

FRESNO COUNTY

COSTS FOR ESTABLISHING AND PRODUCING WALNUTS
 EARLY LEAFING LATERAL BEARING
 SOUTHERN SAN JOAQUIN VALLEY - 1985

Prepared by:

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1. Yield:

Yield (lbs/acre)	Year				
	4	5	6	7	Mature
Early Leafing Lateral Bearing	300	700	1200	2000	3500
Late Leafing Lateral Bearing	300	700	1200	2000	3500
Late Leafing Terminal Bearing			400	900	3500

2. Acreage:

The cost studies are based on a 60 acre orchard of which 3 acres are for roads and burn areas.

3. Spacing:

Terminal bearing orchards are spaced 35' by 35' with 35 trees per acre. Lateral bearing orchards are planted 28' by 28' with 55 trees per acre.

4. Varieties

A cost of establishment and a cost of production study was developed for each of three walnut variety types; (1) early-leafing lateral bearing, (2) late-leafing lateral bearing and (3) late-leafing terminal bearing. There are several differences among variety types that affect costs, labor and equipment requirements and yield. The most significant difference is the number of trees per acre; terminal-bearing trees are planted fewer to the acre than lateral-bearing. For the late-leafing varieties less pesticide applications are made than for the early-leafing varieties. Terminal bearing trees require less pruning per tree than lateral bearing trees. Of course, terminal bearing varieties bear more slowly than early leafing varieties. This is reflected in the establishment cost studies in the fifth, sixth and seventh years. The differences in production practices among the three variety types will be explained in detail.

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5. Irrigation:

A pipeline irrigation system is used. The first three years are flood-irrigated. Borders are put up after that and the centers are mowed. Water applications rates are as follows:

<u>Year</u>	<u>Acre Feet/Year</u>
1	1
2	1
3	1.5
4	2
5	3
6	3
7	3.5
8+	4.0

6. Fertilizer:

The rate of nitrogen applied is as follows:

<u>Year</u>	<u>Lbs/Acre</u>
1	6
2	12
3	27
4	54
5	54
6	108
7	108
8+	150

7. Pesticides:

Early Leafing - 1 spray years 3-5, 2 sprays year 6, 4 sprays year 7 and on.

Late Leafing - 1 spray in the 4th year and then 1 spray every other year.
(lateral and terminal bearing)

8. Pruning:

Starting in year 5 a pruning tower is rented.

<u>Year</u>	<u>Lateral Bearing (early-leafing and late-leafing)</u>	<u>Terminal Bearing (late-leafing)</u>
-----Hours/Acre-----		
1	0.5	0.33
2	1	0.67
3	2	0.67
4	3	1
5	2	1
6	3	1.2
7	3	1.2
8+	4	1.2

9. Brush removal:
Brush is removed by hand in establishment years. After that a shredder is used.
10. Harvest:
The first bearing year is hand-picked with the picker receiving half the crop. Following years are mechanically harvested. The custom rate includes a one ton minimum charge.
11. Interest:
An interest rate of 13% was assumed. Operating capital is assumed to be borrowed for 6 months of each establishment and producing year. Interest is also charged on accumulated cash costs in establishment years to reflect interest charged on a long-term establishment loan. Interest is also charged on investment capital to account for the income foregone by keeping money tied up in capital equipment.
12. Overhead Costs:
County taxes represent a set fee while office and business costs are estimated at about 8% of the total cultural costs. They include such costs as preparing roadways, general weed control, office, bookkeeping, etc.
13. Fuel & Repair:
Included are the cost of fuel, maintenance, replacement parts, tires, etc.
14. Investment Cost:
In allocating the equipment cost per acre, the following calculations were made: (a) "Original Cost" of equipment is the estimated new cost and includes 6% sales tax. (b) "Cost Per Acre" is the new cost divided by the number of acres the equipment will be used on. (c) "Depreciation" is based on the "Per Acre Cost" divided by the expected life of the equipment. (d) "Interest" on investment is figured on one-half of the new cost per acre multiplied by 13%. (e) The investment cost per acre is calculated as 60% of the cost of all new equipment to reflect a mix of new and used equipment.
15. Land is valued at \$6000 per acre. An interest rate of 13% is applied.

English Walnut Orchard Establishment Costs
 Early Leafing Lateral Bearing
 Southern San Joaquin Valley - 1985
 Cost Analysis Work Sheet

Costs are for an orchard planted 28' x 28', with 55 trees per acre. A pipeline irrigation system is used.

Skilled Labor \$ 7.50
 Field Labor \$ 5.75

YEAR	-----Costs Per Acre-----						
	1st	2nd	3rd	4th	5th	6th	7th
YIELD: lbs./acre in-shell	---	---	---	300	700	1200	2000

CULTURAL COSTS:

Land Preparation: subsoil contract	160						
Disk and Float: 4 hours labor and tractor	76						
Trees: 55 @ \$8.5 (+2 2nd Yr. and 1 3rd Yr.)	468	17	9				
Survey and Plant: 55 @ \$1.00 2nd and 3rd Yrs. \$3.	55	6	3				
Prune and Train (skilled hard labor)	4	8	15	23	55	83	83
Brush Disposal	5	9	19	19	19	19	19
Tillage and Irrigation Preparation: 7hrs. yrs. 1-3							
1 hr. yrs. 4+	127	127	127	18	18	18	18
Put up borders				30			
Mow middles				41	41	41	41
Spray: weed control				27	27	27	27
Irrigation: 4hrs. labor 1st 2 yrs., 6 hrs. 3rd yr., 1hr. 4+ yrs.	23	23	23	6	6	6	6
Water: \$14 ac. ft. plus \$6 acre district tax	20	20	27	34	48	48	48
Fertilizer: Nitrogen \$.33/Lb .5 hr. labor and tractor	7	7	7	7	7	7	7
Spray: pest control materials Custom application			14	14	14	28	28
Misc. labor and power, 1hr. labor and tractor	15	15	15	15	15	15	15
TOTAL CULTURAL COSTS	960	235	295	280	297	377	377

HARVESTING COSTS:

Hand pick-\$.35/lb. for .5 of crop	53	123				
1st Pick-80% of crop, \$120/ton, 1 ton minimum					120	120
2nd Pick, \$70 per acre					70	70
Hull and Dry \$70/ton	11	25			42	70
TOTAL HARVESTING COSTS	63	147			232	260

YEAR	1st	2nd	3rd	4th	5th	6th	6th
OVERHEAD COSTS:							
County taxes	60	60	60	60	60	120	120
Office and Business Costs	77	19	24	22	24	30	30
TOTAL OVERHEAD COSTS	137	79	84	82	84	150	150
TOTAL CASH COSTS	1097	314	379	426	528	760	788
ACCUMULATED CASH COSTS	1097	1411	1790	2216	2744	3503	3194
DEPRECIATION:							
Building, equipment, and irrigation system	77	77	77	77	77	77	77
INTEREST ON INVESTMENT @ 13%:							
Building, equipment, and irrigation system	63	63	63	63	63	63	63
Land \$6000	780	780	780	780	780	780	780
Interest in accum. cash cost	143	183	233	288	357	455	415
TOTAL INTEREST ON INVESTMENT	986	1027	1076	1131	1200	1299	1253
TOTAL COST FOR THE YEAR	2160	1417	1532	1587	1604	2135	2123
CREDIT FOR PRODUCTION							
.35/LB. in-shell				105	245	420	700
NET COST FOR THE YEAR	2160	1417	1532	1482	1559	1715	1423
ACCUMULATED NET COST	2160	3577	5109	6591	8150	9865	11287

SAMPLE COSTS TO PRODUCE ENGLISH WALNUTS

Early Leafing Lateral Bearing

Southern San Joaquin Valley - 1984

Labor rate \$ 7.50 /hr. skilled labor
5.75 /hr. field labor

Yield: 3500 pounds of dry nuts per acre

Operation	Labor Hours per Acre	Labor	Cash and Fuel & Repairs	Labor Costs per Acre Kind and Quantity	Materials	Cost	Total Cost	Your Cost
Cultural costs:								
Pruning	4	30.00		Tower Rental \$20/hr.		80.00	110.00	
Brush Disposal	1.2	9.00	10.00				19.00	
Fertilizer				150 lbs. N @ .33/lb.		49.50	49.50	
				Custom application		6.00	6.00	
Spray: Pest Control 4X				Materials		112.00	112.00	
				Custom application		48.00	48.00	
Tillage and irrig. pre	1	5.75	12.00				17.75	
Irrigation	1	5.75		3.5 ac.ft. @ \$14.00/ ac. ft. + \$6.00 tax		55.00	60.75	
Spray: pest control				Materials and Applic.			78.00	
Spray: weed control				Materials and Applic.			26.80	
Mow 5X	2.5	18.75	22.50				41.25	
Misc.	1	7.50	7.00				14.50	
Interest on operating capital @ 13%							75.86	
TOTAL CULTURAL COSTS	10.7	76.75	51.50			350.50	659.41	
Harvest costs:								
1st Pick - 80%				\$120/ton, 1 ton minimum		168.00	168.00	
2nd Pick - 20%				\$70/acre		70.00	70.00	
Hull and Dry				\$70/ton		122.50	122.50	
TOTAL HARVEST COSTS							360.50	
Cash overhead:								
Office and business costs							81.59	
County Taxes							120.00	
TOTAL CASH OVERHEAD COSTS							201.59	
TOTAL CASH COSTS							1221.50	
TOTAL CASH COST PER TON							695.00	
Investment								
	Per Acre			Annual Cost				
				Depreciation	Interest @ 13%			
Equipment & buildings	971.00			76.77	63.12		139.89	
Trees 40 yr. depreciation	11287.00			282.18	733.56		1015.83	
Land	6000.00				780.00		780.00	
TOTAL INVESTMENT COSTS	18258.00			358.95	1576.78		1935.72	
TOTAL COSTS PER ACRE							3157.22	
Cost per ton @	3500 lbs. yield						1804.13	

**Cost of Producing Walnuts at Varying Yields
Early Leafing Lateral Bearing**

	POUNDS PER ACRE								
	1000	1500	2000	2500	3000	3500	4000	4500	5000
Cultural costs	659.41	659.41	659.41	659.41	659.41	659.41	659.41	659.41	659.41
Harvest cost	225.00	242.50	260.00	277.50	319.00	360.50	402.00	443.50	485.00
Cash overhead	190.75	192.15	193.55	194.95	198.27	201.59	204.91	208.23	211.55
Total cash cost	1075.16	1094.06	1112.96	1131.86	1176.68	1221.50	1266.32	1311.14	1355.96
Investment cost	1935.72	1935.72	1935.72	1935.72	1935.72	1935.72	1935.72	1935.72	1935.72
Total cost	3010.88	3029.78	3048.68	3067.58	3112.40	3157.22	3202.04	3246.86	3291.68

Income Above Cash Costs at Varying Yields & Prices

CENTS PER POUND	POUNDS PER ACRE								
	1000	1500	2000	2500	3000	3500	4000	4500	5000
25	-825.16	-719.06	-612.96	-506.86	-426.68	-346.50	-266.32	-186.14	-105.96
30	-775.16	-644.06	-512.96	-381.86	-276.68	-171.50	-66.32	38.86	144.04
35	-725.16	-569.06	-412.96	-256.86	-126.68	3.50	133.68	263.86	394.04
40	-675.16	-494.06	-312.96	-131.86	23.32	178.50	333.68	488.86	644.04
45	-625.16	-419.06	-212.96	-6.86	173.32	353.50	533.68	713.86	894.04
50	-575.16	-344.06	-112.96	118.14	323.32	528.50	733.68	938.86	1144.04
55	-525.16	-269.06	-12.96	243.14	473.32	703.50	933.68	1163.86	1394.04
60	-475.16	-194.06	87.04	368.14	623.32	878.50	1133.68	1388.86	1644.04

Income Above Total Costs at Varying Yields & Prices

CENTS PER POUND	POUNDS PER ACRE								
	1000	1500	2000	2500	3000	3500	4000	4500	5000
25	-2760.88	-2654.78	-2548.68	-2442.58	-2362.40	-2282.22	-2202.04	-2121.86	-2041.68
30	-2710.88	-2579.78	-2448.68	-2317.58	-2212.40	-2107.22	-2002.04	-1896.86	-1791.68
35	-2660.88	-2504.78	-2348.68	-2192.58	-2062.40	-1932.22	-1802.04	-1671.86	-1541.68
40	-2610.88	-2429.78	-2248.68	-2067.58	-1912.40	-1757.22	-1602.04	-1446.86	-1291.68
45	-2560.88	-2354.78	-2148.68	-1942.58	-1762.40	-1582.22	-1402.04	-1221.86	-1041.68
50	-2510.88	-2279.78	-2048.68	-1817.58	-1612.40	-1407.22	-1202.04	-996.86	-791.68
55	-2460.88	-2204.78	-1948.68	-1692.58	-1462.40	-1232.22	-1002.04	-771.86	-541.68
60	-2410.88	-2129.78	-1848.68	-1567.58	-1312.40	-1057.22	-802.04	-546.86	-291.68

ENGLISH WALNUT ORCHARD
Southern San Joaquin Valley - 1985

EQUIPMENT AND BUILDING LIST

ITEM	ORIGINAL COST	ANNUAL USE (ACRES)	COST PER ACRE	LIFE (YEARS)	OVERHEAD		COST PER HOUR
					DEPREC- IATION	INTEREST AT 13%	
Tractors:							
55 HP wheel diesel	30000	60	500.00	10	50.00	32.50	7.00
Disk, tandem 14'	7500	60	125.00	10	12.50	8.13	3.60
Float	2000	60	33.33	10	3.33	2.17	.96
Mower	4000	60	66.67	10	6.67	4.33	2.00
Brush Rake	1000	60	16.67	15	1.11	1.08	1.00
Brush Shredder	7600	60	126.67	10	12.67	8.23	4.00
Weed Sprayer SP	9000	60	150.00	10	15.00	9.75	11.30
Pipeline Irrigation System	24000	60	400.00	20	20.00	26.00	
Buildings	12000	60	200.00	30	6.67	13.00	
TOTAL COST	97100		1618.33		127.94	105.19	
60% OF NEW COSTS	58260		971.00		76.77	63.12	

EARLY-LEAFING LATERAL BEARING WALNUT PRODUCTION CASH FLOW ANALYSIS

PER ACRE MONTHLY CAST COSTS/CULTURAL PRACTICE CALENDAR

PRODUCTION YEAR: OCTOBER-SEPTEMBER

MONTH

PRACTICE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	TOTAL
PRUNING				110.00									110.00
BRUSH DISPOSAL				19.00									19.00
FERTILIZER								27.75			27.75		55.50
INSECT/DISEASE CONTROL ^{1/}						60.00			25.00	25.00	50.00		160.00
TILLAGE & IRRIGATION PREP.											17.75		17.75
IRRIGATION					3.38	3.38	6.75	6.75	13.50	13.50	13.50		60.76
HERBICIDE ^{2/}		20.00						6.80					26.80
MOW					8.25		8.25	8.25	8.25		8.25		41.25
MISCELLANEOUS							7.50					7.00	14.50
INTEREST ON INVESTING CAPITAL ^{3/}		2.60		16.77	1.51	8.59	2.93	6.44	6.08	5.21	15.24	1.01	66.38
TAXES			60.00				60.00						120.00
OFFICE & BUSINESS COSTS	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	81.60
HARVEST ^{4/}												360.50	360.50
TOTAL	6.80	29.40	66.80	152.57	19.94	78.77	92.23	62.79	59.63	50.51	139.29	375.31	1134.04

^{1/} Includes Ethrel application at harvest.

^{2/} Preemergence Nov. Contact May

^{3/} Rate = 13% on preharvest cash costs

^{4/} 1.75 Tons Per Acre