

ALMOND ORCHARD ESTABLISHMENT COSTS FOR THE NORTHERN SAN JOAQUIN VALLEY - 1991

BY

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This cost study is designed to provide almond orchardists or prospective growers the estimated costs to establish a new almond orchard. This study is based on typical costs for a better than average orchard under good management. The costs may reflect practices that are not necessary for all growers in all years.

This study assumes that the farm has good soil, good water, very good equipment, and top management. Used equipment is often purchased for orchard use. This will reduce capital investment, depreciation and interest, but will likely increase repair costs, operating costs and down time. This study uses costs based on 60% of new costs to reflect this mix of new and used equipment.

In this study, harvest costs are based on current custom harvest charges when equipment is hired, and on operating costs where the equipment is owned. Hulling is assumed to be custom, therefore interest and depreciation for hulling is not included.

GENERAL ASSUMPTIONS

1. LAND:

Land is valued at \$5000/acre. There are 2.4 acres allocated to roads and farmstead. This increases the cost of land to \$5263/producing acre. Land is not depreciated.

2. TREES:

Trees are planted at 24' X 24' square spacings, with 75 trees per acre. The orchard is assumed to be 100 acres.

3. IRRIGATION:

The orchard is flood irrigated with irrigation district canal water, and costs reflect the Modesto Irrigation District.

4. PEST MANAGEMENT:

In year 1 there is only a spring Twig Borer spray. In year 2 there is a spring and a dormant spray. In year 3 a spring fungicide spray is added and in years 4 and 5 a summer worm spray is added.

5. LABOR:

Hourly wages for workers are \$5.97 and \$4.25 per hour for skilled and field workers respectively. Adding 34% for SDI, FICA, insurance and other benefits gives labor rates shown of \$8.00 per hour for skilled and \$5.70 per hour for field labor. The labor operations involving machinery are 10% higher to reflect the extra labor involved in equipment moving, setup and maintenance.

6. OVERHEAD:

County taxes are calculated as 1% of the land value plus 1% of the average value of the trees, equipment, buildings and improvements. Insurance is charged at 0.8% of the average value of the equipment over its useful life. Office and business costs are estimated at 4% of cash costs.

7. INTEREST:

Interest on operating capital is based on cash costs and is calculated at a rate of 12% per year. Interest is also charged on investment at 12% per year to account for income forgone that could be received from an alternative investment (opportunity cost) and is based on the value of the land plus the average value of the trees over the life of the orchard, buildings and equipment.

8. EQUIPMENT:

In allocating equipment costs per acre, the following calculations were made: (a) Original Cost of equipment is the cost of new equipment plus sales tax; (b) Depreciation is straightline with no salvage value; (c) Interest on investment is calculated as one-half of the new cost per acre (the average value of equipment during its useful life) multiplied by an interest rate of 12%; (d) The total investment costs are also calculated as 60% of the depreciation and the interest costs for all new equipment to reflect a mix of new and used equipment.

**SAMPLE COSTS TO ESTABLISH AN ALMOND ORCHARD
NORTHERN SAN JOAQUIN VALLEY - 1991**

Labor costs (Total to the grower) Skilled labor = \$8.00 / Hr. Field labor = \$5.70 / Hr. Interest rate = 12%

Costs are for a 100 acre orchard planted 24' X 24' Square (75 trees / acre), under flood irrigation with cultivated middles.

YEAR	COSTS PER ACRE				
	1st	2nd	3rd	4th	5th
YIELD IN POUNDS OF MEATS PER ACRE	0	0	0	500	1200
PLANTING COSTS					
Land preparation: Backhoe (8 holes per hr.)	\$350.00				
Fumigate: (Methyl bromide)	\$500.00	\$2.00	\$1.00		
Disk and float	\$66.00				
Tree cost	\$262.50	\$7.00	\$3.50		
Survey and plant	\$75.00	\$2.00	\$1.00		
TOTAL PLANTING COSTS	\$1,253.50	\$11.00	\$5.50		
CULTURAL COSTS:					
Prune and train	\$0.00	\$15.81	\$21.08	\$31.63	\$63.25
Ridge and knock banks	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00
Irrigate: (6X)					
Labor	\$11.40	\$11.40	\$11.40	\$11.40	\$11.40
Water cost	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00
Fertilizer and application	\$10.00	\$22.00	\$34.00	\$46.00	\$58.00
Pest control program					
Materials	\$25.00	\$55.00	\$85.00	\$85.00	\$85.00
Application	\$12.68	\$25.36	\$38.04	\$38.04	\$38.04
Cultivate (4X)	\$43.86	\$43.86	\$43.86	\$43.86	\$43.86
Weed control	\$24.05	\$24.05	\$51.11	\$61.11	\$61.11
Pollination				\$30.00	\$60.00
Miscellaneous labor and materials	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Interest on operating capital - 12%	\$84.81	\$14.49	\$19.38	\$22.80	\$27.22
Office and business expense (4% of cash costs)	\$59.93	\$10.24	\$13.69	\$16.11	\$19.24
TOTAL PREHARVEST CASH COSTS	\$1,558.23	\$266.21	\$356.07	\$418.95	\$500.11
HARVEST COSTS					
Shake				\$65.00	\$65.00
Sweep				\$19.69	\$26.25
Hand rake				\$4.28	\$5.70
Pick up and haul				\$57.75	\$115.10
Hull and shell (\$0.05 per meat lb.)				\$25.00	\$60.00
TOTAL HARVEST COSTS	\$0.00	\$0.00	\$0.00	\$171.72	\$272.05
TOTAL CASH COSTS	\$1,558.23	\$266.21	\$356.07	\$590.67	\$772.16
DEPRECIATION					
Buildings and equipment	\$111.00	\$111.00	\$111.00	\$111.00	\$111.00
TOTAL DEPRECIATION COSTS	\$111.00	\$111.00	\$111.00	\$111.00	\$111.00
INTEREST ON INVESTMENT @ 12%					
Buildings and equipment	\$92.00	\$92.00	\$92.00	\$92.00	\$92.00
Land (\$5000 / Acre Bare land cost)	\$600.00	\$600.00	\$600.00	\$600.00	\$600.00
Interest on accumulated costs		\$283.35	\$445.65	\$638.22	\$822.05
TOTAL INTEREST ON INVESTMENT COSTS	\$692.00	\$975.35	\$1,137.65	\$1,330.22	\$1,514.05
TOTAL COST PER ACRE FOR YEAR	\$2,361.23	\$1,352.56	\$1,604.72	\$2,031.89	\$2,397.21
CREDIT FOR NUT MEATS @ \$1.00 / LB.				\$500.00	\$1,200.00
NET COST FOR YEAR	\$2,361.23	\$1,352.56	\$1,604.72	\$1,531.89	\$1,197.21
TOTAL ACCUMULATED COST	\$2,361.23	\$3,713.79	\$5,318.51	\$6,850.40	\$8,047.62



ITEM #	NEW COST	ANNUAL USE (ACRES)	COST PER ACRE	LIFE (HRS)	YEARS TO TRADE	DEPRECIATION	INTEREST	TAR*	FUEL	REPAIRS	TOTAL	
1	60 HP DIESEL TRACTOR	\$25000	100	\$220.00	12000	10	\$22.00	\$15.00	120	\$3.40	\$2.50	\$5.90
2	30 HP DIESEL TRACTOR	15000	100	150.00	12000	10	15.00	9.00	120	1.70	1.50	3.20
3	100 GAL PTO WEED SPRAYER	2750	100	28.00	1200	10	2.75	1.65	100		2.29	2.29
4	500 GAL ORCHARD SPRAYER	38000	100	380.00	2000	10	38.00	22.80	80	5.30	15.20	20.50
5	10 FT FLAIL MOWER	6500	100	65.00	2000	10	6.50	3.90	120		3.90	3.90
6	BUCKRAKE/FRONTEND LOADER	5600	100	56.00	2500	10	5.60	3.36	100		2.24	2.24
7	4 WHEEL ATV & SPRAYER	6000	100	60.00	3000	5	12.00	3.60	60		1.20	1.20
8	PRUNING EQUIPMENT	1200	100	12.00		10	1.20	0.72	100			
9	1/2 TON PICKUP	14000	100	140.00	2000	5	28.00	8.40	60		4.20	4.20
10	FLOOD IRRIGATION SYSTEM	30000	100	300.00	7000	35	8.57	36.00				
11	TWO IRRIGATION PUMPS (100HP)	35000	100	350.00	35000	20	17.50	21.00	5		0.05	0.05
12	SHAKER HARVESTER	0	0	0.00	0	0	0.00	0.00	0		0.00	0.00
13	SWEEPER	0	0	0.00	0	0	0.00	0.00	0		0.00	0.00
14	PICKUP MACHINE & 4 CARTS	0	0	0.00	0	0	0.00	0.00	0		0.00	0.00
15	12 FT OFFSET DISC	6833	100	68.00	2500	10	6.83	4.10	120		3.28	3.28
16	14 FT ROLLER FLOAT	1500	100	15.00	2500	10	1.50	0.90	120		0.72	0.72
17	10 FT SPRINGTOOTH	6000	100	60.00	2500	10	6.00	3.60	120		2.88	2.88
	BUILDINGS	25000	100	250.00		35	7.14	15.00				
	MISC TOOLS	6000	100	60.00		10	6.00	3.60				
	THERMOMETERS & FROST ALARM	500	100	5.00		5	1.00	0.30				
TOTAL COSTS		\$224,883		\$2,219			\$186	\$153				
60% OF NEW COSTS		\$134,930		\$1,331			\$111	\$92				

*DEFINITIONS:

YEARS TO TRADE-----	THE PROJECTED LIFE OF THE MACHINE IN YEARS ADJUSTED FOR EXCESSIVE ANNUAL USE.
OVERHEAD-----	PER ACRE PER YEAR
DEPRECIATION-----	"COST PER ACRE" DIVIDED BY "YEARS TO TRADE"
INTEREST-----	("COST PER ACRE" X "INTEREST RATE") DIVIDED BY 2 = AVERAGE INTEREST COST PER ACRE PER YEAR
TAR-----	TOTAL ACCUMULATED REPAIRS. THE TOTAL COST OF REPAIRS DURING THE MACHINES LIFE. EXPRESSED AS A PERCENT OF "NEW COST". CALCULATED FROM EQUATIONS BASED ON EQUIPMENT TYPE AND ANNUAL USE.
HOURLY COST OF FUEL-----	DIESEL FUEL, OIL AND LUBE COSTS PER HOUR = HP X COST OF DIESEL/GAL X 0.0667 GASOLINE FUEL, OIL AND LUBE COSTS PER HOUR = HP X COST OF GASOLINE/GAL X 0.0889
HOURLY COST OF REPAIRS-----	("NEW COST" X "TAR") DIVIDED BY ("LIFE IN HOURS")
60% OF NEW COSTS-----	USED TO REFLECT A MIX OF NEW AND USED EQUIPMENT