

# - Walnut -

## PRODUCTION IN CALAVERAS COUNTY

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## WALNUTS

Walnut trees have deep roots. Effective rooting may reach to 12 feet or deeper if the depth and condition of soil will permit. At least six feet of soil is recommended for walnut plantings. Soils less than six feet limit yield growth and cause many production hazards. Walnuts are very sensitive to "wet feet" so that orchard soils must be well drained.

Walnuts thrive in the climate of the Sierra foothills where winter temperatures do not damage the trees but temperatures are still cold enough to break the dormancy of trees that spring bloom and foliage is not delayed or staggered. Air drainage is also an important factor to consider in avoiding spring frost damage.

Urban and industrial encroachment in established walnut areas and the increased demand has tended to move orchards from Southern to Central California. The location of processing plants in nearby Stockton and Linden provide excellent marketing outlets for most of the established production in the County.

TREE SPACING: - With much higher fixed costs today, growers are not satisfied to wait 10 to 12 years before their orchards produce an income crop. To expedite their income; walnut plantings are now being made at 25 to 30 foot spacings using newly introduced varieties which produce heavier crops and come into bearing at an earlier age. Using these newer methods, considerable production can be expected in seven or eight years with careful management. Alternate trees are removed before crowding limits the growth and production of permanent trees in the orchard.

VARIETIES: - Paradox hybrid rootstock is usually recommended because of its vigor and resistance to crown rot. Grafting or budding to the desired variety may be made in the orchard after the rootstock is well established or trees may be purchased already top-worked from nurseries.

Many of the old varieties are not being used in new plantings. Franguettes usually have a low kernel yield; Hartleys seem to have a high incidence of phloem canker and Paynes have an early leafing date and some years may be severely damaged by frost. Four new varieties that can be recommended at this time are: Amigo (UC 56-226), Midland (UC 49-47), Tehama (UC 58-11) and Pedro (UC 53-113).

Serr (UC 59-129), Chico (UC 56-129) and Vina (UC 49-49) leaf out earlier and might encounter a greater spring frost hazard during many years. In block plantings, pollinators increase yields; Pedro would make a suitable pollinator for most of the other varieties. Variety combinations should receive specific consideration before orchards are planted. Pollinators are planted on the outside row at right angles to expected spring winds - usually in the foothills we get both north and south winds. From the outside rows, every 10th row planted to pollinators would be adequate. Grafting wood of these varieties are available from the Foundation Plant Materials Service, Viticulture and Enology, University of California, Davis, California.

Walnut yields of 2000 pounds per acre can be expected with these new varieties and good management is essential. Fertilization requirements will vary with yield, growth, and soil, but 150 pounds of nitrogen per acre will usually supply the nutritional needs of a high yielding mature orchard. Deficiencies of zinc and boron may be evident in spotted areas and can be easily corrected by field treatments with borax or zinc-sulfate sprays applied on first leaves early in the season.

Permanent grass cover of native plants with chemical weed control in the tree rows is recommended in this area to help control erosion and excessive dust, which encourages mite development. Non-tillage is lower in cost than mechanical cultivation.

Required pest control at present in Calaveras County is usually for Husk Fly with Parathion, or Trithion and Stayley's bait, which, will also control mites. Gopher control is effective using a tractor drawn burrow machine and poison bait. The Codling Moth does not require control in the Jenny Lind area at present. Perhaps, as the industry develops, other pests will build-up and require economical control.

When these growing costs are compared with other walnut producing areas in the state, it is obvious that our production cost of 20.18¢ per pound is low because of the relatively low land value of \$500 per acre. No doubt, immediately

following the development of an adequate secured water supply, land values will markedly increase.

PRICE: - The most recent five year average price for walnuts as reported by the California Crop and Livestock Reporting Service is \$512.00. A summary of their report for the last 9 years is of interest to producers.

CALIFORNIA WALNUT PRODUCTION STATISTICS

Crop Year	Acreage		Total Production	Yield per bearing acre	Grower's Return *	
	Bearing	Non Bearing			Per bearing acre	Per ton
1960	123,525	36,512	70,300	.57	304	535
1961	122,775	41,373	61,200	.50	236	473
1962	123,335	39,215	77,000	.62	293	469
1963	124,460	38,861	79,300	.64	293	460
1964	128,245	36,028	86,100	.67	307	458
1965	129,382	34,285	79,000	.61	264	432
1966	135,980	33,020	92,000	.68	310	460
1967	137,550	40,440	74,000	.54	301	560
1968	139,290	36,920	92,000	.66	428	650

\* Equivalent in-shell returns per tons at growers' first delivery point.  
Source: U.S. Government Publications and others.

California Agricultural Extension Service, University of California.

SAMPLE COSTS TO PRODUCE WALNUTS, IRRIGATED IN CALAVERAS COUNTY

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March 1970

YIELD: 1 Ton Per Acre 30'X30' (permanent alternate rows)

Operation	Hours Per Acre	Cash and labor cost per acre				Total
		Labor	Fuel & Repairs	Materials Kind and Quantity	Cost	
<b>Cultural Costs</b>						
Prune	10.0	20.00				20.00
Brush Disposal	1.5	3.00	1.58			4.58
Fertilize	1.0	2.00		150 Lbs.N@ 14¢+\$1.50	22.50	24.50
Spray (Husk Fly)	0.5	1.00	1.58	8 Lbs. Parathion	5.60	8.18
Chop Grass 6X	1.8	3.60	2.25			5.85
Strip Weed Control	.3	0.60	0.39	Herbicide	3.00	3.99
Irrigate 6X	3.6	7.20		Power Cost 3.3 Ac.Ft. @\$5.47	18.05	25.25
Misc., Pest, etc.	2.0	4.00	1.50	(Pickup Truck)		5.50
<b>TOTAL CULTURAL COSTS</b>		<b>41.40</b>	<b>7.30</b>		<b>49.15</b>	<b>97.85</b>

Harvest Costs

<b>Preharvest</b>						
weed chop	.3	.60	0.38			0.98
Shake	2.0	4.00	3.70			7.70
Rake	1.0	2.00	0.75			2.75
Pickup	1.0	2.00	2.10			4.10
Haul to Huller	0.3	0.60	0.45			1.05
Hull and Dry (Contract)				\$40.00/Ton + \$5.00 Haul		45.00
<b>TOTAL HARVEST COSTS</b>						<b>61.58</b>

Cash Overhead

Misc., Office, etc.				6% of above cost		9.57
Taxes - Land \$500; Trees \$1000				\$1500 x 25% x 6% rate		22.50
Rent						
<b>TOTAL CASH OVERHEAD</b>						<b>32.07</b>

**TOTAL CASH COST** **191.50**

INVESTMENT	PER ACRE	ANNUAL COST 7 %	
		DEPRECIATION	INTEREST
Land	\$500		35.00
Trees (Development)	1600 40 Yrs.	40.00	56.00
Irrigation System	150	10.00	5.25
Buildings	15 20 Yrs.	0.75	.53
Equipment	406	43.16	14.23
Irrigation Supply Line	104 30 Yrs.	3.47	3.64
<b>TOTAL</b>	<b>\$ 2775</b>	<b>97.38</b>	<b>114.65</b>
			<b>212.03</b>

**TOTAL COST PER ACRE** **403.15**

Cost per hundred pounds @ 1 ton yield

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EQUIPMENT INVESTMENT FOR WALNUTS  
IN CALAVERAS COUNTY

MARCH 1970

Based on 80 acres

ITEM	Cost	Cost	Life	Depre-	7%	Cash Cost Per Hour			
		Per				Ciation	Int.	Fuel	Repairs
		Acres	Yrs.						
40 H.P. Diesel Wheel Tractor	\$ 5700	7.25	10	7.13	2.49	.32	.58	.90	
Speed Sprayer 300 Gal.	4500	56.25	10	5.63	1.97	.40	1.85	2.25	
Chopper	1500	18.75	10	1.88	.66		.35	.35	
Pruning Tower & Tool	2500	31.25	10	3.13	1.09				
Buckrake	800	10.00	10	1.00	.35		.15	.15	
Boom Sprayer P.T.O. (Weeds)	1000	12.50	10	1.25	.44		.40	.40	
Pickup Truck	2500	31.25	10	3.13	1.09			1.50	
Shaker S.P.	5500	68.75	10	6.88	2.41	.20	1.65	1.85	
Pickup Machine S.P.	5000	62.50	10	6.25	2.19	.35	1.75	2.10	
Nut Rake S.P.	2000	25.00	5	5.00	.88	.20	.55	.75	
Carts (3)	1500	18.75	10	1.88	.66				
<b>TOTAL</b>	<b>\$ 406.25</b>			<b>43.16</b>	<b>14.23</b>				

Irrigation System

Booster Pump and Pipeline	12,000	150.00	15	10.00	5.25				
Supply Line 2640' of 6"	8,316	104.00	30	3.47	3.64				

COSTS AND EXPECTED RETURNS FROM WALNUT PRODUCTION IN CALAVERAS COUNTY  
AT SELECTED YIELDS

	YIELDS IN TONS PER ACRE				
	1500	1750	2000	2250	2500
Cash Costs Per Acre	\$ 180.25	185.87	191.50	197.13	202.75
Overhead Costs Per Acre	212.03	212.03	212.03	212.03	212.03
Total Cost Per Acre	392.28	397.90	403.53	409.16	414.78
Cost Per Hundred Pounds At Selected Yields	26.15	22.74	20.18	18.18	17.60
5 Yr. Average Price - Per CWT.	25.60	25.60	25.60	25.60	25.60
Net Farm Income Per CWT.	0.55	2.86	5.42	7.42	9.00
Net Farm Income Per Acre (Without Cost of Water)	8.25	50.05	108.40	166.95	225.00