

1986

PERMANENT
RECORD FILE

WALNUT OBJECTIVE MEASUREMENT SURVEY



SEPTEMBER 11, 1986

CALIFORNIA AGRICULTURAL STATISTICS SERVICE
P.O. Box 1258
SACRAMENTO, CALIFORNIA 95806

1986 CALIFORNIA WALNUT ESTIMATE

The September 1 California walnut production is estimated at 190,000 tons. This is a 13 percent decrease from the 1985 crop of 219,000 tons. The 190,000 ton estimate is down from the July and August estimate of 195,000 tons. The July and August estimates are based on subjective information provided by growers. The September 1 estimate is based on the Objective Measurement Survey along with subjective grower information.

The average nut set was 1,613 nuts per tree, down 23 percent from the 1985 set of 2,099. This year's set was the lowest since 1978 when the average set was only 1,587. The percentage of sound kernels was 95.3 which was near normal when compared to the last several years. The in-shell weight per nut was 22.1 grams while the in-shell suture measurement was 32.9 millimeters. All of these measurements are about average when compared to the last several years.

Estimated nut sets, sizing measurements, average number of trees per acre, and estimated bearing acreage were used in regression formulas utilizing the years 1978-85.

SURVEY HISTORY

The Walnut Objective Measurement Survey began in 1958 to fulfill industry needs for an accurate walnut production forecast prior to harvest. The original sample was chosen proportionally to county and variety bearing acreage. With each succeeding year, additions and deletions have been made in the sample to adjust for acreage removed, new acreage beginning to bear, and refusals.

SAMPLING PROCEDURES

Once a block is randomly selected and permission is granted, two trees are randomly selected. An accessible branch is selected which is (a) five to fifteen percent of the total cross-sectional area of the primaries, and (b) reachable with a twelve foot ladder.

Measurements are made on the trunk, each primary, and each split leading to and including the accessible branch. The sample tree and accessible branch are marked by a single tag.

On each accessible branch, every fifth nut is picked for use in size and grade determinations. If available, at least ten nuts are harvested from each accessible branch for this purpose.

The following measurements are made on nuts selected for sizing:

1. Width of hull at widest point.
2. Width of hull 90 degrees to widest point (cross-width).
3. Length of hull.
4. Grade in-hull.
5. Weight of nut including hull.
6. Width of shell at suture.
7. Width of shell 90 degrees to suture line (cross-suture).
8. Length of shell.
9. Kernel grade.
10. Weight of nut.

ACREAGE

The acreage tables (Table 3 and Table 7) are the same that appear in the 1985 California Fruit and Nut Acreage publication. These acreage figures are preliminary and may be revised in the 1986 Fruit and Nut Acreage publication to be released in June of 1987.

Jim Tippet

Agricultural Statistician in Charge

Dave Klewen - Kevin Hintzman

Agricultural Statisticians

Bruce Eklund

Mathematical Statistician

TABLE 1 — California English Walnut Acreage, Production, Price, and Value

Year	Bearing Acres a/	In-Shell Production			Price Per Short Ton	Total Value
		Total		Per Bearing Acre		
		Metric Tons	Short Tons	Short Tons		
					Dollars	000 Dollars
1980	179,923	179,000	197,000	1.09	936.00	184,392
1981	175,141	205,000	225,000	1.28	1,014.00	228,150
1982	177,958	213,000	234,000	1.31	1,020.00	238,680
1983	175,700	181,000	199,000	1.13	631.00	125,569
1984	178,161	194,000	213,000	1.20	730.00	155,490
1985	177,880	199,000	219,000	1.23	737.00	161,403
1986 b/	181,400	173,000	190,000	1.05	—	—

a/ Eight years and older for the Franquette variety, 6 years and older for Payne variety, and 7 years and older for all other varieties.

b/ Preliminary figures as of July 1, 1986.

TABLE 2 —Walnut Acreage by County as of 1985

County	Bearing	Non-Bearing	Total	County	Bearing	Non-Bearing	Total
Alameda	435	11	446	Placer	465	311	776
Amador	667	4	671	Sacramento	205	0	205
Butte	12,492	2,517	15,009	San Benito	4,953	55	5,008
Calaveras	766	2	768	San Joaquin	25,944	2,527	28,471
Colusa	4,347	247	4,594	San Luis Obispo	2,714	8	2,722
Contra Costa	3,518	283	3,801	Santa Barbara	738	233	971
El Dorado	406	0	406	Santa Clara	1,629	35	1,664
Fresno	3,093	372	3,465	Shasta	1,478	69	1,547
Glenn	4,656	487	5,143	Solano	2,377	737	3,114
Kern	1,110	258	1,368	Sonoma	570	9	579
Kings	4,516	157	4,673	Stanislaus	22,310	2,869	25,179
Lake	8,762	164	8,926	Sutter	12,718	1,266	13,984
Los Angeles	291	0	291	Tehama	10,129	1,107	11,236
Madera	1,310	512	1,822	Tulare	24,508	1,592	26,100
Mendocino	265	0	265	Ventura	875	13	888
Merced	7,625	1,005	8,630	Yolo	6243	273	6,516
Monterey	287	0	287	Yuba	4,534	663	5,197
Napa	691	4	695	Other	253	33	286
				TOTAL	177,880	17,823	195,703

TABLE 3 — Total Nut Set per tree, by District a/

Year	Average Set Per Tree			
	Coast b/	Sacramento Valley c/	San Joaquin Valley d/	State a/
1980	1,214	2,271	1,917	1,972
1981	1,124	2,424	2,244	2,132
1982	1,419	2,674	2,047	2,158
1983	1,178	2,151	1,741	1,787
1984	1,795	2,850	2,114	2,357
1985	1,512	2,457	1,982	2,099
1986	1,579	2,008	1,321	1,613

See Page 4, Table 4 for footnotes.

TABLE 4 — Survey Averages for In-Shell Measurements, by Districts

	Measurement	District Averages e/			
		Coast b/	Sacramento Valley c/	San Joaquin Valley d/	State a/
AUGUST	In-Shell Weight (gm)				
	1980	20.7	22.5	23.6	22.7
	1981	20.3	23.1	21.2	21.7
	1982	21.9	23.2	22.2	22.4
	1983	23.3	21.9	22.0	22.1
	1984	20.5	21.2	21.1	21.1
	1985	20.2	21.1	20.6	20.7
	1986	22.9	23.7	19.9	22.1
OBERCTIVE	In-Shell Suture (mm)				
	1980	32.2	33.0	33.4	33.1
	1981	32.0	32.8	32.5	32.5
	1982	32.8	33.3	33.6	33.4
	1983	32.6	32.2	32.1	32.2
	1984	31.7	32.2	32.4	32.2
	1985	31.5	32.0	32.1	32.0
	1986	32.8	33.3	32.3	32.9
MEASURE	In-Shell Cross Suture (mm)				
	1980	31.1	31.8	32.1	31.8
	1981	30.9	32.1	31.6	31.6
	1982	31.6	32.2	32.4	32.2
	1983	32.6	32.0	31.7	31.9
	1984	32.1	32.4	32.2	32.3
	1985	31.9	32.5	32.3	32.4
	1986	32.7	33.5	32.3	33.0
MENT	In-Shell Length (mm)				
	1980	39.4	39.7	40.9	40.2
	1981	39.1	40.2	40.0	39.9
	1982	39.9	39.6	40.4	40.0
	1983	41.1	39.1	39.6	39.7
	1984	40.0	39.3	39.3	39.2
	1985	38.9	39.4	39.6	39.4
	1986	40.4	40.6	39.2	40.0
SURVEY	Kernel Grade				
	Percent Sound				
	1980	89.8	95.8	91.9	92.7
	1981	94.2	95.9	93.9	94.6
	1982	92.5	97.3	96.8	96.3
	1983	92.4	97.6	93.5	94.6
	1984	91.4	96.3	94.4	95.9
	1985	97.2	97.3	94.1	95.8
	1986	97.2	98.0	91.3	95.3

a/ District and State averages are derived by weighting county averages by county bearing acreage figures.

b/ Coast includes: Alameda, Contra Costa, Lake, Monterey, Napa, San Benito, San Luis Obispo, Santa Clara, and Sonoma counties.

c/ Sacramento Valley includes: Butte, Colusa, Glenn, Placer, Sacramento, Shasta, Solano, Sutter, Tehama, Yolo, and Yuba counties.

d/ San Joaquin Valley includes: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties.

e/ 1984, 1985, and 1986 measurements are weighted by nuts set by tree.

TABLE 5 — Average Survey Measurements by Variety e/

	Measurement	Ashley	Eureka	Franquette	Hartley	Mayette
A U G U S T O B J E C T I V E M E A S U R E M E N T S U R V E Y	In-Shell Weight (gm)					
	1980	19.5	22.2	22.2	25.8	21.7
	1981	19.5	21.2	20.3	24.8	21.4
	1982	21.0	23.6	20.8	24.6	21.3
	1983	18.7	19.8	22.4	25.5	23.3
	1984	17.5	21.1	20.2	24.2	20.6
	1985	19.8	21.0	17.6	23.5	19.4
	1986	20.4	18.4	21.0	24.7	22.3
	In-Shell Width (mm)					
	1980	31.8	31.8	32.1	34.3	33.1
	1981	31.7	31.2	31.6	33.5	33.0
	1982	32.6	32.8	32.6	34.2	33.0
	1983	31.2	30.5	31.7	33.5	32.3
	1984	31.2	31.2	31.4	33.5	31.1
	1985	32.5	31.2	29.7	33.3	30.1
	1986	32.7	30.4	31.7	34.0	32.1
	In-Shell Cross-Width (mm)					
	1980	30.9	30.7	30.8	33.2	31.1
	1981	30.9	30.7	30.6	32.7	31.3
	1982	31.5	31.5	31.4	33.2	31.0
	1983	30.9	30.6	31.5	33.3	34.0
	1984	31.2	31.9	31.5	33.3	32.4
	1985	32.5	31.7	30.5	33.5	32.0
	1986	32.7	30.7	32.0	34.0	33.5
	In-Shell Length (mm)					
	1980	37.8	43.7	39.6	41.1	38.9
	1981	38.2	43.6	38.6	41.2	37.9
	1982	38.2	43.7	39.3	40.7	38.0
	1983	37.1	41.4	39.9	41.1	39.0
	1984	36.5	42.5	38.8	40.5	37.2
	1985	38.4	43.3	37.3	40.2	37.1
	1986	39.1	40.7	39.8	40.8	39.1
	Kernel Grade					
	Percent Sound					
	1980	93.3	94.9	92.7	95.5	96.1
	1981	95.9	93.9	94.9	96.6	90.0
	1982	95.9	92.9	94.5	98.5	92.9
	1983	95.6	88.5	95.4	98.3	95.4
	1984	95.0	93.4	95.7	98.1	97.6
	1985	96.7	89.0	97.4	96.3	96.5
	1986	95.9	79.8	96.0	97.0	97.3
	Nuts Set Per Tree					
	1980	2,436	1,621	2,426	1,963	2,707
	1981	1,321	1,321	2,737	2,579	2,930
	1982	1,585	1,986	3,249	2,466	3,870
	1983	1,636	2,057	2,227	2,131	2,276
	1984	2,063	2,297	3,406	2,497	3,402
	1985	1,460	2,721	2,728	2,135	1,950
	1986	808	1,076	2,474	2,220	2,082

TABLE 5 — Average Survey Measurements by Variety e/ (continued)

	Measurement	Payne	Serr	Tehama	Vina	Other
A U G U S T	In-Shell Weight (gm)					
	1980	20.8	23.6	23.9	21.0	23.5
	1981	19.1	22.5	21.3	19.0	22.2
	1982	21.0	23.5	22.6	21.8	21.0
	1983	20.5	20.5	21.8	20.2	21.4
	1984	18.8	21.5	20.4	18.2	20.4
	1985	20.1	20.9	20.5	18.3	20.3
	1986	18.5	19.9	21.4	20.5	21.4
	In-Shell Width (mm)					
	1980	32.6	34.4	34.0	31.9	33.2
	1981	31.9	34.0	32.9	31.5	33.2
	1982	32.8	34.9	34.1	33.0	33.0
	1983	31.8	32.5	33.0	30.8	31.6
O B J E C T I V E	1984	32.1	34.2	32.8	30.5	31.6
	1985	32.5	34.1	32.8	30.3	31.3
	1986	31.9	33.4	33.7	31.6	32.5
	In-Shell Cross-Width (mm)					
	1980	31.2	32.6	32.9	30.6	32.0
	1981	31.0	32.7	32.0	30.9	31.9
	1982	31.7	33.7	32.9	31.5	31.3
	1983	31.5	31.2	32.3	30.7	31.1
	1984	32.0	33.2	32.6	31.2	32.3
	1985	32.4	33.4	32.6	31.1	32.3
	1986	31.7	32.8	33.0	32.0	32.7
	In-Shell Length (mm)					
	1980	38.7	40.5	40.0	40.1	41.2
M E A S U R E M E N T	1981	38.2	40.4	38.9	40.0	40.2
	1982	38.6	41.0	39.1	41.2	39.7
	1983	38.3	38.2	38.8	39.4	39.3
	1984	37.7	39.0	37.7	38.6	39.9
	1985	38.3	39.8	38.7	38.0	39.8
	1986	38.4	39.3	38.7	40.2	39.8
	Kernel Grade					
	Percent Sound					
	1980	91.5	85.9	93.4	97.6	92.6
	1981	94.7	93.5	92.6	96.5	89.4
	1982	96.5	97.7	97.6	96.7	95.2
	1983	91.3	95.2	94.8	99.3	93.5
	1984	92.8	95.8	97.4	99.1	96.0
S U R V E Y	1985	95.2	96.7	96.2	98.3	97.2
	1986	90.6	96.3	96.8	98.9	96.0
	Nuts Set Per Tree					
	1980	1,980	1,997	1,522	1,834	2,031
	1981	1,956	1,251	1,697	2,339	1,999
	1982	2,230	1,002	1,229	2,289	1,898
	1983	1,574	1,148	1,502	2,103	1,702
	1984	2,335	857	2,282	2,281	2,287
	1985	1,863	1,354	1,997	2,239	2,530
	1986	1,062	846	1,290	1,430	1,478

See page 4, Table 4 for footnotes.

1986 CALIFORNIA WALNUT SURVEY

TABLE 6 — Percentage Distribution of Walnut Shell Suture Sizes, by District and Variety

District & Variety	U.S. Standards Size Intervals a/																								Percent of Total b/						
	1982						1983						1984						1985							1986					
	Mth	Jmb	Lge	Med	Bby	Oth	Mth	Jmb	Lge	Med	Bby	Oth	Mth	Jmb	Lge	Med	Bby	Oth	Mth	Jmb	Lge	Med	Bby	Oth		Mth	Jmb	Lge	Med	Bby	Oth

DISTRICTS:																															
Coast	1	68	13	12	5	1	1	70	12	9	8	0	2	47	18	20	13	0	1	47	19	20	13	1	3	66	14	9	8	0	
	2	74	10	8	5	0	0	61	15	14	10	0	0	62	14	14	10	1	1	57	16	14	12	1	2	71	12	9	6	0	
	2	78	9	7	4	0	1	58	17	13	10	1	1	61	19	13	7	0	1	57	17	14	10	0	1	60	15	12	11	1	

VARIETIES:																															
Ashley	0	65	13	14	7	0	0	44	18	21	17	0	0	49	14	18	17	2	0	63	16	12	9	0	0	69	11	14	5	1	
Eureka	0	74	17	5	4	0	0	27	33	19	20	1	1	38	35	16	9	0	0	40	35	16	9	0	0	32	23	18	25	2	
Franquette	1	68	14	12	5	0	0	62	19	18	11	0	0	46	19	23	10	0	0	19	16	31	32	0	1	50	22	14	12	1	
Hartley	3	84	6	4	3	0	1	81	9	5	4	0	1	81	8	5	4	0	1	77	11	7	4	0	3	81	8	5	3	0	
Mayette	3	70	11	11	4	0	0	68	21	7	2	2	1	30	29	22	18	0	0	24	19	31	26	0	4	47	21	21	7	0	
Payne	1	69	12	12	5	1	0	59	15	14	11	1	0	57	21	14	8	0	0	65	15	12	7	0	0	55	18	14	12	1	
Serr	5	88	4	2	1	0	0	65	16	11	8	0	3	86	6	3	2	0	4	81	6	5	3	0	3	74	10	7	6	0	
Tehama	3	83	6	5	3	0	0	77	8	10	5	0	0	75	10	8	5	1	0	74	10	6	9	0	1	81	9	6	3	0	
Vina	0	70	10	13	7	0	1	34	18	26	20	1	1	31	22	23	22	2	0	27	27	19	24	3	1	52	19	17	10	1	
Other	3	69	10	9	8	1	2	48	18	16	14	2	0	52	15	18	13	2	0	44	19	22	14	1	2	60	13	13	11	1	
State	2	75	10	8	4	0	0	60	16	13	10	1	1	60	16	14	9	1	1	56	16	15	11	1	2	86	14	10	8	0	
Number of Shells Measured	5,514						5,292						5,671						11,348						11,558						

a/ Sizes used are as follows: Mammoth — larger than 96/64" in diameter; Jumbo — 80/64" to 96/64"; Large — 76/64" to 80/64" for Eureka variety, 77/64" to 80/64" for all other varieties; Medium — 73/64" to 76/64" for Eureka, 73/64" to 77/64" for all others; Baby — 60/64" to 73/64"; and Others — below 60/64".

b/ Percentage distributions based upon nut samples taken in the field, may not equal 100 percent due to rounding.

TABLE 7: Walnut Acreage, by Variety and Year of Planting

CROP AND VARIETY		1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	ACRES STANDING IN 1985:	
		AND : EARLIER :													NON- BEARING:	TOTAL:

WALNUTS - ENGLISH																
AMIGO	468	4	0	0	2	7	0	3	0	0	29	0	1	0	481	514
ANTENELLE	33	0	0	0	0	20	0	0	0	0	0	0	0	0	53	53
ASHLEY	11,353	294	172	0	75	25	47	168	191	45	105	102	56	0	11,966	12,633
BLACKBURN	115	0	1	0	0	0	0	0	0	0	0	0	0	0	117	117
BLACKMER/MAUTNER/VAUGHN	1,625	20	7	0	1	0	0	0	17	0	0	0	37	0	1,653	54
CHANDLER	0	0	85	0	0	13	43	222	325	158	282	285	266	159	1,451	1,807
CHICO	1,228	99	85	172	25	25	127	282	487	254	72	30	72	0	1,736	2,933
CONCORD	519	0	0	0	0	0	0	0	0	0	0	0	0	0	519	519
EUREKA	14,236	47	37	73	13	13	24	12	41	22	8	10	11	0	14,416	104
FRANQUETTE	25,164	28	52	33	33	52	44	33	71	20	229	50	5	0	25,277	504
GROVE	54	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50
GUSTINE	866	0	19	0	0	1	0	0	0	0	0	0	0	0	866	866
HARTLEY	46,899	808	1,112	598	1,175	1,175	942	1,481	799	842	327	350	594	140	51,549	4,541
HOUSTON	105	0	0	0	0	0	0	0	5	4	5	0	0	0	105	122
HOWARD	0	0	0	0	0	0	0	86	0	0	0	0	0	0	86	92
HYBRID	90	0	2	0	0	0	0	15	3	0	2	31	0	0	92	51
LOMPOC	129	0	0	0	0	0	0	0	6	0	0	0	0	0	129	135
MARCHETTI	758	0	0	0	0	0	0	10	72	0	0	0	0	0	788	82
MAYETTE	2,205	0	2	0	0	3	16	0	0	0	0	0	0	0	2,226	1
MIDLAND	337	0	1	0	0	0	0	2	7	0	0	0	0	0	338	9
NUGGETT	1,253	3	15	0	0	0	2	19	0	0	0	0	0	0	1,273	19
PAYNE	26,376	410	259	83	71	62	563	145	563	306	324	255	64	36	27,404	1,548
PEDRO	455	0	0	0	0	0	0	0	0	0	0	0	0	0	457	0
PIONEER	90	0	0	0	0	0	0	0	0	0	0	0	0	0	90	0
PLACENTIA	202	0	7	0	0	0	0	0	0	0	0	0	0	0	209	0
POE	1,001	0	0	0	0	0	0	3	10	0	0	0	0	0	1,001	13
PRIDE OF VENTURA	145	0	0	0	0	0	0	0	0	0	0	0	0	0	145	0
SERR	14,243	1,386	915	963	826	826	1,070	1,562	414	253	73	73	42	5	19,403	2,433
SIERRA GOLD	35	0	18	0	0	0	0	0	0	0	0	0	0	0	53	0
SNT BARBARA	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62	0
SOFTSHELL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUNLAND	0	0	0	0	0	0	0	67	45	76	106	31	2	0	327	327
TEHAMA	5,322	337	63	175	10	10	29	60	19	122	69	10	64	0	5,936	344
TRINTA	1,792	7	1	0	0	0	0	0	0	0	0	0	0	0	1,800	0
VINA	2,916	325	328	230	164	164	380	408	715	496	253	250	430	31	4,343	2,583
WATERLOO	1,107	28	0	3	1	1	0	4	0	28	9	0	0	0	1,139	32
WESTSIDE	13	24	2	18	0	0	0	2	14	1	0	6	0	0	57	23
WOODLAND	366	2	0	0	0	0	0	0	0	0	0	0	0	0	368	0
4946	67	0	0	0	0	0	0	0	0	0	0	0	0	0	67	0
OTHER	1,103	78	112	129	42	42	92	213	60	177	167	447	371	15	1,556	1,450
CROP TOTAL	162,728	3,893	3,297	2,555	2,458	2,458	2,900	4,800	3,864	2,805	2,062	1,940	2,015	386	177,880	17,823
																195,703