value of California olive oil.



Summary of Report Findings

This first report from the OOC's mandatory sampling program indicates the program is working to make a difference in the quality of olive oil produced in the state. **Chart B** indicates California producers are labeling their product with increasing accuracy. In 2016/17 100 percent of the samples were accurately labeled. **Chart C** shows that laboratory analysis confirms most of the olive oil produced in the state is Extra Virgin and the trend is increasing.

Table D shows that California olive oils are easily meeting the mandatory standards required by the OOC. **Table E** shows the largest number of samples collected are olive oils made from the Arbequina variety at 25 percent. Arbosana closely follows at 16 percent of the samples and the third largest number of samples is Koroneiki at 10 percent.

Please note that samples collected and analyzed through this program evaluate the quality of California olive oil at time of production. Many factors affect quality of olive oil after it enters distribution channels. OOC is conducting additional research to examine shelf life of California olive oils. These studies may have further potential to improve the quality and image of California olive oils and to enhance the consumer's eating experience.

Below is a table showing the breakdown of total samples included in the data analysis by the UC Davis Olive Center. This table shows the number of samples collected for the OOC by CDFA and those collected and tested by handlers themselves.

Table A. Number of Samples Collected by Year

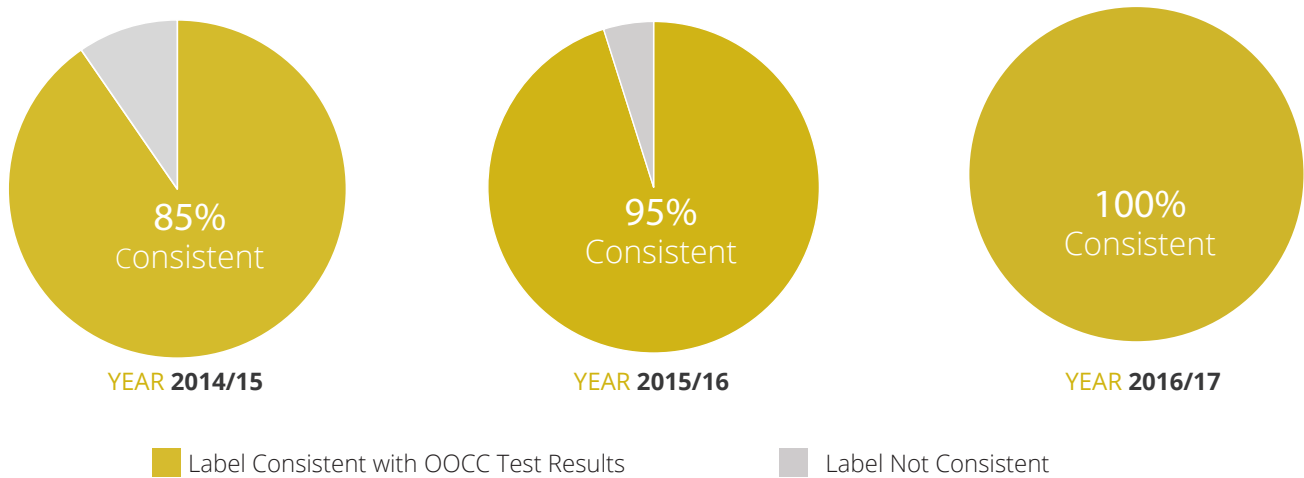
	OOC Samples	Handler Samples	# of Handlers	Total Samples
2014/15	38	66	7	104
2015/16	49	131	12	180
2016/17	57	90	14	147

Footnote: The OOC seeks bids each year for conducting its official analyses and selects the best laboratories to provide this service in a cost-effective and efficient manner. In 2014/15 and 2015/16, a well-respected and experienced government lab, the Australian Oils Research Laboratory in New South Wales was selected to do both chemistry and sensory analysis for the OOC. In 2016/17 quality and purity testing was performed by Eurofins Analytical Laboratories in New Orleans, LA, and sensory analysis remained at the Australian lab.

One of the most important objectives of the OCCC program is to verify that handlers are correctly labeling their olive oil according to grade. As part of its analysis, the UC Davis Olive Center compared lots tested both by the OCCC's independent lab and by the handlers at a lab of their choosing. The chart below indicates how many times the OCCC's independent lab verified the grade identified by the handler was consistent with the grade determined through the OCCC's mandatory testing program.

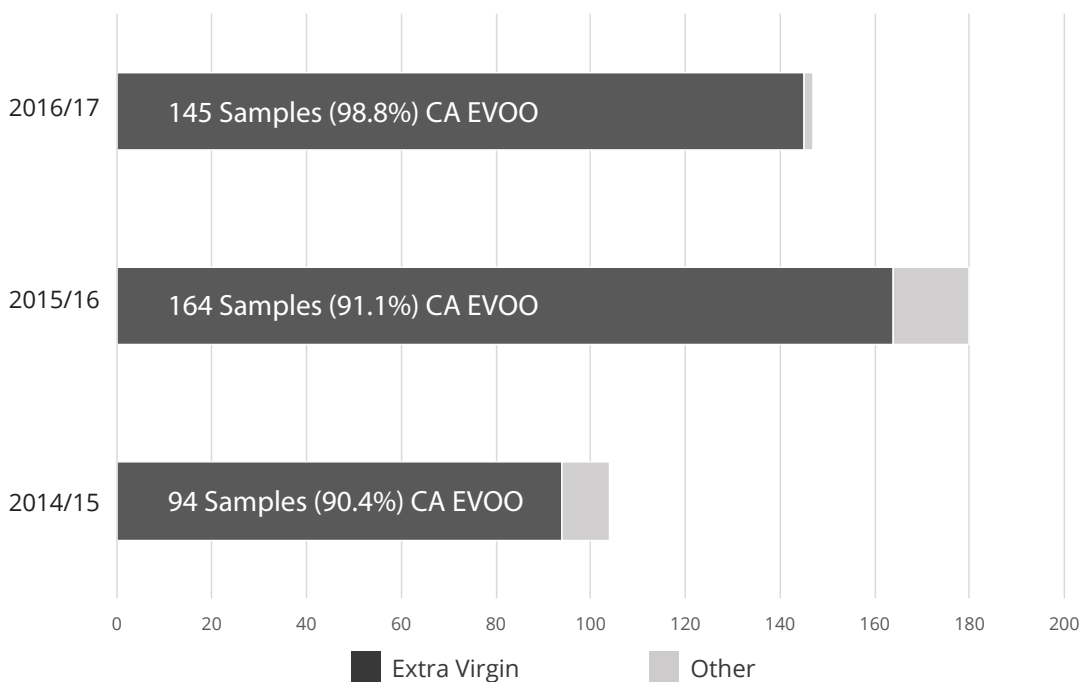
Please note the purpose of this comparison is not to determine how often the OCCC's independent lab can verify the grade is EVOO, but to ensure the grade appearing on the bottle is consistent with OCCC test results.

Chart B. Verification of Olive Oil Grades



The vast majority of California olive oil tested through the OCCC program met the California Extra Virgin standard. California producers also make a small percentage of olive oil designated as Virgin or Crude. Quality parameters for the California Extra Virgin Olive Oil Standard are outlined in Table D.

Chart C. Breakdown of California Olive Oil Production by Grade



The table below indicates the average values found in EVOO samples for each parameter required under the California grade standard.

Table D. Summary of Quality Testing Results for EVOO Samples

Test Year	2014/15		2015/16		2016/17		
	CA EVOO Standard	Average Value	Standard Deviation	Average Value	Standard Deviation	Average Value	Standard Deviation
Free Fatty Acidity	(≤0.5)	0.2	0.1	0.2	0.1	0.2	0.1
Peroxide Value	(≤15.0)	7.3	2.8	5.9	2.9	5.5	2.5
UV K232	(≤2.40)	1.69	0.25	1.77	0.21	1.78	0.22
UV K232	(≤0.22)	0.12	0.03	0.12	0.03	0.13	0.03
UV ΔK	(≤/0.01/)	<0.003	0	<0.003	0	0	0
Moisture and Volatile Matter	(≤0.2)	0.1	0	0.1	0	0.1	0
Insoluble Impurities	(≤0.1)	0	0	0	0	0	0
Pyropheophytins	(≤17)	2	1	2	1	2	1
1,2-Diacylglycerols	(≥35)	82	10	88	6	89	7
Organoleptic	(MeF>0)	4.2	0.7	4.4	0.7	4.6	0.8

Table E. Varietal Breakdown of OOC Test Samples

The list below shows the percentage of samples collected through the OOC's sampling program according to variety. Varietal blends are included in one category.

Variety	2014/15	2015/16	2016/17
Arbequina	30 (28.8%)	55 (30.6%)	36 (24.5%)
Arbosana	22 (21.2%)	33 (18.3%)	24 (16.3%)
Koroneiki	12 (11.5%)	15 (8.3%)	15 (10.2%)
Coratina	1 (1%)	3 (1.7%)	3 (2%)
Mission	6 (5.8)	7 (3.9%)	5 (3.4%)
Frantoio	3 (2.9%)	5 (2.8%)	5 (3.4%)
Leccino	3 (2.9%)	4 (2.2%)	2 (1.4%)
Manzanillo	2 (1.9%)	5 (2.8%)	5 (3.4%)
Pical	1 (1%)	2 (1.1%)	4 (2.7%)
Sevillano	2 (1.9%)	7 (3.9%)	6 (4.1%)
Blends	9 (8.6%)	14 (7.8%)	19 (13%)
Other	1 (1%)	13 (7.2%)	13 (8.8%)
Unidentified	12 (11.5%)	17 (9.4%)	10 (6.8%)
TOTAL	104	180	147

Footnote: Data found inside parentheses is the percentage of total samples.

Background

The OOC's mandatory sampling and testing program requires that:

- ▶ All handlers of California olive oil who produce 5,000 gallons per year or more must sample and test all their olive oil lots and provide laboratory analysis to the OOC.
- ▶ Inspectors from the California Department of Food and Agriculture (CDFA) collect a designated number of olive oil samples from each California olive oil handler. These samples are sent to an accredited third-party laboratory for sensory and chemical analysis.
- ▶ Test results from samples collected by producers and from CDFA are provided to the OOC and the information is analyzed by the UC Davis Olive Center.
- ▶ UC Davis Olive Center compares lab testing results from producers and those from the government sampling program to:
 1. Confirm the quality of olive oils produced in California is meeting the minimum standards set through the OOC;
 2. Ensure labeling used by California producers matches the quality of olive oil in the bottle.

The OOC was established in March 2014. Analysis of results from Quality Testing of California Olive Oil began with the 2014/15 California olive oil season. Included in this report are evaluations from the following crop years: 2014/15, 2015/16, 2016/17.

TIMELINE

In California, olive oil harvesting and milling generally occurs from September through December. The OOC program operates on the following timeline:

October through January. Olive oil samples collected.

February 1. Samples collected by CDFA and by individual handlers must be collected before this date.

March 1. Samples collected by CDFA must be tested and results reported to the OOC. Handlers must also test, compile data and report results to the OOC for their samples by this date.

March 15. Lab results from CDFA samples must be returned to handlers.

March 31. All lab test results for both the CDFA-collected samples and those from handlers must be turned over to the UC Davis Olive Center for analysis.

ABOUT THE OOC

The Olive Oil Commission of California is a government entity of the State of California and operates with general oversight from the California Department of Food and Agriculture. The OOC was established and is funded by California olive oil farmers. The Olive Oil Commission of California exists to support California olive farmers by:

1. Conducting research to assist farmers in successfully growing a healthy, sustainable crop.
2. Developing and enforcing standards for the purity and quality of California olive oil.
3. Verifying California olive oil quality through mandatory government sampling and third-party analysis.
4. Promoting simple, clear accurate labels for California olive oil.