



2024 California Almond Objective Measurement Report



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Released: July 10, 2024 - 12:00 p.m. PDT Revised: July 11, 2024, Data Reliability statement included

2024 CALIFORNIA ALMOND FORECAST UP 13 PERCENT

The 2024 California almond production forecast is 2.80 billion meat pounds, down 7% from May's subjective forecast and 13% higher than last year's crop of 2.47 billion meat pounds. The forecast is based on 1.38 million bearing acres. Production for the Nonpareil variety is forecast at 1.10 billion meat pounds, 17% above last year's deliveries of 941 million meat pounds. The Nonpareil variety represents 39% of California's total almond production.

The 2024 almond crop experienced mostly favorable weather during the bloom period, which began the second week in February and finished by the middle of March. Bee hours were reported to be significantly higher than last year. Wet and warm weather in April increased pest and disease pressure, but dry conditions and mild temperatures in May helped the developing crop. Multiple heat waves across the state during June and July required growers to increase irrigation on their orchards. The almond harvest is expected to be on schedule.

The average nut set per tree is 4,072, an increase of 3% compared to 2023. The Nonpareil average nut set of 4,137 is 3% higher than last year. The average kernel weight for all varieties sampled was 1.61 grams, down 4% from the 2023 average weight. The Nonpareil average kernel weight was 1.64 grams, down 3% from the 2023 average weight. A total of 98.9% of all nuts sized were sound.

SAMPLING PROCEDURES

To determine tree set, nuts are counted along two paths within each randomly selected tree. Work begins at the trunk and progresses to the end of the terminal branch. Using a random number table, one branch is selected at each forking to continue the path. A branch's probability of selection is directly proportional to its cross-sectional area. This methodology is used because of its statistical efficiency. The method also makes it possible to end up at any one of the tree's numerous terminal branches. This process is done twice.

Since each path has a probability of selection associated with it, this probability is used to expand nut counts and arrive at an estimated set for the entire tree.

Along intermediate stages (i.e., the bearing surface between forkings), every fifth nut is picked. All nuts on the terminal branch are picked. These nuts are used to determine size and weight measurements.

FIELD SAMPLING ACTIVITIES

The survey began May 25 and sampling was completed by June 28. There were 1,904 trees sampled for the 2024 survey in 952 orchards. Data was collected from two random paths within each tree. Additional orchards were not sampled for one of the following reasons:

- 1) Orchard had been sprayed.
- 2) Orchard had been recently irrigated and was wet.
- 3) Orchard had been pulled.
- 4) Grower would not grant permission or could not be contacted.

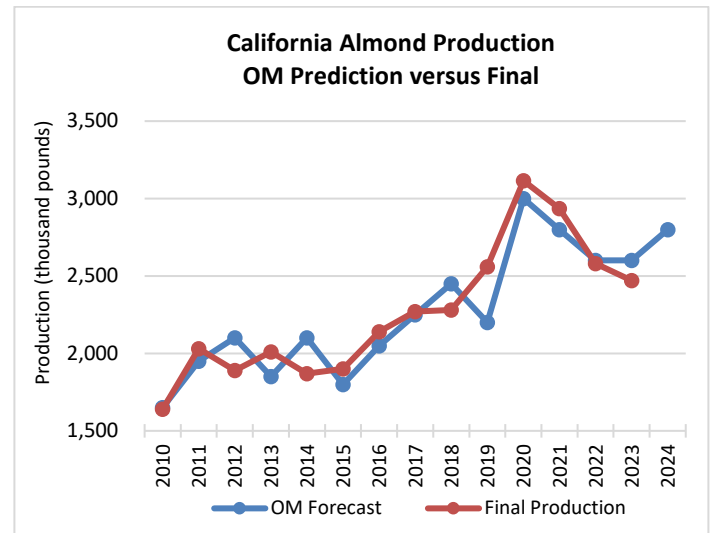
The Objective Measurement Survey is funded by the Almond Board of California.

TABLE 1: OBJECTIVE MEASUREMENT SURVEY COUNTS; COMPARISON OF NUT ESTIMATES AND ORCHARDS SAMPLED BY COUNTY AND VARIETY, 2023-2024

County and Variety	2023		2024	
	Nuts per tree	Orchards sampled	Nuts per tree	Orchards sampled
STATE LEVEL	3,953	912	4,072	952
BY COUNTY				
Colusa	4,336	39	4,231	43
Fresno	2,946	171	3,317	187
Kern	4,374	158	3,718	176
Madera	3,001	114	4,996	116
Merced	4,686	138	5,429	138
San Joaquin	3,196	39	3,860	39
Stanislaus	4,260	148	3,258	149
Tulare	4,677	38	4,493	41
Other ¹	4,771	67	4,295	63
BY VARIETY				
Butte	4,043	54	3,316	56
Carmel	4,959	39	5,356	33
Independence	4,048	91	3,448	111
Monterey	3,598	178	4,257	199
Nonpareil	4,004	376	4,137	361
Padre	4,055	40	3,953	46
Other ²	3,856	134	4,170	146

¹ Other includes: Butte, Glenn, Kings, Solano, Sutter, Tehama, and Yolo.

² Other includes: Aldrich, Avalon, Bennett-Hickman, Fritz, Price Cluster, Shasta, Sonora, Supareil, Winters, and Wood Colony.



DATA RELIABILITY

The 80% confidence interval is from 2,430,000 to 3,170,000 meat pounds.

TABLE 2: WEIGHT, SIZE AND GRADE OF AVERAGE ALMOND SAMPLE, 2023-2024

District and variety	Kernel weight (grams)	Kernel size (millimeters)			Grade (percent of nuts) ¹							
					Edible nuts		Insect damage	Shrivel	Natural gum	Blank	Other	
		Length	Width	Thickness	Singles	Doubles						
STATE LEVEL												
2023	1.67	23.90	13.15	9.92	90.6	7.8	²	1.4	0.1	²	0.1	
2024	1.61	22.81	13.18	10.27	96.0	2.8	²	1.0	0.1	²	²	
BY COUNTY												
Colusa												
2023	1.58	22.78	13.70	9.80	92.9	6.0	²	1.0	²	0.1	²	
2024	1.48	22.14	13.13	10.04	93.3	5.7	0.1	0.7	²	²	0.2	
Fresno												
2023	1.60	23.56	12.97	9.77	92.7	5.9	²	1.3	²	²	0.1	
2024	1.53	22.34	13.05	10.20	96.7	2.1	²	1.0	²	²	0.1	
Kern												
2023	1.59	23.43	12.59	9.76	93.0	6.3	²	0.6	²	0.1	²	
2024	1.55	22.20	12.50	10.16	97.0	1.8	²	1.0	0.1	²	0.1	
Madera												
2023	1.78	25.17	13.82	10.21	89.8	10.2	²	²	²	²	²	
2024	1.61	23.00	13.42	10.30	96.6	3.4	²	²	²	²	²	
Merced												
2023	1.69	23.83	12.88	10.00	88.3	9.6	²	2.0	0.1	²	²	
2024	1.64	22.48	13.19	10.20	96.9	2.8	²	0.2	²	²	²	
San Joaquin												
2023	1.99	24.70	13.99	10.33	87.3	7.0	²	4.4	1.2	²	²	
2024	1.76	23.90	13.50	10.57	93.5	2.3	²	3.3	0.9	²	²	
Stanislaus												
2023	1.70	23.85	13.09	9.99	89.0	9.1	²	1.5	0.4	²	0.1	
2024	1.73	23.40	13.32	10.60	94.5	2.7	²	2.5	0.3	²	²	
Tulare												
2023	1.67	24.76	13.44	9.88	88.3	8.7	0.4	1.6	²	²	1.0	
2024	1.63	23.76	13.60	10.50	95.8	2.7	²	1.4	²	²	0.1	
Other ³												
2023	1.68	23.94	13.73	9.71	92.7	5.2	²	2.0	²	²	²	
2024	1.70	23.96	13.96	10.13	94.7	4.4	²	0.9	²	0.1	²	
BY VARIETY												
Butte												
2023	1.36	20.33	12.16	9.99	89.0	9.8	²	0.8	0.2	0.2	²	
2024	1.38	19.93	12.52	10.34	97.3	1.7	²	0.9	0.1	0.1	²	
Carmel												
2023	1.72	25.31	12.41	10.13	83.0	15.2	²	1.7	0.1	²	²	
2024	1.54	22.53	12.51	10.25	96.4	2.9	²	0.7	0.1	²	²	
Independence												
2023	1.88	25.32	13.93	10.05	93.3	4.6	²	1.6	0.3	²	0.2	
2024	1.88	24.38	14.45	10.65	96.0	2.6	²	1.3	0.1	²	²	
Monterey												
2023	1.82	25.75	12.95	10.25	81.0	17.9	²	0.8	0.2	²	²	
2024	1.68	23.96	13.00	10.37	93.5	5.7	²	0.6	0.1	²	²	
Nonpareil												
2023	1.69	23.85	13.59	9.78	94.0	4.0	²	1.8	0.1	²	0.1	
2024	1.64	22.91	13.45	10.18	97.1	1.7	²	1.2	0.1	²	²	
Padre												
2023	1.21	19.66	11.73	9.56	95.8	2.7	²	1.5	²	²	²	
2024	1.33	19.64	12.53	10.29	98.4	0.8	²	0.8	0.1	²	²	
Other ⁴												
2023	1.54	23.00	12.66	9.80	93.0	6.0	²	0.8	0.2	²	²	
2024	1.49	21.92	12.62	10.11	96.0	2.7	²	0.9	0.2	²	0.2	

¹ Percentages may not add to 100 due to rounding.

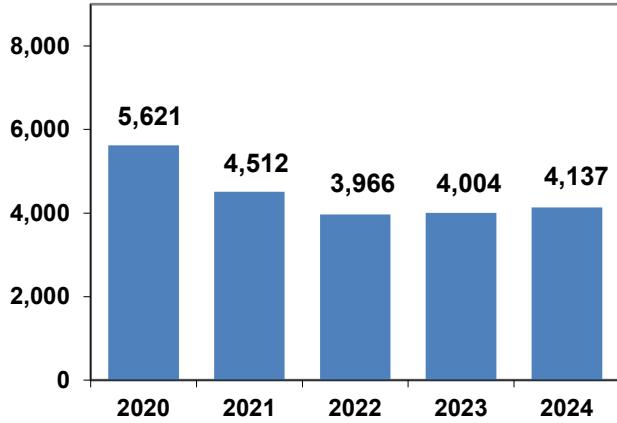
² Not shown if less than 0.05 percent.

³ Other includes: Butte, Glenn, Kings, Solano, Sutter, Tehama, and Yolo.

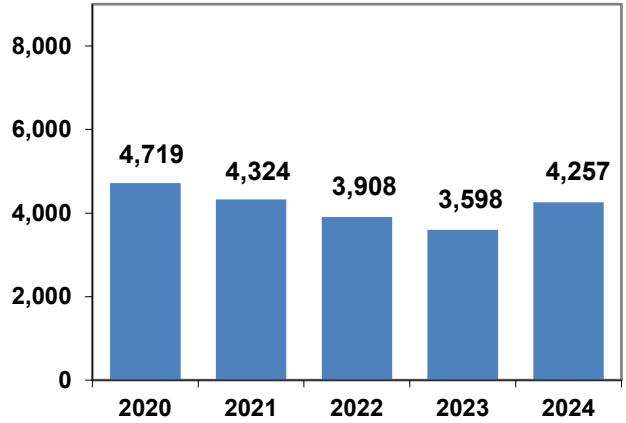
⁴ Other includes: Aldrich, Avalon, Bennett-Hickman, Fritz, Price Cluster, Shasta, Sonora, Supareil, Winters, and Wood Colony.

ALMONDS NUT SET BY VARIETY

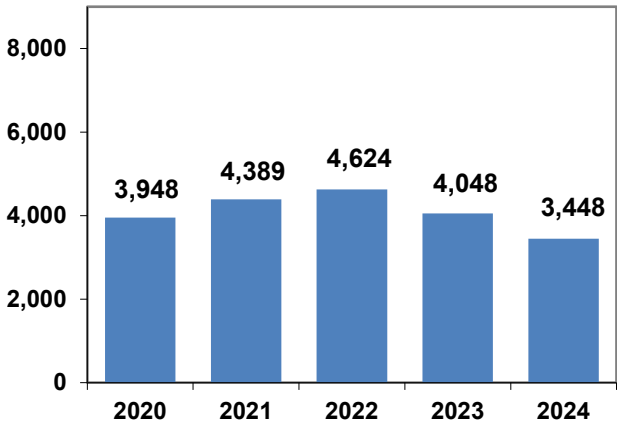
NONPAREIL TYPE
Nuts per Tree



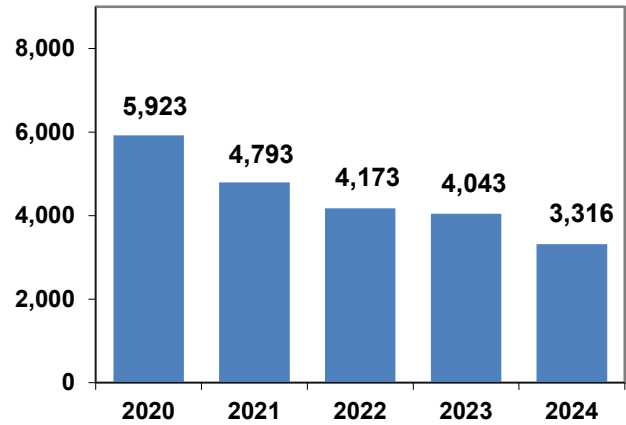
MONTEREY TYPE
Nuts per Tree



INDEPENDENCE TYPE
Nuts per Tree



BUTTE TYPE
Nuts per Tree



ALMONDS NUTS PER TREE, BY COUNTY & STATE

■ Colusa
 ■ Fresno
 ■ Kern
 ■ Madera
 ■ Merced
 ■ San Joaquin
 ■ Stanislaus
 ■ Tulare
 ■ State

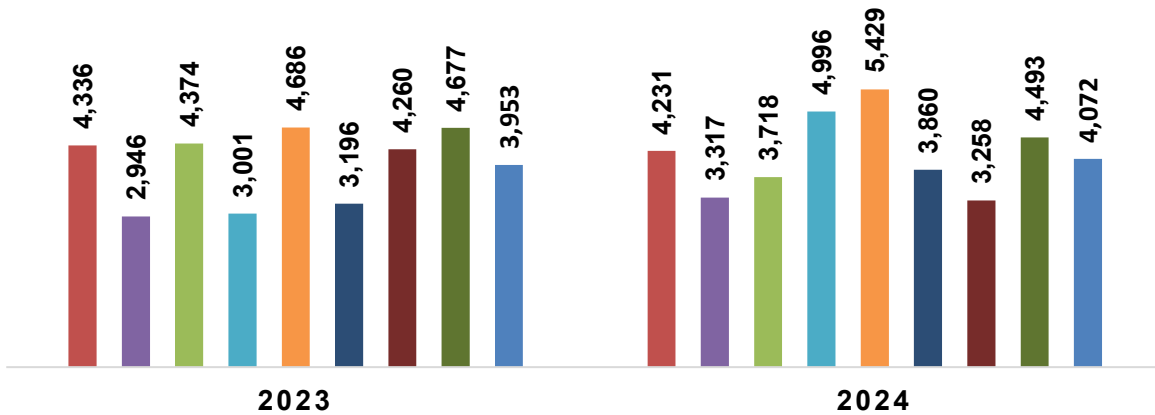


TABLE 3: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES PER ACRE, 1995-2024

Year	Bearing acres ¹	Trees per acre	Total Meat Production			Price per lb.	Value of production
			Metric Tons ²	Million lbs.	Lbs. per acre	dollars	1,000 dollars
1995	418,000	93.7	168,000	370	890	2.48	880,896
1996	428,000	94.4	231,000	510	1,190	2.08	1,018,368
1997	442,000	95.5	344,000	759	1,720	1.56	1,160,640
1998	460,000	96.3	236,000	520	1,130	1.41	703,590
1999	485,000	97.3	378,000	833	1,720	0.86	687,742
2000	510,000	99.0	319,000	703	1,380	0.97	666,487
2001	530,000	101.0	376,000	830	1,570	0.91	740,012
2002	545,000	101.0	494,000	1,090	2,000	1.11	1,200,687
2003	550,000	103.0	472,000	1,040	1,890	1.57	1,600,144
2004	570,000	103.0	456,000	1,005	1,760	2.21	2,189,005
2005	590,000	104.0	415,000	915	1,550	2.81	2,525,909
2006	610,000	105.0	508,000	1,120	1,840	2.06	2,258,790
2007	640,000	105.0	630,000	1,390	2,170	1.75	2,401,875
2008	710,000	107.0	739,000	1,630	2,300	1.45	2,343,200
2009	750,000	108.0	640,000	1,410	1,880	1.65	2,293,500
2010	770,000	108.0	744,000	1,640	2,130	1.79	2,903,380
2011	800,000	111.0	921,000	2,030	2,540	1.99	4,007,860
2012	820,000	112.0	857,000	1,890	2,300	2.58	4,816,860
2013	880,000	112.0	912,000	2,010	2,280	3.21	6,384,690
2014	930,000	114.0	848,000	1,870	2,010	4.00	7,388,000
2015	950,000	114.0	862,000	1,900	2,000	3.13	5,868,750
2016	970,000	116.0	971,000	2,140	2,210	2.39	5,052,460
2017	1,030,000	117.0	1,030,000	2,270	2,200	2.53	5,603,950
2018	1,090,000	119.0	1,034,000	2,280	2,090	2.50	5,602,500
2019	1,180,000	122.0	1,161,000	2,560	2,170	2.45	6,169,100
2020	1,250,000	122.0	1,413,000	3,115	2,490	1.71	5,251,410
2021	1,310,000	122.0	1,331,000	2,935	2,240	1.86	5,351,220
2022	1,350,000	122.5	1,170,000	2,580	1,910	1.40	3,536,400
2023	1,380,000	124.7	1,120,000	2,470	1,790	1.64	3,880,240
2024 ^{3,4}	1,380,000	125.4	1,270,000	2,800	2,030	—	—

¹ Bearing acreage is defined as plantings four years and older.² Rounded to nearest thousand, metric ton = 2,204.62 pounds.³ Price and value will be available in the annual Noncitrus Fruits & Nuts publication, released in May 2025.⁴ Preliminary estimate of bearing acres.**TABLE 4: 2024 ALMOND OM SAMPLE DISTRIBUTION BY COUNTY AND VARIETY**

	Butte	Carmel	Independence	Monterey	Nonpareil	Padre	Other ¹	Total
Butte	0	0	1	1	10	0	0	12
Colusa	4	1	0	6	24	1	7	43
Fresno	10	0	30	43	61	10	33	187
Glenn	1	0	0	0	20	0	0	21
Kern	15	1	9	48	64	8	31	176
Kings	0	0	3	5	4	0	0	12
Madera	5	1	9	33	42	8	18	116
Merced	11	11	18	26	40	11	21	138
San Joaquin	2	2	9	0	22	1	3	39
Solano	0	0	2	0	1	0	0	3
Stanislaus	7	17	22	20	46	7	30	149
Sutter	0	0	1	0	0	0	0	1
Tehama	0	0	0	0	2	0	0	2
Tulare	1	0	6	15	18	0	1	41
Yolo	0	0	1	2	7	0	2	12
Total	56	33	111	199	361	46	146	952

¹ Other includes Aldrich, Avalon, Bennett-Hickman, Fritz, Price Cluster, Shasta, Sonora, Supareil, Winters, and Wood Colony.