

1987
WHOLE FARM TREE MODEL - SAMPLE PRODUCTION COSTS
Yolo and Solano Counties

Almonds

by

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This cost study provides detailed information on the sample costs of producing various tree crops in Yolo and Solano Counties. For the purposes of this study, a hypothetical 205 acre orchard with 200 acres under production is considered. The 200 acres is planted in equal thirds with walnuts, almonds and prunes leaving the remaining 5 acres for roads and burn area.

Included in this study are Production Cost Assumptions, a Cost of Production Worksheet and a Monthly Summary of Sample Costs for each crop; a List of General Assumptions; and an Equipment List containing machinery, building and other costs shared on the 200 acre orchard. Costs given in this sample study are for those of a typical well managed orchard in Yolo or Solano County and are not intended to reflect an average of all orchards in these counties.

Practices listed are based on those production procedures considered typical for this crop and area. Sample costs given for labor, materials, equipment and contract services are based on 1987 figures. Some costs or practices listed in this study may not be applicable to your situation. The study is intended only as a guide and can be used as an aid in making production decisions, determining potential returns, preparing budgets and evaluating production loans. A blank "Your Costs" column is provided to enter your actual costs on the Cost of Production Worksheets.

For explanation of calculations used for the study refer to the attached cost estimate assumptions or call Agricultural Economics Extension, University of California, Davis, California (916) 752-2745.

GENERAL PRODUCTION COST ASSUMPTIONS FOR 200 ACRE WHOLE FARM TREE MODEL
Yolo and Solano Counties - 1987

The following list contains a detailed description of the equipment, time requirement, and other assumptions pertaining to the costs of production for a sample orchard in Yolo or Solano County.

1. Labor rates include 34% for benefits (SDI, FICA, Insurance, holidays, etc.):

Machinery operators:	\$6.50/hr
Irrigators:	\$6.50/hr
Misc. Labor:	\$5.00/hr

2. The number of trees per acre and spacing is as follows:

Walnuts -	48 trees/acre - 30' X 30' spacing.
Almonds -	75 trees/acre - 24' X 24' spacing.
Prunes -	108 trees/acre.

3. Irrigation:

Sprinkler irrigation system for 200 acres includes:

Pipeline \$400/acre x 200 acres =	\$ 80,000
300 ft Well and 100 HP Pump	<u>25,000</u>
	\$105,000

Irrigation labor - 0.5 hr/application/acre @ \$5.00/hr x 7 =	\$ 17.50/acre
Electricity - @ 65% plant efficiency =	\$107.94/acre
7 Irrigations - 35 ac in total	
Pump capacity - 1100 gal/min = 2431 ac.in./hr	
2.0567 hrs/acre/irr. X 7 Irr. =	14.4 hrs/acre

4. County taxes: (1% of land + equipment and building costs) = \$ 32.52/acre

5. Pickup: 75 miles/acre/yr. Repairs \$3.09/acre + Fuel \$7.76/acre=\$10.85/acre

6. Buildings and equipment:

	<u>200 acres</u>	<u>Per acre</u>
Building for equipment (1,200 sq.ft.)	\$24,000	\$120.00
Shop and tools	\$ 4,000	\$ 20.00
Insurance for equipment - 60% of new cost @ 0.5% =	\$ 690	\$ 3.45

7. Equipment costs:

In allocating the equipment costs per acre, the following calculations were made: (a) "Original Cost" of equipment is the new cost including sales tax. (b) "Depreciation" is the new cost per acre divided by the years of life. (c) "Interest" on investment is figured as one-half of the new cost per acre multiplied by the interest rate. One-half of the new cost is the average value of the equipment during its useful life. (d) The investment per acre used in the cost study is calculated at 60% of the depreciation and interest costs for all new equipment to reflect a mix of new and used equipment.

Herbicide Summary:

<u>Date</u>	<u>Materials</u>	<u>Application</u>	<u>Labor</u>	<u>Total</u>
Nov	\$18.29	\$ 2.39	\$ 3.25	\$23.93
Jun	\$ 5.69	\$ 1.03	\$ 3.25	\$ 9.97
<u>Jul</u>	<u>\$33.38</u>	<u>\$ 2.39</u>	<u>\$ 3.25</u>	<u>\$39.02</u>
Total	\$57.36	\$ 5.81	\$ 9.75	\$72.92

5. Pest and Disease Sprays:

<u>Date</u>	<u>Material</u>	<u>Rate/acre Applied</u>	<u>Cost/unit</u>	<u>Cost/acre</u>
Dec	Diazinon	4 lbs	\$ 4.27/lb	\$17.08
	Oil	6 gal	\$ 2.39/gal	\$14.34
Feb	Bloom spray	1 lb	\$21.32/lb	\$21.32
Feb	Post Bloom spray	1 gal	\$10.09/gal	\$10.09
May	Summer spray	4 lbs	\$ 7.70/lb	\$30.80
Jul	Miticide	5 lbs	\$ 4.26/lb	\$21.30

Application and Labor - (5 times - Dec, Feb, Feb, May, Jul):

<u>Description</u>	<u>Hours/acre</u>	<u>\$/hour</u>	<u>Cost/acre</u>
70 HP tractor	0.3	\$5.50	\$ 1.65
Speed sprayer - pto	0.3	\$8.64	\$ 2.59
Labor	0.3	\$6.50	\$ 1.95

Pest and Disease Spray Summary:

<u>Date</u>	<u>Materials</u>	<u>Application</u>	<u>Labor</u>	<u>Total</u>
Dec	\$31.42	\$ 4.24	\$ 1.95	\$37.61
Feb	\$21.32	\$ 4.24	\$ 1.95	\$27.51
Feb	\$10.09	\$ 4.24	\$ 1.95	\$16.28
May	\$30.80	\$ 4.24	\$ 1.95	\$36.99
<u>Jul</u>	<u>\$21.30</u>	<u>\$ 4.24</u>	<u>\$ 1.95</u>	<u>\$27.49</u>
Total	\$114.93	\$21.20	\$ 9.75	\$145.88

6. Bees - 2 hives @ \$20/hive in February = \$40/acre

7. Rodent control in April:

Materials: Poison Grains @ \$0.50/acre
 Time & Equipment: rent gopher machine at \$0.50/acre
 45 HP tractor-0.5 hr/acre @ 3.12/hr = \$1.56/acre

8. Fertilize in May through sprinkler system:

Materials: 200 lbs N @ \$0.30/lb = \$60/acre

9. Mow weeds in March, June and July:

Equipment: 70 HP tractor and mower @ \$8.38/hour
 x 0.5 hrs/acre x 3 = \$12.57/acre
 Labor: 0.5 hrs/acre @ \$6.50/hr x 3 = \$ 9.75/acre

1987 WHOLE FARM TREE MODEL
for untilled Walnuts, Almonds and Prunes
in Yolo and Solano County

EQUIPMENT AND BUILDING LIST

Interest Rate: 12.00%

Fuel Cost per Gallon: \$60 Diesel
\$.75 Regular Gasoline
\$.90 Regular Unleaded Gasoline

ITEM	NEW COST	ANNUAL USE (ACRES)	COST PER ACRE	LIFE (HRS)	YEARS TO TRADE*	—OVERHEAD*—		ANNUAL USE (HRS)	TAR* (per cent)	— HOURLY COSTS —		
						DEPREC- IATION	INTEREST* 12.00%			FUEL*	REPAIRS*	TOTAL
Tractors:												
45 HP wheel diesel	\$18,000	200	\$90	12,000	10.0	\$9.00	\$5.40	450	33%	\$1.00	\$1.32	\$3.12
70 HP wheel diesel	33,000	200	165	12,000	10	16.50	9.90	550	45	2.00	2.70	5.50
3 wheel cycle (12 HP)	1,500	200	8	2,000	5.0	1.50	.45	100	9	1.29	.27	1.56
Weed sprayer on a trailer	2,000	200	10	1,200	8.0	1.25	.60	150	100		1.67	1.67
Speed sprayer - PTO	15,000	200	75	2,500	10.0	7.50	4.50	250	144		8.64	8.64
Small sprayer on a trailer	625	200	3	1,200	10.0	.31	.19	100	78		.49	.49
Mower - 8 foot	4,000	200	20	2,000	6.7	3.00	1.20	300	144		2.88	2.88
Flat bed trailer	3,000	200	15	5,000	20.0	.75	.90	200	73		.55	.55
Brush rake	1,000	200	5	2,500	12.5	.40	.30	200	100		.40	.40
2 - chain saws (\$200 each)	400	200	2	4,000	5.0	.40	.12	700	83		.09	.09
Pruning tower	5,000	200	25	7,500	10.0	2.50	1.50	750	36		.24	.24
Misc. pruning equipment	1,500	200	8	20,000	10.0	.75	.45	2000	36		.03	.03
Sprinkler irrigation system	80,000	200	400	45,000	15.0	26.67	24.00	2800	36		.67	.67
Irrigation pump and well	25,000	200	125	60,000	20.0	6.25	7.50	2800	36		.16	.16
Pick-up	12,000	200	60	2,000	6.7	9.00	3.60	300	36	5.18	2.16	7.34
Shop and tools	4,000	200	20		10.0	2.00	1.20					
Buildings for equipment	24,000	200	120		35.0	3.43	7.20					
TOTAL COST	\$230,025		\$1,150			\$91	\$69					
60% OF NEW COSTS*	\$138,015		\$690			\$55	\$41					

*** 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 machine's 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 fuel/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 ("YEARS TO TRADE" X "ANNUAL USE IN HOURS")
- 60% OF NEW COSTS ————— Used to reflect a mix of new and used equipment.

MONTHLY SUMMARY OF
SAMPLE COSTS TO PRODUCE ALMONDS
Yolo and Solano Counties - 1987

Operation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
Cultural costs:													
Pruning												\$52	\$52
Brush Removal												17	17
Poling (2X)								\$40				40	80
Herbicide (3X)						\$6	\$33				\$18		57
Application costs						4	6				6		16
Pest/Disease Sprays (5X)		\$31			\$31		21					31	115
Application costs		12			6		6					6	31
Bees		40											40
Rodent control				\$6									6
Fertilize thru sprinkler					60								60
Mowing (3X)			\$7			7	7						22
Irrigation (7 X 5")				20	20	39	39		\$20				137
Costs for pick up truck	\$1	1	1	1	1	1	1	1	1	\$1	1	1	11
Interest on operating capital	3	3	3	3	3	3	3	3	3	3	3	3	39
TOTAL CULTURAL COSTS	\$4	\$88	\$12	\$30	\$121	\$61	\$117	\$44	\$24	\$4	\$28	\$151	\$683
Harvest Costs:													
Harvest								200					200
TOTAL HARVEST COSTS								\$200					\$200
Cash overhead:													
Office and business costs	6	6	6	6	6	6	6	6	6	6	6	6	70
County Taxes				16								16	33
Equipment Insurance	3												3
TOTAL CASH OVERHEAD COSTS	\$9	\$6	\$6	\$22	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$22	\$106
TOTAL CASH COSTS	\$13	\$94	\$17	\$52	\$127	\$67	\$123	\$250	\$30	\$10	\$34	\$173	\$989

SAMPLE COSTS TO PRODUCE ALMONDS
Yolo and Solano Counties - 1987

Labor Rate: \$6.50 /hr. skilled labor
\$5.00 /hr. field labor

Interest Rate: 12.00%
Yield: 1,000 lbs meat/acre

Operation	Labor Hours per Acre	Cash and Labor Costs per Acre			Total Cost	Your Cost
		Labor	Fuel & Repairs	Materials Kind and Quantity		
Cultural costs:						
Pruning	10.0	\$50.00	\$2.40		\$52	
Brush Removal	2.0	13.00	3.52		17	
Poling (2X)	16.0	80.00			80	
Herbicide (3X)				Materials	\$57	57
Application costs	1.5	9.75	5.81		16	
Pest/Disease Sprays (5X)				Materials	115	115
Application costs	1.5	9.75	21.20		31	
Bees				2 Hives @ \$20	40	40
Rodent control	.5	3.25	1.56	Materials + Rent machine	1	6
Fertilize thru sprinkler				200 lbs. N @ .30/lb.	60	60
Mowing (3X)	1.5	9.75	12.57		22	
Irrigation (7 X 5")	3.5	17.50	11.95	Pump costs for 35 ac.in.	100	137
Costs for pick up truck			10.85			11
Interest on operating capital @ 12.00% for 6 months						39
TOTAL CULTURAL COSTS		36.5	\$193	\$70	\$381	\$683
Harvest Costs:						
Harvest				Custom harvest - \$200/acre		\$200
TOTAL HARVEST COSTS						\$200
Cash overhead:						
Office and business costs					\$70	
County Taxes					33	
Equipment Insurance					3	
TOTAL CASH OVERHEAD COSTS						\$106
TOTAL CASH COSTS						\$989
TOTAL CASH COST PER POUND						\$.99
Investment						
		Per Production Acre	Annual Cost			
			Depreciation	Interest @ 12.00%		
Land @ \$2,500/Acre		\$2,562		\$307		\$307
Equipment & buildings		690	\$55	41		96
Trees (30 yr. depreciation)		4,600	153	276		429
TOTAL INVESTMENT COSTS		\$7,852	\$208	\$625		\$833
TOTAL COSTS PER ACRE						\$1,822
Cost per pound @	1,000 lbs. yield					\$1.82

10. Irrigation:

<u>Month</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>September</u>	<u>Total</u>
# Irrigations	1x	1x	2x	2x	1x	7x
Amount (ac.in.)	5	5	10	10	5	35

11. Harvest In August:

Custom harvest - 1000 lbs meat/acre @ \$ 200/acre

12. Establishment costs =

\$4600/acre

The establishment costs are divided by 30 years. Interest on investment is calculated at 12%. The annual costs of investment in the trees are: \$153.33 depreciation + \$276.00 interest per acre.