

2020 California Almond Crop In Review

With the publication of the March 2021 ABC Position Report, we can finally see where the 2020 California almond crop will finalize at with much greater certainty. With USDA receipts totaling 3.105 billion pounds, we now see this crop finalizing around 3.108 billion pounds.

As you can see from the chart below, the 2020 crop was driven by the extremely high yields in the northern & central growing regions. The perfect bloom conditions in 2020 played a major role for the trees in these regions reaching their full yield potential. As we stated last May when we released our 2.85-billion-pound estimate, we did not see the southern region being up significantly in yield as the 2019 crop was very good and the 2020 crop looked similar in our observations. It turns out we were right in that assessment. However, due to Covid 19 travel restrictions, we were not able to visually assess the northern & central region crops for 2020. As a result, we under-estimated the potential for those regions significantly. There was no historical data available that would have supported yield estimates anywhere close to the results that were achieved in the 2020 crop year. So, this crop year (2021), we made sure we made the effort to visually see all the major growing regions.

Growing Region	CY 20 Outlook Yield/Acre Yield/Acre by Region - as of 4/12/21			Yld/Acre Comparison						
	CY20 Bearing Acreage	Yield/Acre	Receipts based on BOY Assumptions	2019 Yield/Acre	Increase/(Decrease) In Yield/Acre		Record Yield/Acre	Crop Year Record Set	Increase/(Decrease) In Yield/Acre	
					In Lbs.	In %			In Lbs.	In %
Northern	220,443	2,218	489,047,860	1,534	685	44.7%	1,842	2017	376	20.4%
Central	502,055	2,534	1,272,162,852	1,980	554	28.0%	2,208	2011	326	14.8%
Southern	519,690	2,592	1,347,159,136	2,600	(8)	-0.3%	2,827	2011	(235)	-8.3%
State Total/Average	1,242,188	2,502	3,108,369,848	2,160	342	15.8%	2,368	2,011	135	5.7%

Note: Note that all yield per acre figures shown are based on Land IQ Acreage for the given crop year.

2021 California Almond Crop Evaluation & Estimate

– as of 5/10/21

The following pages summarize the results of our 2021 State Almond Crop Estimate. Unlike last year, our company travel policy returned to normal, and with 11 people in three vehicles, we were able to once again visually inspect all major growing regions of the state. As in the past, we were hosted by farmers, handlers and PCA's in each area to not only look at their orchards for ourselves, but we also got a lot of first-hand knowledge of what they thought their crops looked like this year in comparison to the crop they had in 2020. Per normal, we conducted visual assessments from Kern County all the way north into Tehama County. We started our tour on April 26th this year and looked at orchards for 3 full days. Our total combined miles covered more than 1,800 road miles including the pre-tour time we spent in Kern County in the two weeks prior to the start of our tour.

As we do every year, all members were provided with historical data as to crop receipts by county and region, as well as historical yield/acre estimates based on either Land IQ acreage (2010 to 2021...with the odd years during this period between 2010 - 2017 being extrapolated using the variance seen between Land IQ acreage and NASS acreage for the even year's). NASS acreage was used for crop years 2008 & 2009 which is as far back as we look at for our data history. All 2021 estimates were based on Land IQ bearing acres of 1,327,222 minus 27,222 acres of additional acreage we believe still to be removed prior to CY21 harvest for a new total of 1,300,000 bearing acres. Non-bearing acres and their contribution to the total 2021 harvested supply (108,000 acres of 3rd leaf acreage per the latest Land IQ data released in April 2021) were also factored into our final estimate. Some of you may have noticed our acreage projections from previous months reports have risen from 1,280,000 to the above mentioned 1,300,000 million acres. The reason for this increase is that Land IQ added just shy of 34,000 to the now 4th and 5th leaf trees as compared to their November 2020 Report. The link to the Land IQ Acreage for the 2021 crop year is shown below. Other Charts on this can be found later in this report.

<https://www.almonds.com/tools-and-resources/crop-reports/standing-acreage-final-reports>

In addition to the data provided above, each team member was given three different models (Excel worksheet tools) in which to develop their individual estimates (by tree age, by region, and by county or any combination of these three tools. As always, we had a 3rd Party expert in statistics and regression analysis review the individual estimates and determined the best group average figure to use for our "official group estimate" based on many factors including model weighting based on the past accuracy of each individual participant.

2021 California Almond Crop Evaluation - Southern Region

– as of 5/10/21

General Observations for the Southern Region (Fresno South)

Visual observations for Southern Kern County are that orchards are more variable from ranch to ranch as compared to last year, and the 3rd to 5th leaf orchards for 2021 are not nearly as loaded compared to what we saw on our tour in 2020. However, most orchards of this tree age had good to very good nut sets. We strongly believe this region will contribute to the additional acreage removals we noted on the prior page. There is also clear evidence of deficit irrigation taking place in western Kern, Kings, Tulare, and Fresno counties already. We saw large amounts of orchard removals in this area vs. last year with many new removals since the Land IQ data was finalized on April 1, 2021. The nut sets in this area look to be good to very good for acreage in its prime years (5th leaf – 15th leaf) as long as the acreage was being farmed well. However, we saw a lot more variability from orchard to orchard (even tree to tree) than what we saw last year on our tour. Overall nut size seems to be average, however we expect the current drought conditions to have a significant impact on nut size and final yields by the time all the nuts are harvested.

For Kings, Tulare, Fresno and Madera Counties specifically, we saw a lot of similar observations as were made in our more extensive tours of Kern County. Healthy orchards that were well farmed and those without bud failure issues looked similar to last year except for Nonpareil which looked lighter. Carmel and Sonora acreage looked down significantly with most Butte/Padre showing stronger nut sets in Padre and lighter nut sets in Butte. Overall, for this southern region, we saw Nonpareil nut sets down vs. last year (-10%) and improvement in Monterey and Independence orchard nut sets vs. last year. But as stated before, more variability from orchard to orchard. Nut size seemed average to below average vs. last year in most orchards.

Some have said this region looks to be the best in the state and that may be true except for the strong Independence orchards we consistently saw in the Central Region. Since we saw very little solidification in the nuts we cut open in this area, we don't expect to see an early harvest this coming year (more similar to last year) unless a hot summer plus deficit irrigation accelerates maturity significantly over the next few months. Trap counts for NOW are higher than last year at this time and the double % seems similar to last year. Overall, another good crop for this region but not a historical record and down from last year overall.

2021 California Almond Crop Evaluation – Central Region – as of 5/10/21

General Observations for the Central Region (Merced to San Joaquin)

Visual observations for the Central Region are that orchards are also more variable when compared to last year per our visual inspection of this region and from our discussions with growers in this area. We saw orchards side by side that were 300 - 600lbs. to the acre different from each other with older orchards showing much lighter crops than seen at this time last year (17th leaf and older). Younger trees (3rd to 5th leaf) once again have good nut sets for their age generally, but not as consistently heavy as we saw last year at this time. The shining star in this region is the Independence variety! In fact, consistently the Independence variety in this region has very strong nut sets no matter the age of the tree. The Nonpareil in this region have noticeably lighter nut sets and the Monterey and Aldrich seem to be as good if not slightly better than last year. Miscellaneous California varieties along with Butte/Padre and Fritz had much more variable nut sets than last year (as we saw in the southern region). Carmel in this region looks particularly poor due to very high incidences of bud failure (which was also seen in many older Nonpareil orchards as well). As expected in southern region, the western portion of this region is expected to suffer negative nut size and yield impact by the time harvest rolls around. Although water supply from local districts in this region are generally better than we have in the southern region, there are many areas of this region that have similar surface water supply issues. Although ground water is more prevalent for growers in this region, some areas have only poor-quality groundwater to supplement their loss of surface water this season.

One of the most difficult factors in developing an average yield per acre for this region is the high percentage of older trees still standing vs. the southern region. When we analyze the latest Land IQ data looking at the number of acres of trees that are 20+ years and older, the Central region has 99,061 acres or 51.8% of the States trees of that age. It also consists of 93,833 acres of trees aged 16th to 19th leaf which equates to 35.2% of the state's acreage in that age range. Even though the younger trees generally have good to very good nut sets in this region, it is very hard to calculate the impact that the older trees will have on the overall average since their nut sets in general are significantly lighter. Overall, we see this region with a historically strong nut sets but down from the record crop of last year.

2021 California Almond Crop Evaluation – Northern Region – as of 5/10/21

General Observations for the Northern Region (Sacramento to Tehama)

Visual observations for the Northern Region included, Yolo, Colusa, Butte, Tehama and Glenn Counties. The nut sets we saw in this region are more typical to what we have seen in the past when bloom weather and post-bloom weather was generally good to very good. This is the region that really over-performed last year with perfect bloom and post bloom weather achieving record yields in both Pollinators as well as Nonpareil for this region. In fact, not only did it beat the prior year's average yield per acre by 45% (CY'19), but it beat the overall yield per acre record set in CY'17 by 20%! As a result, per our own visual observations of nut sets as well as assessments from many PCA's, farm managers, and orchard owners, this region is for sure taking a breather vs. the monster nut set and total production seen last year (despite very good bloom and post bloom weather).

We did not get to see any of this region last year, so our point of reference for comparison went back to notes and memories from CY'17-CY19. We know that in the CY'19 crop year, excess rain during bloom had a negative impact to their overall yield per acre. In 2018, Tehama and portions of other counties were hit hard by strong frost/freeze conditions during bloom. But in CY17, bloom and post-bloom conditions were generally good. So that was our point of reference for this year's crop in these areas. Like the Central and Southern Regions, the crop was more variable from orchard to orchard with older trees having lighter nut sets and younger acreage that is farmed well having stronger nut sets. However, like the Central Region, the Northern Region still has a high percentage of standing bearing acres that are 16th leaf and older. Thus, the yield potential remains less than what we have in the Southern Region that has less than 9% of its bearing acreage at 20 years or older. The Nonpareil and Carmel acreage in this area had mostly fair to good nut sets (with poor nut sets in orchards with bud failure) and other varieties had generally good nut sets for this region. It was the first year I can remember not thinking that the Williams/Arbuckle region was not one of the better regions in the state.⁵

2021 California Almond Crop Evaluation - Group Estimate

Figure and further comments

Results and Our 2021 Estimate

The worksheet on the following page reflects the average estimated results by region for our group of 14 estimators. Our weighted regression analysis on the estimates given (based on past accuracy of each individual estimator) resulted in a crop size range of 2.926 billion to 2.956 billion pounds with a mid-point of 2.950 billion pounds which is a compromise between our overall group average and average of those who were within 5% in 2019.

2.950 billion pounds based on 1.300 million bearing acres (2,269 lbs./bearing acre).

This was a hard year to determine a final number as each area was different from ranch to ranch, tree to tree, and variety to variety. However, we believe that the current drought and water supply/cost issues facing the growers in the state may have an even bigger outcome than most think.

In terms of water supply, water costs, and general soil climate (acres in the severe drought category), the California Almond growing landscape of today is very similar to what growers faced in the 2014 crop year. However, there is one major factor that will likely make greater downside final yield impact to the 2021 crop that was not a factor in crop year 2014. What is this major factor? The factor is the difference in the base industrial bulk average price for raw almonds now vs. the levels seen in crop years 2013 and 2014. In 2014, the average new crop pricing levels would end up returning over \$4.00/lb. on average to the grower and almond growers had just come off a year in 2013 when grower returns averaged \$3.21/lb. So even though water prices during the 2014 drought were just as high as we see today in 2021, growers had the money and justification to spend more on the water knowing they could still be profitable. Today's situation is vastly different and much more dire as will be discussed on the following page.

2021 California Almond Crop Evaluation - further comments continued

In contrast to the 2014 crop year, California growers today have been saddled with market prices for the past 12 months that have now locked in growers returns that will average no better than \$1.65/lb. for most growers. The bottom line is most growers in the state have been growing at break-even (at best) or more likely a loss during the 2020 crop year (even at last years lower water cost rates). In 2021, unlike 2014, growers cannot afford or justify paying the higher water costs seen today (if you can even find available water to buy). As a result, we expect a lot more orchards to be abandoned between now and the 2021 harvest period than we saw in 2014 and a significant increase in acres that are deficit irrigated than happened in 2014. We also expect SGMA to add additional water supply restrictions for critical basins in 2021 vs. 2014 when these types of groundwater restrictions were not in place.

In summary, we see a large impact to final crop size for 2021 as a result. Just how much we don't know for sure. We do know that in 2014, all the "public" estimates were too high due to the impact of the drought. On average, the four public estimates were too high by an average of 7% or 130 million pounds. We know using basic math that an orchard that has 121 trees/acre and 8,500 nuts per tree will drop 190 lbs./acre in harvested weight if the nut size drops from an average nut size of 25/27 to an average nut size of 27/30. If we assume 40% of the irrigated orchards in 2021 have some level of deficit irrigation and that results in a similar reduction in average nut size, that will drop our estimate down by 98.8 million pounds (using our bearing acreage estimate of 1.3 million). This crop could easily be 2.85 billion or lower. But for now, we cannot speculate on the impact, and we are going to stay with our 2.95 billion figure that we can visually see on the trees today. We are now in the very bad position of knowing this coming fall/winter/spring period must be very wet in comparison to normal to survive another year with this much acreage. Another year of below normal precipitation will be truly devastating to most growers in our state. So please be praying for a wet year starting in November!

Land IQ Initial Bearing Acreage Comparison by Region for Crop Year 2021

Total Acres by Tree Age by Region							
Northern Counties	20 & Older	16th - 19th	6th-15th	4th-5th	3rd leaf	Bearing Acreage	Total Acreage
Butte	13,844	3,673	12,309	3,212	Estimate	33,037	
Colusa/Lake	12,925	14,779	24,184	7,189		59,076	
Glenn	9,783	7,788	22,746	8,470		48,786	
Shasta	5	-	-	-		5	
Solano	1,308	1,138	12,740	4,420		19,607	
Sutter	2,437	1,849	5,590	2,254		12,129	
Tehama	2,521	1,610	10,661	2,290		17,082	
Yolo/Sacramento/Placer	3,315	5,480	24,688	7,652		41,135	
Yuba	288	366	1,033	285		1,971	
Regional Total	43,557	39,551	113,950	35,771	19,046	232,828	251,875
% within region of Bearing Acres	18.7%	17.0%	48.9%	15.4%		100%	
Percentile within the State	22.8%	14.8%	17.6%	16.2%	17.6%	71%	

Central Counties	20 & Older	16th - 19th	6th-15th	4th-5th	3rd leaf	Bearing Acreage	Total Acreage
Merced/Mariposa	33,274	23,168	57,798	21,916	ESTIMATE	136,156	
Alameda	380	-	1,740	713		2,833	
Madera	17,674	25,603	80,640	18,794		142,712	
San Joaquin/Contra Costa	15,906	8,179	36,098	16,534		76,717	
Stanislaus	40,856	27,836	80,977	22,104		171,773	
Calaveras	17	-	180	-		197	
Regional Total	99,061	93,833	257,433	80,061		43,388	
% within region of Bearing Acres	18.7%	17.7%	48.5%	15.1%		100%	
Percentile within the State	51.8%	35.2%	39.7%	36.1%	40.2%		

Southern Counties	20 & Older	16th - 19th	6th-15th	4th-5th	3rd leaf	Bearing Acreage	Total Acreage
Kern	20,642	56,363	88,610	30,759	ESTIMATE	196,373	
Kings	3,224	4,380	21,088	5,676		34,368	
Tulare	3,868	9,231	42,654	15,635		71,388	
Fresno	30,303	51,565	124,218	46,579		252,665	
Riverside/San Luis Obispo	2,165	11	37	-		2,213	
Regional Total	48,439	133,313	276,607	98,648		45,566	
% within region of Bearing Acres	8.7%	23.9%	49.7%	17.7%		100%	
Percentile within the State	25.4%	50.0%	42.7%	44.5%	42.2%		

State Total	191,057	266,696	647,989	221,480	108,000	1,327,222	1,435,222
Percent of State Total	14.4%	20.1%	48.8%	16.7%		100.0%	

 = 7,000 acres added to these categories to account for Land IQ's acreage Figures

2021 California Almond Crop Evaluation & Estimate by Region - as of 5/10/21

	Total Crop			Pollinator Crop			Nonpareil Crop		
	Bearing Acreage	Receipts	Yield/Acre	Bearing Acreage	Receipts	Yield/Acre	Bearing Acreage	Receipts	Yield/Acre
2020 CY - Outlook									
Northern Counties	220,443	487,284,695	2,210	134,683	264,962,970	1,967	85,760	222,321,725	2,592
Central Counties	502,055	1,263,427,916	2,517	306,737	757,634,457	2,470	195,318	505,793,459	2,590
Southern Counties	519,690	1,344,278,386	2,587	317,511	782,663,746	2,465	202,179	561,614,640	2,778
Total:	1,242,188	3,094,990,997	2,492	758,931	1,805,261,173	2,379	483,257	1,289,729,824	2,669

2021 CY - % up or down vs. 2020 in Yield/Acre

Northern Counties	5%	-14%	-18%	5%	-13%	-17.0%	5%	-16%	-20.0%
Central Counties	4%	-3%	-7%	4%	0%	-3.0%	4%	-9%	-12.0%
Southern Counties	6%	-3%	-8%	6%	-1%	-6.0%	6%	-5%	-10.0%

2021 Estimate Results vs. 2020

Northern Counties	231,620	417,851,332	1,804	141,511	231,069,640.92	1,633	90,109	186,781,690.96	2,073
Central Counties	520,026	1,222,242,903	2,350	317,717	761,211,988	2,396	202,310	461,030,914	2,279
Southern Counties	548,354	1,309,613,312	2,388	335,024	776,281,787	2,317	213,330	533,331,525	2,500
Total:	1,300,000	2,949,707,547	2,269	794,252	1,768,563,416	2,227	505,748	1,181,144,131	2,335

Southern Region vs. 2020:	6%	-3%	-8%	6%	-1%	-6%	6%	-5%	-10%
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Total vs. 2020:	5%	-5%	-9%	5%	-2%	-6%	5%	-8%	-12%
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 = estimate figures for CY'21 (+/- CY20 avg. Yield/Acre in %)

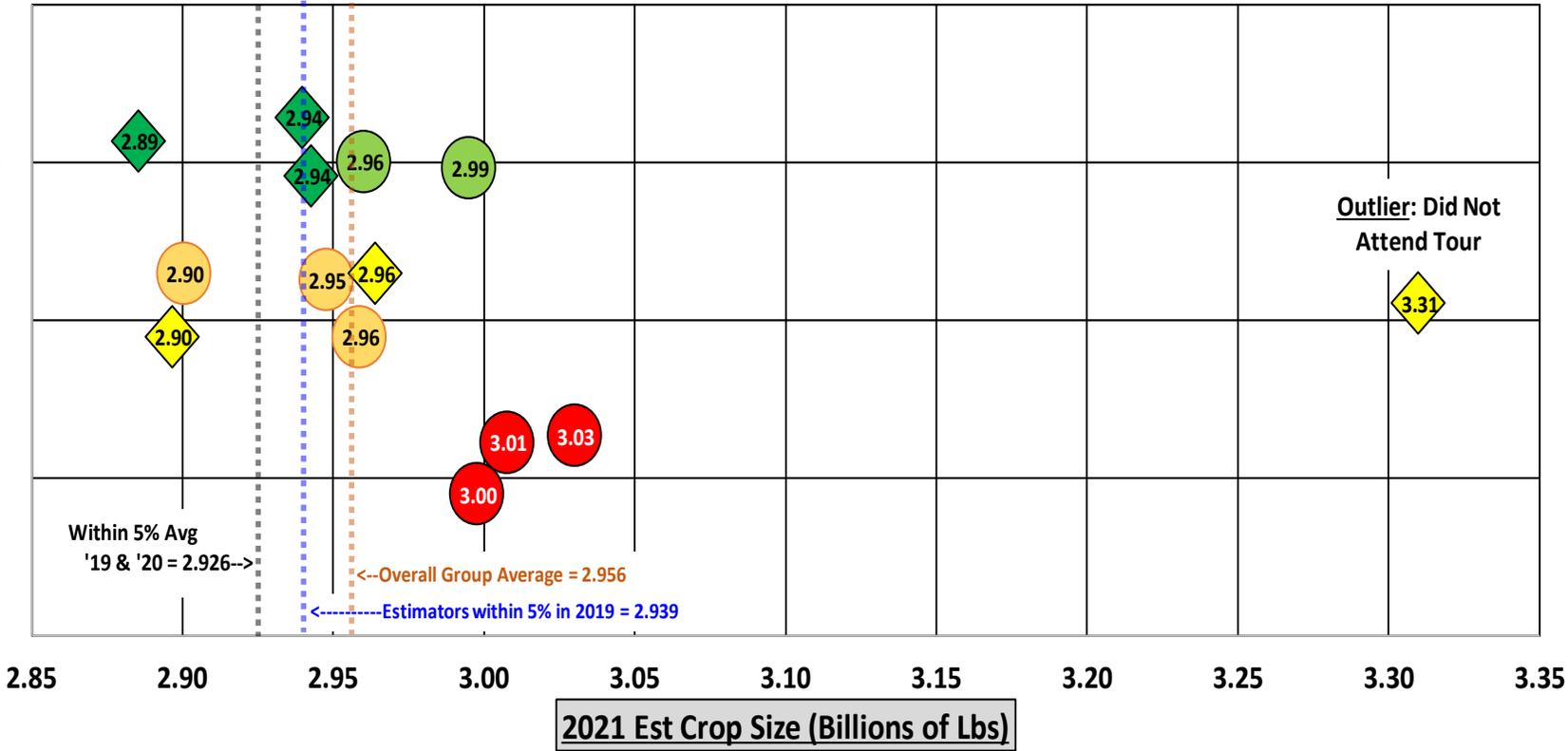
2021 California Almond Crop Evaluation & Estimate

Individual Group Estimates – as of 5/10/21

2021 Estimated Crop Size (Billion Lbs) vs. Experience Est & 2019/20 Accuracy

● = New or Not Within 5% in 2019/20 Est / ◆ = Within 5% in 2019/20 Est.

Experience Estimating Crops
(1 = Low -- 3 = High)

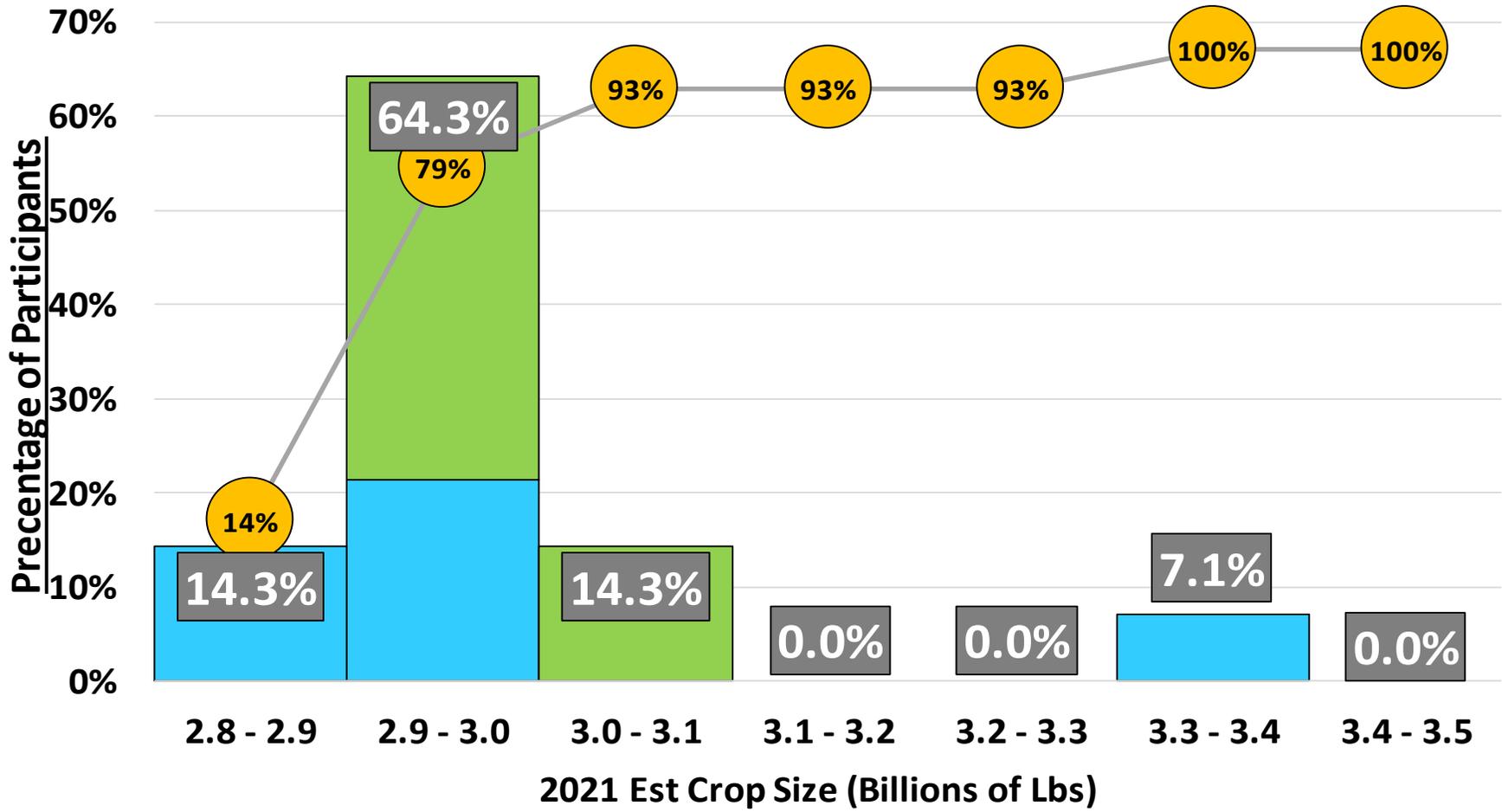


2021 California Almond Crop Evaluation & Estimate

Distribution of Estimates – as of 5/10/21

2021 Crop Estimate by Evaluators within a Given Range

■ New or >5% off in 2019/20
■ Within 5% in 2019/20
● % Cumulative



Historical Almond Crop Estimates for California Almond Crop (Gross in Millions/Lbs.) - Updated 5/10/21

Crop Year	TNT Estimate	Final Crop	Variance		NASS Objective	Final Crop	Variance		NASS Subjective	Final Crop	Variance		WP&A Group Avg.	Final Crop	Variance		B. Ezell Estimate	Final Crop	Variance	
			in M/Lbs.	in %			in M/Lbs.	in %			in M/Lbs.	in %			in M/Lbs.	in %				
1996	558	508	51	10.0%	530	508	23	4.4%	520	508	13	2.5%								
1997	764	757	8	1.0%	680	757	(77)	-10.1%	710	757	(47)	-6.1%								
1998	522	517	5	1.0%	540	517	23	4.4%	550	517	33	6.4%								
1999	863	830	33	4.0%	830	830	0	0.0%	760	830	(70)	-8.4%								
2000	636	698	(63)	-9.0%	640	698	(58)	-8.4%	675	698	(23)	-3.4%								
2001	832	824	8	1.0%	850	824	26	3.2%	875	824	51	6.2%								
2002	961	1,082	(121)	-11.2%	980	1,082	(102)	-9.4%	940	1,082	(142)	-13.1%								
2003	930	1,033	(103)	-10.0%	1,000	1,033	(33)	-3.2%	920	1,033	(113)	-10.9%								
2004	1,140	998	142	14.2%	1,080	998	82	8.2%	1,100	998	102	10.2%								
2005	948	912	36	3.9%	880	912	(32)	-3.5%	850	912	(62)	-6.8%								
2006	970	1,117	(147)	-13.2%	1,050	1,117	(67)	-6.0%	1,020	1,117	(97)	-8.7%								
2007	1,370	1,383	(13)	-0.9%	1,330	1,383	(53)	-3.8%	1,310	1,383	(73)	-5.3%								
2008	1,290	1,614	(324)	-20.1%	1,500	1,614	(114)	-7.1%	1,460	1,614	(154)	-9.5%								
2009	1,300	1,406	(106)	-7.5%	1,350	1,406	(56)	-4.0%	1,450	1,406	44	3.1%	1,998							
2010	1,440	1,628	(188)	-11.5%	1,650	1,628	22	1.4%	1,530	1,628	(98)	-6.0%	128	6.9%						
2011	1,840	2,020	(180)	-8.9%	1,950	2,020	(70)	-3.5%	1,750	2,020	(270)	-13.4%								
2012	1,830	1,884	(54)	-2.9%	2,100	1,884	216	11.5%	2,000	1,884	116	6.2%	2,099	1,884	215	11.4%	2,070	1,884	186	9.9%
2013	1,960	2,010	(50)	-2.5%	1,850	2,010	(160)	-8.0%	2,000	2,010	(10)	-0.5%	1,997	2,010	(13)	-0.6%	2,035	2,010	25	1.2%
2014	2,000	1,870	130	7.0%	2,100	1,870	230	12.3%	1,950	1,870	80	4.3%	1,943	1,870	73	3.9%	1,917	1,870	47	2.5%
2015	1,880	1,895	(15)	-0.8%	1,800	1,895	(95)	-5.0%	1,850	1,895	(45)	-2.4%	1,831	1,895	(64)	-3.4%	1,862	1,895	(33)	-1.7%
2016	2,060	2,135	(75)	-3.5%	2,050	2,135	(85)	-4.0%	2,000	2,135	(135)	-6.3%	2,055	2,135	(80)	-3.7%	2,086	2,135	(49)	-2.3%
2017	2,270	2,260	10	0.4%	2,250	2,260	(10)	-0.4%	2,200	2,260	(60)	-2.7%	2,335	2,260	75	3.3%	2,340	2,260	80	3.5%
2018	2,510	2,270	240	10.6%	2,450	2,270	180	7.9%	2,300	2,270	30	1.3%	2,200	2,270	(70)	-3.1%	2,223	2,270	(47)	-2.1%
2019	2,530	2,551	(21)	-0.8%	2,200	2,551	(351)	-13.8%	2,500	2,551	(51)	-2.0%	2,570	2,551	19	0.7%	2,580	2,551	29	1.1%
2020	2,960	3,108	(148)	-4.8%	3,000	3,108	(108)	-3.5%	3,000	3,108	(108)	-3.5%	2,850	3,108	(258)	-8.3%	2,880	3,108	(228)	-7.3%
2021	2,800											2,950				2,943				
Overall Straight Avg. prior to 2020:			(38)	-2.2%			(27)	-1.6%			(44)	-2.8%			19	1.1%			30	1.5%
Most Recent 10 Yr Straight Avg. prior to 20:			(16)	(0)			(25)	(0)			(45)	(0)								
Most Recent 5 Yr Straight Avg. prior to 2021:			1	0.4%			(75)	-2.7%			(65)	-2.6%			(63)	-2.2%			(43)	-1.4%
Most Recent 3 Yr Straight Avg prior to 2020:			24	1.7%			(93)	-3.1%			(43)	-1.4%			(103)	-3.5%			(82)	-2.8%
# of times Over-estimated:			6	24.0%			8	32.0%			8	32.0%			3	33.3%			5	55.6%
# of times Under-estimated:			12	48.0%			15	60.0%			16	64.0%			4	44.4%			4	44.4%
# of times within 1%:			7	28.0%			2	8.0%			1	4.0%			2	22.2%			0	0.0%
Standard Deviation: CY13 - CY20:			122	5.3%			186	8.4%			70	3.2%			107	4.1%			96	3.5%

= Current Outlook as of 5/11/21