



2022 California Almond Objective Measurement Report



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Released: July 8, 2022 - 12:00 p.m. PDT

2022 CALIFORNIA ALMOND FORECAST DOWN 11 PERCENT

California's 2022 almond production is forecast at 2.60 billion meat pounds, down 7% from May's subjective forecast and 11% lower than last year's crop of 2.92 billion meat pounds. The forecast is based on 1.37 million bearing acres. Production for the Nonpareil variety is forecast at 1.00 billion meat pounds, 12% percent below last year's deliveries of 1.13 billion meat pounds. The Nonpareil variety represents 38% of California's total almond production.

The almond bloom began in early February with favorable weather for pollination. Warm temperatures encouraged a shorter bloom period than has occurred in recent years. Some areas were hit by a freeze that occurred during the last week in February. Frost damage was observed, with reports that some acres would be left unharvested without an adequate nut set. As drought conditions persist, water availability is a top concern for almond growers. Harvest is expected to begin in the next month.

The average nut set per tree is 4,082, a decrease of 12% compared to 2021. The Nonpareil average nut set of 3,966 is also 12% lower than last year. The average kernel weight for all varieties sampled was 1.47 grams, up less than 1% from the 2021 average weight. The Nonpareil average kernel weight was 1.55 grams, up slightly from last year. A total of 98.7% of all nuts sized were sound.

SAMPLING PROCEDURES

To determine tree set, nuts are counted along a path within a 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.

Since the selected 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 26 and sampling was completed by June 27. There were 1,760 trees sampled for the 2022 survey in 880 orchards. 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.

DATA RELIABILITY

The 80 percent confidence interval is from 2,280 million meat pounds to 2,920 million meat pounds. This means that the results of our sampling procedures will encompass the true mean 80 percent of the time.

**TABLE 1: OBJECTIVE MEASUREMENT SURVEY COUNTS;
COMPARISON OF NUT ESTIMATES AND ORCHARDS SAMPLED
BY COUNTY AND VARIETY, 2021-2022**

County and Variety	2021		2022	
	Nuts per tree	Orchards sampled	Nuts per tree	Orchards sampled
STATE LEVEL	4,619	914	4,082	880
BY COUNTY				
Colusa	3,219	44	2,631	44
Fresno	4,252	152	3,929	181
Kern	3,957	160	4,099	134
Madera	4,082	102	2,614	97
Merced	6,455	134	6,780	128
San Joaquin	4,700	48	3,954	44
Stanislaus	4,774	143	3,369	147
Tulare	5,025	44	5,297	38
Other ¹	4,476	87	3,344	67
BY VARIETY				
Butte	4,793	81	4,173	66
Carmel	5,469	37	4,417	38
Independence	4,389	92	4,624	89
Monterey	4,324	166	3,908	177
Nonpareil	4,512	368	3,966	347
Padre	5,214	51	4,928	48
Other ²	4,899	119	3,763	115

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

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

TABLE 2: WEIGHT, SIZE AND GRADE OF AVERAGE ALMOND SAMPLE, 2021-2022

District and variety	Kernel weight (grams)	Kernel size (millimeters)			Grade (percent of nuts) ¹							
		Length	Width	Thickness	Edible nuts		Insect damage	Shrivel	Natural gum	Blank	Other	
					Singles	Doubles						
STATE LEVEL												
2021	1.46	22.33	12.73	9.68	94.6	4.7	²	0.7	²	²	²	
2022	1.47	22.12	12.69	10.03	94.2	4.5	²	1.0	0.1	²	²	0.1
BY COUNTY												
Colusa												
2021	1.37	21.59	12.97	9.19	95.8	2.6	²	1.2	²	²	²	0.4
2022	1.48	21.93	13.03	9.85	94.0	2.9	²	2.8	0.3	²	²	0.1
Fresno												
2021	1.40	21.78	12.64	9.61	94.0	5.1	²	0.9	0.1	²	²	²
2022	1.43	22.08	12.75	10.04	95.0	3.3	²	1.1	0.1	0.2	²	0.3
Kern												
2021	1.37	21.59	12.38	9.75	93.2	6.0	²	0.7	²	²	²	²
2022	1.31	21.05	12.06	9.77	93.8	4.4	²	1.6	²	²	²	0.2
Madera												
2021	1.49	22.75	12.74	9.66	92.2	5.8	²	1.9	0.1	²	²	²
2022	1.47	22.01	12.77	10.18	92.4	6.1	²	0.8	0.4	²	²	0.4
Merced												
2021	1.45	21.88	12.57	9.46	95.0	4.9	²	0.1	0.1	²	²	²
2022	1.46	21.98	12.47	10.13	93.7	6.2	²	0.1	²	²	²	²
San Joaquin												
2021	1.62	23.46	13.38	10.35	97.7	1.8	²	0.4	0.1	²	²	²
2022	1.63	22.82	13.12	10.19	97.7	1.8	²	0.5	0.1	²	²	²
Stanislaus												
2021	1.56	23.42	12.81	10.25	94.8	4.0	²	1.1	0.1	²	²	²
2022	1.56	22.44	12.87	10.24	94.0	4.5	²	1.0	0.6	²	²	²
Tulare												
2021	1.46	22.94	12.81	9.53	94.3	5.2	²	0.5	0.1	²	²	²
2022	1.57	23.37	13.16	9.95	92.8	5.6	²	1.2	²	²	²	0.3
Other ³												
2021	1.45	22.61	13.22	9.17	96.1	3.2	²	0.6	²	²	²	0.1
2022	1.58	22.97	13.55	9.66	95.8	1.9	0.1	2.0	0.1	²	²	0.1
BY VARIETY												
Butte												
2021	1.20	19.11	11.92	9.84	90.9	8.1	²	0.9	0.1	²	²	²
2022	1.13	18.20	11.79	9.92	95.8	2.8	²	1.1	0.1	²	²	0.2
Carmel												
2021	1.41	22.29	11.89	9.71	94.8	4.6	²	0.6	²	²	²	²
2022	1.47	22.17	12.20	10.16	88.4	9.9	²	1.6	0.1	²	²	²
Independence												
2021	1.71	24.39	13.68	9.86	97.3	1.8	²	0.7	0.1	²	²	²
2022	1.68	24.00	13.47	10.17	97.5	1.0	²	1.0	0.1	²	²	0.4
Monterey												
2021	1.58	24.44	12.61	9.76	90.2	9.2	²	0.5	0.1	²	²	²
2022	1.55	23.74	12.30	10.18	88.6	10.3	²	0.7	0.1	0.1	²	0.3
Nonpareil												
2021	1.51	22.69	13.29	9.58	96.6	2.8	²	0.7	²	²	²	²
2022	1.55	22.61	13.33	9.99	95.9	3.0	²	1.0	0.1	²	²	²
Padre												
2021	1.15	18.51	11.47	9.56	94.3	4.4	²	1.3	²	²	²	²
2022	1.10	18.28	11.51	9.90	96.9	2.0	²	0.9	²	²	²	0.2
Other ⁴												
2021	1.37	21.79	12.41	9.75	94.5	4.9	²	0.5	²	²	²	0.1
2022	1.33	21.02	12.04	9.85	94.4	3.8	²	1.1	0.4	0.2	²	0.1

¹ Percentages may not add to 100 due to rounding.

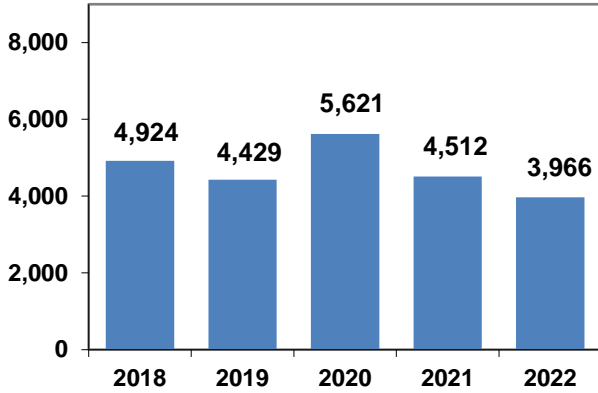
² For years 2021 and prior, not shown if less than 0.07 percent. For 2022 going forward, not shown if less than 0.05 percent.

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

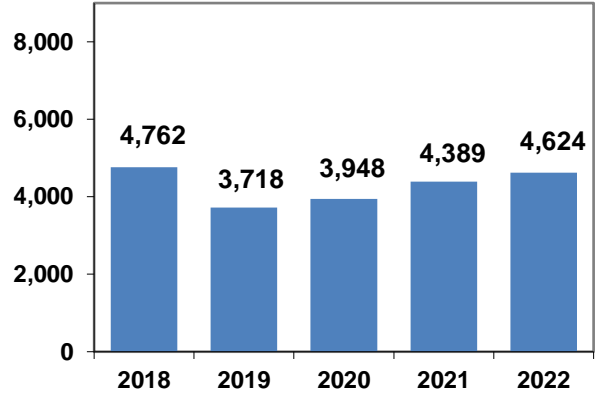
⁴ Other includes: Aldrich, Bennett, Fritz, Mission, Price Cluster, Shasta, Sonora, Supareil, Winters, and Wood Colony.

ALMONDS NUT SET BY VARIETY

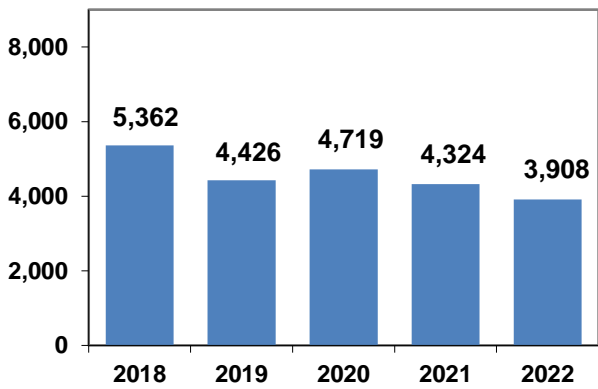
**NONPAREIL TYPE
Nuts per Tree**



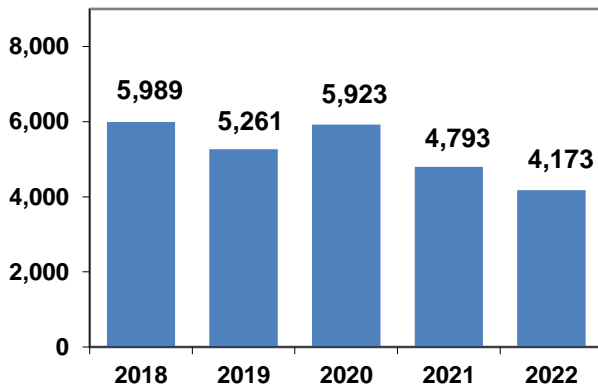
**INDEPENDENCE TYPE
Nuts per Tree**



**MONTEREY TYPE
Nuts per Tree**



**BUTTE TYPE
Nuts per Tree**



ALMONDS NUTS PER TREE, BY COUNTY & STATE

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

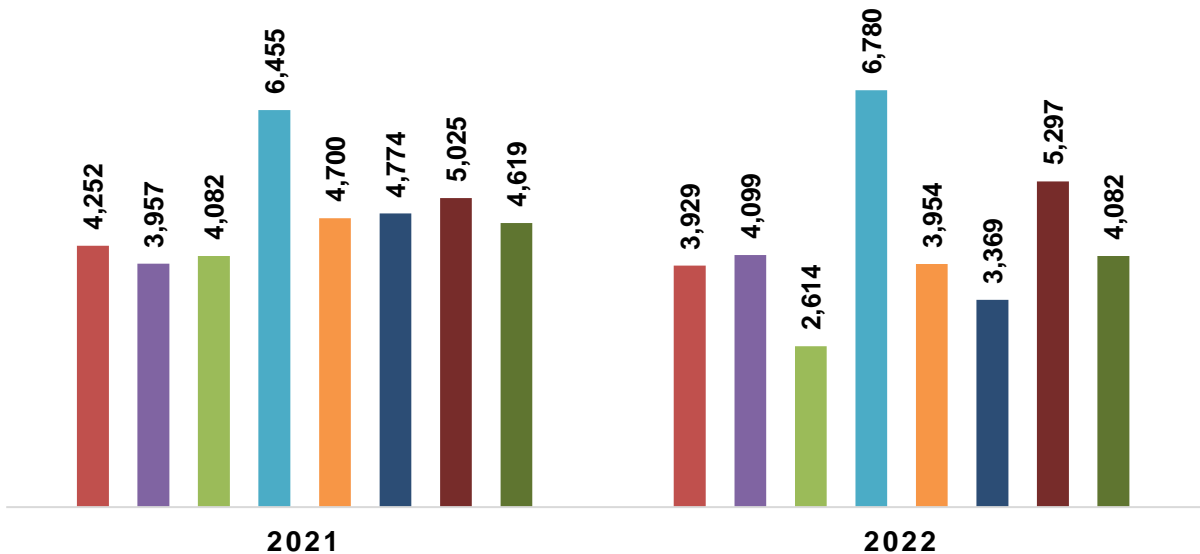


TABLE 3: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES PER ACRE, 1991-2022

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
1991	405,000	89.6	222,000	490	1,210	1.19	564,179
1992	401,000	90.5	249,000	548	1,370	1.30	691,340
1993	413,000	92.0	222,000	490	1,190	1.94	930,618
1994	433,000	92.6	333,000	735	1,700	1.34	965,202
1995	418,000	93.7	168,000	370	885	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	1,320,000	122.0	1,322,000	2,915	2,210	1.76	5,028,320
2022 ^{3,4}	1,370,000	122.5	1,179,000	2,600	1,900	—	—

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 2023.⁴ Preliminary estimate of bearing acres is based on the Almond Acreage Report and the Almond Nursery Sales Survey.

2022 ALMOND OM SAMPLE DISTRIBUTION

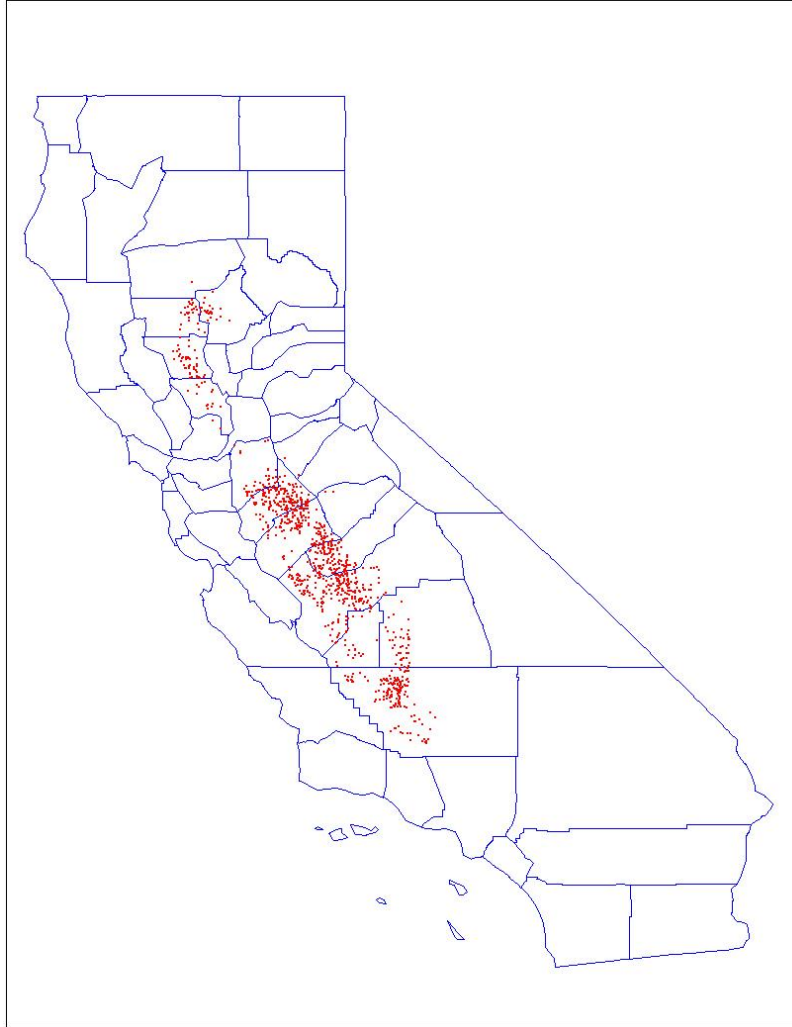


TABLE 4: 2022 ALMOND OM SAMPLE DISTRIBUTION BY COUNTY AND VARIETY

	Butte	Carmel	Independence	Monterey	Nonpareil	Padre	Other ¹	Total
Butte	0	0	0	1	16	0	0	17
Colusa	6	2	0	6	22	1	7	44
Fresno	14	1	25	42	56	11	32	181
Glenn	2	0	0	0	16	0	0	18
Kern	9	1	5	40	53	8	18	134
Kings	1	0	4	5	5	1	0	16
Madera	8	2	5	28	34	7	13	97
Merced	9	10	15	24	45	11	14	128
San Joaquin	4	1	9	0	27	0	3	44
Solano	0	0	0	0	2	0	0	2
Stanislaus	12	21	19	17	44	9	25	147
Tehama	0	0	0	0	1	0	0	1
Tulare	1	0	6	13	17	0	1	38
Yolo	0	0	1	1	9	0	2	13
Total	66	38	89	177	347	48	115	880

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