

California Olive Oil Quality 2014–2018



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

REPORT HIGHLIGHTS

- ▶ Report findings demonstrate the value of the OOC program at ensuring California olive oil is accurately labeled.
- ▶ Independent laboratory analysis indicates that California olive oils produced by OOC members are continuing to meet mandatory quality standards.
- ▶ Most of the olive oil produced in California is verified as Extra Virgin by independent analysis.

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 four years of the program's existence.

Although the OOC is still young, 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 this trend is continuing; 90% or more of the olive oil produced in the state of California is California Extra Virgin Olive Oil.**

More importantly, laboratory analysis shows that California producers are accurately labeling their product. Results from independent testing shows that olive oils produced by OOC members are consistent with the grade indicated on the package most of the time. Although, 2018 tests found that 92% of the samples were accurately labeled by grade - a drop from 100% in 2017 - this is still an improvement over the 2014 results when just 85% of the samples were labeled accurately.

It's significant that the 2018 testing found only five samples inconsistent with their labeling grade. Of these five, two samples were actually found to be of a higher grade than what was listed on the bottle. Producers of the other three samples were notified by the OOC about the test results and labels on the bottles were changed to reflect the accurate grade. This is exactly how mandatory government sampling and testing was designed to work and demonstrates the value of the OOC program at ensuring California olive oil is correctly labeled.

Overall this is excellent news for consumers. 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 California olive oils 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 retail and food service buyers. This trust increases the value of California olive oil.

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.

Summary of Report Findings

This 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 the accuracy with which California producers are labeling their products. In 2017/18 92% of the samples were accurately labeled. **Chart C** shows that laboratory analysis confirms that most of the olive oil produced in the state is Extra Virgin.

Table D shows that most California olive oils are continuing to meet the mandatory CDFA standards required by the OOC. **Table E** shows the number of olive oil samples collected according to their respective varieties. In 2018 the majority of olive oils tested were made from the Arbequina variety at 23% followed by Arbosana.

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

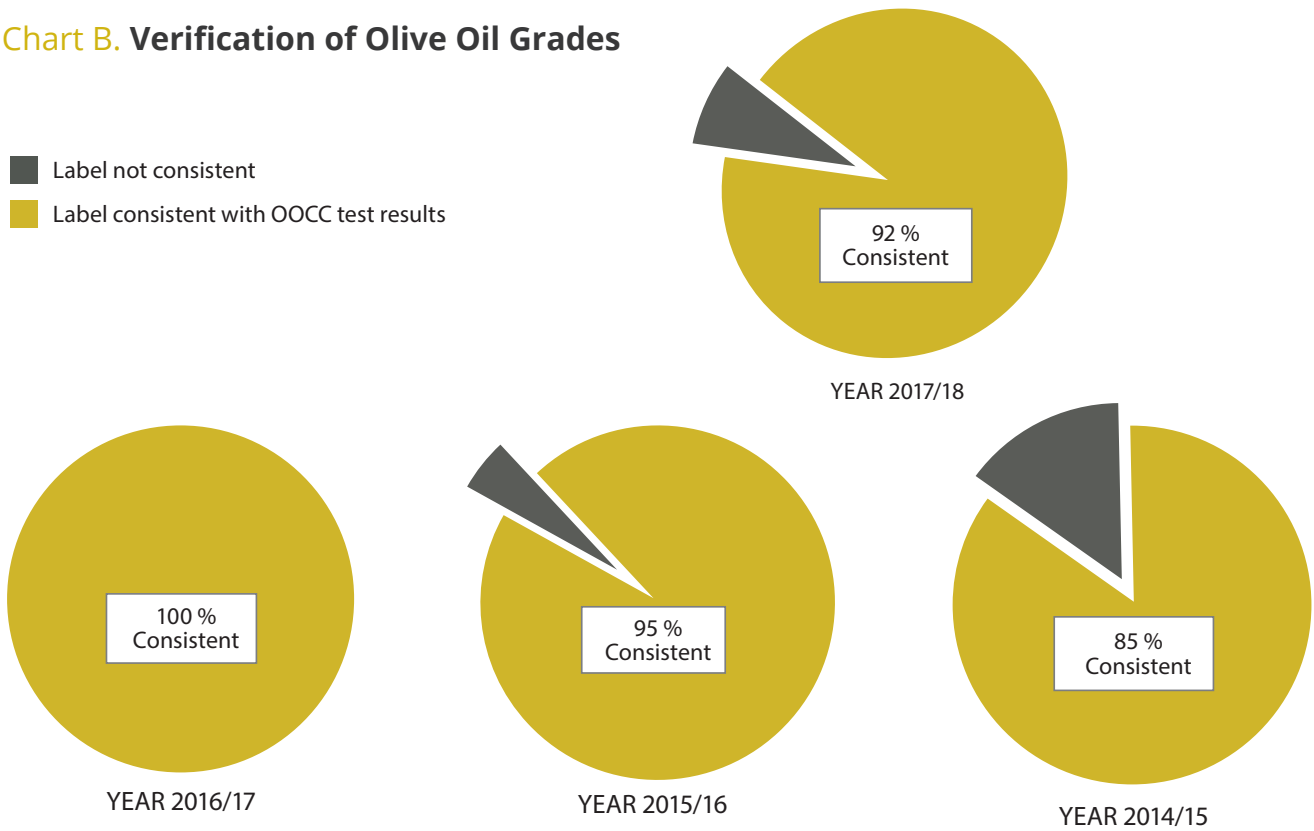
	OOCC Samples	Handler Samples	# of Handlers	Total Samples
2014/15	38	66	7	104
2015/16	49	131	12	180
2016/17	57	90	14	147
2017/18	78	109	13	187

One of the most important objectives of the OOC 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 OOC's independent lab and by the handlers at a lab of their choosing. The chart below indicates how many times the OOC's independent lab verified the grade identified by the handler was consistent with the grade determined through the OOC's mandatory testing program.

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 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. In 2017/18, chemical analysis was conducted by Eurofins Analytical Laboratories and the California Olive Oil Council for organoleptic analysis.

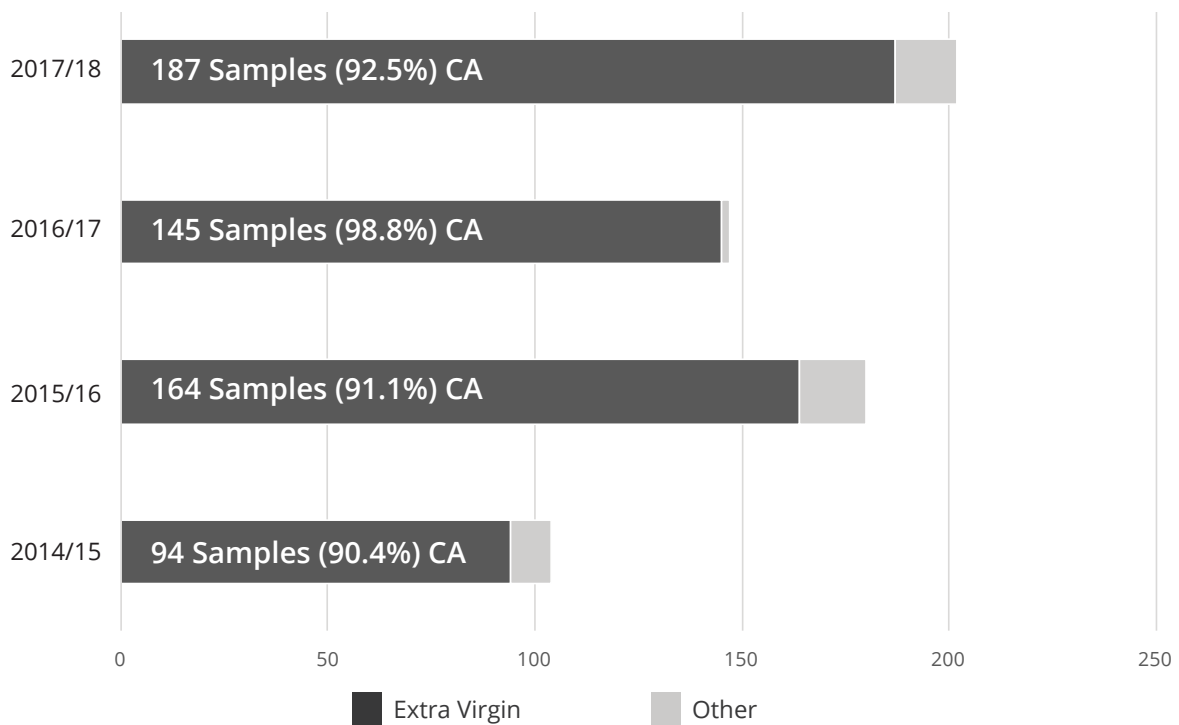
Please note the purpose of this comparison is not to determine how often the OOC's independent lab can verify the grade is California Extra Virgin Olive Oil, but to ensure the grade appearing on the bottle is consistent with OOC test results.

Chart B. Verification of Olive Oil Grades



The vast majority of California olive oil tested through the OCCC program met the California Extra Virgin Olive Oil 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		2017/18		
	CA EVOO Standard	Average Value	Standard Deviation	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	0.1	0.1
Peroxide Value	(≤15.0)	7.3	2.8	5.9	2.9	5.5	2.5	5.3	2.6
UV K232	(≤2.40)	1.69	0.25	1.77	0.21	1.78	0.22	1.67	0.2
UV K232	(≤0.22)	0.12	0.03	0.12	0.03	0.13	0.03	0.12	0.03
UV ΔK	(≤/0.01/)	<0.003	0	<0.003	0	0	0	0	0
Moisture and Volatile Matter	(≤0.2)	0.1	0	0.1	0	0.1	0	0.1	0
Insoluble Impurities	(≤0.1)	0	0	0	0	0	0	0	0
Pyropheophytins	(≤17)	2	1	2	1	2	1	1	1
1,2-Diacylglycerols	(≥35)	82	10	88	6	89	7	91	6
Organoleptic	(MeF>0)	4.2	0.7	4.4	0.7	4.6	0.8	3.6	0.7

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	2017/18
Arbequina	30 (28.8%)	55 (30.6%)	36 (24.5%)	43 (23%)
Arbosana	22 (21.2%)	33 (18.3%)	24 (16.3%)	21 (11.2%)
Koroneiki	12 (11.5%)	15 (8.3%)	15 (10.2%)	15 (8%)
Coratina	1 (1%)	3 (1.7%)	3 (2%)	2 (1.1%)
Mission	6 (5.8)	7 (3.9%)	5 (3.4%)	6 (3.2%)
Frantoio	3 (2.9%)	5 (2.8%)	5 (3.4%)	4 (2.1%)
Leccino	3 (2.9%)	4 (2.2%)	2 (1.4%)	4 (2.1%)
Manzanillo	2 (1.9%)	5 (2.8%)	5 (3.4%)	5 (2.7%)
Picual	1 (1%)	2 (1.1%)	4 (2.7%)	7 (3.7%)
Sevillano	2 (1.9%)	7 (3.9%)	6 (4.1%)	6 (3.2%)
Blends	9 (8.6%)	14 (7.8%)	19 (13%)	38 (20.3%)
Other	1 (1%)	13 (7.2%)	13 (8.8%)	20 (10.7%)
Unidentified	12 (11.5%)	17 (9.4%)	10 (6.8%)	16 (8.6%)
TOTAL	104	180	147	187

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

Background

The OOCC'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 OOCC.
- ▶ Beginning in 2017/18, test results include members who produce fewer than 5,000 gallons per year and participate in the OOCC program voluntarily.
- ▶ 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.
- ▶ 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 OOCC;
 2. Ensure labeling used by California producers matches the quality of olive oil in the bottle.

The OOCC 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 and 2017/18.

TIMELINE

In California, olive oil harvesting and milling generally occurs from September through December. The OOCC 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.

February 28. Samples collected by CDFA must be tested and results reported to the OOCC. Handlers must also test, compile data and report results to the OOCC for their samples by this date.

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

March 30. All lab test results for both the CDFA-collected samples and those from handler's must be turned over to the UC Davis Olive Center for analysis.

ABOUT THE OOCC

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 OOCC 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.