UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2001

SAMPLE COSTS TO ESTABLISH AN ALMOND ORCHARD AND PRODUCE

ALMONDS

SACRAMENTO VALLEY

Low-volume sprinkler

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INTRODUCTION

The sample costs to establish an almond orchard and produce almonds under sprinkler irrigation in the Sacramento Valley are presented in this study. This study is intended as a guide only, and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. Practices described are based on those production practices considered typical for the crop and area, but will not apply to every situation. Sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, "*Your Costs*", in Tables 2 and 3 is provided to enter your costs.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-3589 or your local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-1515. Current studies, those produced during the last five years, can be obtained from selected county UC Cooperative Extension offices or downloaded from the department website at http://coststudies.ucdavis.edu.

ASSUMPTIONS

The following assumptions pertain to sample costs to establish an almond orchard and produce almonds in the Sacramento Valley. Practices described are not recommendations by the University of California, but represent production practices considered typical for this crop and area. Some practices listed may not be needed or used during every production year, while practices not indicated may be needed. Cultural practices for the production of almonds varies by grower and region, and variations can be significant. The practices and inputs used in the cost study serve only as a sample or guide. The costs shown are on an annual, per acre basis. **The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products**.

Farm. The farm consists of 105 contiguous acres farmed by the owner. Smaller non-contiguous parcels may have additional costs for travel time and equipment re-calibration. Almonds are being established on 100 acres, and roads, irrigation systems and farmstead occupy five acres.

Trees. No specific almond variety is planted in this study. Almond orchards will include at least two or more varieties in which pollen shedding and bloom periods' overlap to insure adequate pollination. Planting densities may range from 75 to 180 trees per acre. In this study, 110 trees per acre are planted on a 22' X 18' spacing. The life of the orchard at the time of planting is estimated to be 25 years.

Establishment Cultural Practices and Material Inputs

Site Preparation. Land preparation begins with deep ripping in two directions two to three feet deep to break up underlying compaction. The ground is disced three times and then floated two to three times to level and smooth the surface. All operations that prepare the orchard for planting are done in the year prior to planting, but costs are shown in the first year.

Planting and Training. Planting the orchard starts by surveying and marking tree sites with a small stake, digging holes, planting and staking trees. Prior to planting, the trees are treated to control crown gall. In the second year, 1% of the orchard or approximately one tree per acre will be replanted.

Pruning. Pruning begins in the first year when newly planted trees are thinned and topped. Pruning is done annually in the winter through the fifth year. In the second year, some summer pruning and/or sucker removal may occur. Prunings in the early years are placed in the row middles and shredded with the regular mowing. Beginning in the third year, the prunings are pushed to the edge of the orchard and burned.

Winter Sanitation. The shaking of mummy nuts begins in the fourth year. See production year for procedures.

Fertilization. Annual rates of actual N are shown in Table A. Nitrogen fertilizer as dry Urea is applied by hand near the base of the tree during the first two years. Beginning in the third year, liquid UN-32 is applied through the irrigation system. Beginning in the fall of the second year, zinc sulfate is applied as a foliar spray.

Table A. Applied Nitrogen

Year	Pounds of N/Acre
1	15
2	30
3	60
4	120
5	160
6+	200

Irrigation. Price per acre-foot of water will vary by grower depending on power source, water cost, well characteristics, and water district. In this study, water is calculated to cost $37.20 per acre-foot. No assumption is made about effective rainfall. The amount of irrigation water applied to the orchard during the establishment years increases as the tree size increases. Amounts will vary each year depending upon the environment. The average water applied to an almond orchard is shown in Table B**.**

Table B. Total Applied Water

Year	AcIn/Year
1-2	20
3	24
4-5	26
6+	34

Frost Protection. Frost protection begins in the fourth year and uses 2 acre-inches annually.

Pollination. In the first production year (3rd year), beehives are placed in the orchard at a rate of one-half hive per acre. The number of hives increases each year and by the fifth year two hives per acre are placed in the orchard.

Weeds. In the first year, weeds are controlled in the row middles with two discings, and in the tree row with a strip spray of the contact herbicide, Gramoxone. In the second year the row middles are mowed twice and in the tree row, two spot sprayings with Gramoxone are added. From the third year on, the row middles are mowed six times, and in the tree row, a dormant season spray with the residual herbicides Surflan and Goal is applied. The two spot sprayings in the tree row are continued. In addition, a preharvest weed spray with Roundup is applied to the orchard floor (row middles and tree row).

Insects and Diseases. In the first year sprays are applied using a sprayer with a handgun. An insecticide treatment of Lorsban for peach twig borer control is made in May. Starting in the second year an airblast sprayer is used to apply the materials. In January of the second year an insecticide, Diazinon, and dormant oil are applied to every other row. Fungicide applications with Rovral for brown rot and shothole disease control begin with one treatment in the third year. A biological insecticide, Dipel, is added and two treatments are made in the fourth and fifth year.

Vertebrate Pest. In the spring a mechanical bait applicator is used to apply poison bait for gopher control. Ground squirrels are managed using anti-coagulant bait in aboveground bait stations.

Production Cultural Practices and Material Inputs

Winter Sanitation. Winter sanitation destroys overwintering sites for navel orangeworm. The trees containing mummy nuts are shook to drop them to the orchard floor where they are blown into the middles and shredded with a flail mower. The shaking and blowing operations are custom hired.

Pruning. Beginning in the sixth year (first full production year), hand pruning is done in alternate years during the winter months. In this study, one-half of the cost is charged each year to the orchard operation. Prunings are placed into the row middles and pushed out of the orchard by a tractor with a brush rake and burned.

Pollination. Mature orchards require a rate of two and one-half hives per acre for pollination during February through March.

Fertilization: Tree nitrogen status is determined by leaf analysis; sampling for analysis begins in July of the fifth year. UN-32 is applied through the irrigation system at 200 pounds of N per acre in equal, split applications, in March and in July. Potassium as sulfate of potash at 500 pounds per acre is applied in late November. Also in November zinc sulfate is applied as a foliar spray.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Almonds.* For more information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. Written recommendations are required for many pesticides and are made by licensed pest control advisors. For information and pesticide use permits, contact the local county agricultural commissioner's office.

Weeds. In this study, weeds in mature orchards are controlled in the tree row with a winter strip spray of Surflan and Goal. Also two spot sprays with Gramoxone are made in the tree rows during the growing season. Row middles are mowed six times to control resident vegetation. To prepare the orchard floor for harvest, a herbicide application of Roundup is made in late July.

Insects and Mites. Several insect and mite pests are controlled each year using integrated pest management. It is assumed that biological insecticides such as Dipel applied at bloom and post bloom will control peach twig borer, therefore dormant sprays are not needed. The sprays are applied as a tank mix with each of the fungicide sprays.

Disease Management. Three fungicide applications, February, March, and April control brown rot, shothole, scab, and anthracnose. Fungicides with different modes of action protect against chemical resistance. Fungicides used in this study are Rovral, Abound, and Ziram.

Vertebrate Pests. Gophers and ground squirrels are managed the same as in the establishment years.

Harvest. Harvest starts in the third year and reaches maturity in the sixth year. In this study the grower contracts to have the almond crop custom harvested. All of the harvest operations are done mechanically except for hand raking. For growers that own harvesting equipment, the equipment used for harvesting operations should be added to the equipment and investment inventories on Table 5 and custom harvest charges should be subtracted from harvest costs in Tables 1 and 2, and the grower harvest and hauling costs added.

Yields and Returns. Typical annual yields for almonds are measured in pounds of kernels per acre and are shown in Table C. An estimated grower return price of $1.00 per pound of almond kernels based on the current market is used in this study to determine profits/losses. A range of returns and yields are shown in the Ranging Analysis in Table 7.

Table C. Annual Yield Per Acre

Year	Kernel Pounds
3	300
4	800
5	1,400
6+	2,000

Labor. Hourly wages for workers are $8.75 for skilled and $7.00 per hour for unskilled workers. Adding 34% for the employers share of federal and state payroll taxes, insurance, and other possible benefits gives the labor rates shown of $11.73 per hour for skilled labor and $9.38 per hour for unskilled labor. Labor

for operations involving machinery is 20% higher than the operation time given in Table 2 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and repair.

Risk. Risks associated with almond production are not assigned a production cost. While this study makes an effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of almond production. Because of the risk involved, growers should consider all of the agronomic and economic risks before committing resources to almond production in the Sacramento Valley. Crop insurance is available to growers to manage or reduce risk, but is not shown in this study.

Overhead

Cash Overhead. Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, sanitation services, and equipment repairs.

Property Taxes. Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis. Salvage value for investments will vary.

Interest On Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 10.51% per year. A nominal interest rate is the typical market cost of borrowed funds.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.666% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $572 for the entire farm.

Office Expense. Office and business expenses are estimated at $40 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, and miscellaneous farm expense.

Sanitation Services. Sanitation services provide portable toilets and washing facilities for the orchard and cost the farm $756 annually. This cost includes delivery and seven months of weekly toilet service.

Management Salary. Wages for management are not included as a cash cost. Any return above total costs is considered a return to management.

Establishment Cost. Costs to establish the orchard are used to determine the non-cash overhead expenses, capital recovery, and interest on investment for the production years. The establishment cost is the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing almond trees through the first year nuts are harvested less returns from production. The *Accumulated Net Cash*

Cost in the third year shown in Table 1 represents the establishment cost per acre. For this study, this cost is $2,399 per acre or $239,900 for the 100-acre orchard. Establishment cost is amortized beginning in the fourth year over the remaining 22 years of production.

Non-cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment used for almonds may be purchased new or used, this study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs (equipment and investments) are shown in the tables and represent the capital recovery cost for investments on an annual per acre basis.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x Interest Rate).

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wearout life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in Table 5.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

Interest Rate. The interest rate of 6.70% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten-year average of California's agricultural sector long run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Land. Land values range from $1,400 for Class III soil to $4,500 for Class I soil. The orchard site is assumed to be on previously farmed open agricultural ground and in this study is valued at $3,000 per acre or $3,150 per producing acre.

Irrigation System. The cost is based on one 75 horsepower electric pump lifting 36 acre-inches from a water level depth of 75 feet. The pump and 300-foot deep well already existed on the site, and the cost of the

irrigation system is for the recasing of the well, refurbishment of the pump and the installation of a new filtration system and micro sprinklers. Water is pumped through a filtration station into micro sprinkler system. The life of the irrigation system is estimated to be 25 years. The irrigation system is considered an improvement to the property and is shown in the non-cash overhead sections of the tables and the investment portion of Table 5.

Equipment Costs. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication. The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 5 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Repairs, Fuel and Lube. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $1.26 and $1.51 per gallon, respectively.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

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Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH AN ALMOND ORCHARD

SACRAMENTO VALLEY - 2001

	Cost Per Acre					
Year:	1st	2nd	3rd	4th	5th	6th
Kernel pounds per acre:	0	0	300	800	1,400	2,000
Planting Costs:						
Land Preparation - Subsoil 2X	200					
Land Preparation - Disc 3X	11					
Land Preparation - Float 3X	23					
Survey and Plant Trees	268	2				
Trees: 110 Per Acre (1% Replant In 2nd Year)	468	5				
Stake Trees (includes stakes)	110	1				
TOTAL PLANTING COSTS	1,080	8	0	0	0	0
Cultural Costs:						
Training, Pruning, & Suckering	12	25	30	30	30	40
Brush Disposal			33	38	40	40
Winter Sanitation:				70	70	70
Weed Control - Dormant Strip	10	10	48	48	48	48
Weed Control - Disc Middles 2X	8					
Weed Control - Mow 2X Yr 2/6X Yr 3+		9	22	22	22	22
Weed Control - Preharvest Spray			13	13	13	13
Weed Control - Spot Spray Tree Rows 2X		9	12	12	12	12
Insect Control - Dormant		19				
Insect Control - PTB	30					
Disease/Insect Control - Shothole/Brown Rot/PTB			31	84	84	138
Vertebrate Control - Rodents	11	10	10	10	10	10
Fertilizer - Zinc Foliar		10	14	21	21	21
Fertilizer - Nitrogen	11	14	22	39	51	62
Fertilizer - Potash						85
Irrigate	66	66	78	84	84	109
Frost Protection				9	9	9
Pollination			25	50	100	125
PCA Service	5	5	5	5	25	25
Pickup Truck Use	66	66	66	66	66	66
ATV Truck Use	31	31	31	31	31	31
Leaf Analysis					2	2
TOTAL CULTURAL COSTS	250	274	440	632	718	928
Harvest Costs:						
Shake Trees			70	70	70	70
Sweep Nuts			40	40	40	40
Hand Rake			4	4	9	12
Pick Up and Haul			13	35	62	88
Hull Nuts			18	48	84	120
TOTAL HARVEST COSTS	0	0	145	197	265	330
Interest On Operating Capital @ 10.51%	110	9	14	25	30	34
TOTAL OPERATING COSTS/ACRE	1,440	291	599	854	1,013	1,292
Cash Overhead Costs:						
Office Expense	40	40	40	40	40	40
Liability Insurance	6	6	6	6	6	6
Sanitation Fees	8	8	8	8	8	8
Property Taxes	44	44	44	44	44	55
Property Insurance	8	8	8	8	8	8
Investment Repairs	17	17	17	17	17	17
TOTAL CASH OVERHEAD COSTS	123	123	123	123	123	134
TOTAL CASH COSTS/ACRE	1,563	414	722	977	1,136	1,426
INCOME/ACRE FROM PRODUCTION	0	0	300	800	1,400	2,000
NET CASH COSTS/ACRE FOR THE YEAR	1,563	414	422	177	0	0
PROFIT/ACRE ABOVE CASH COSTS	0	0	0	0	264	574
ACCUMULATED NET CASH COSTS/ACRE	1,563	1,977	**2,399**	2,576	2,312	1,738

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Table 1. continued

	Cost Per Acre					
Year:	1st	2nd	3rd	4th	5th	6th
Kernel pounds per acre:	0	0	300	800	1,400	2,000
Non-Cash Overhead Costs:						
Capital Recovery Cost:						
Shop Building	48	48	48	48	48	48
Land	211	211	211	211	211	211
Fuel Tank & Pump	6	6	6	6	6	6
Shop Tools	14	13	13	13	13	13
Sprinkler Irrigation System	79	79	79	79	79	79
Pruning Equipment	3	3	3	3	3	3
Equipment	74	73	73	75	75	75
TOTAL NON-CASH OVERHEAD COST/ACRE	435	433	433	435	435	435
TOTAL COST/ACRE FOR THE YEAR	1,998	847	1,155	1,412	1,571	1,861
INCOME/ACRE FROM PRODUCTION	0	0	300	800	1,400	2,000
TOTAL NET COST/ACRE FOR THE YEAR	1,998	847	855	612	171	0
NET PROFIT/ACRE ABOVE TOTAL COST	0	0	0	0	0	139
TOTAL ACCUMULATED NET COST/ACRE	1,998	2,845	3,700	1,312	4,483	4,344

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Table 2. COSTS PER ACRE TO PRODUCE ALMONDS

SACRAMENTO VALLEY 2001

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Winter Sanitation	0.00	0	0	0	70	70	
Pruning/Alternate Years	4.26	40	0	0	0	40	
Brush Disposal/Alternate Years	0.17	38	1	0	0	39	
Pollination	0.00	0	0	0	125	125	
Irrigation - Frost Protection	0.25	2	0	6	0	9	
Irrigate	0.41	4	0	105	0	109	
Fertilize-N @ irrigation	0.50	5	0	58	0	62	
Fertilize-Zinc Sulfate Foliar	0.25	4	2	15	0	21	
Fertilize-Potash	0.13	2	1	83	0	85	
Pest Control - Gophers	0.50	5	0	6	0	10	
Pest Control-Shothole/Brown Rot	0.75	11	7	120	0	138	
Weed Control - Mow Middles 6X	1.03	15	8	0	0	22	
Weed Control - Spot Spray 2X	0.50	7	4	1	0	12	
Weed Control Preharvest Spray Middles	0.25	4	2	8	0	13	
Weed Control - Dormant Strip Spray	0.25	4	2	43	0	48	
Pickup Truck Use	3.25	46	20	0	0	66	
ATV Use	2.00	28	3	0	0	31	
Consultant Fees	0.00	0	0	0	25	25	
Leaf Analysis	0.00	0	0	0	2	2	
TOTAL CULTURAL COSTS	14.49	211	50	445	222	928	
Harvest:							
Shake	0.00	0	0	0	70	70	
Hand Rake	1.25	12	0	0	0	12	
Sweep	0.00	0	0	0	40	40	
Pickup and Haul	0.00	0	0	0	88	88	
Hull and Shell	0.00	0	0	0	120	120	
TOTAL HARVEST COSTS	1.25	12	0	0	318	330	
Interest on operating capital @ 10.51%						33	
TOTAL OPERATING COSTS/ACRE		223	50	445	540	1,291	
Cash Overhead:							
Office Expense						40	
Liability Insurance						6	
Sanitation Service						8	
Safety Training						0	
Property Taxes						55	
Property Insurance						8	
Investment Repairs						17	
TOTAL CASH OVERHEAD COSTS						134	
TOTAL CASH COSTS/ACRE						1,480	
Non-cash Overhead (Capital Recovery) Investment		Per producing Acre		Annual Cost Capital Recovery			
Buildings		520		48		48	
Fuel Tanks & Pumps		65		6		6	
Shop Tools		129		13		13	
Irrigation System w/micro sprinklers		950		79		79	
Pruning Equipment		19		3		3	
Establishment Costs		2,399		212		212	
Land		3,150		211		211	
Equipment		567		73		73	
TOTAL NON-CASH OVERHEAD COSTS		7,799		645		645	
TOTAL COSTS/ACRE						2,071	

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Table 3. COSTS AND RETURNS PER ACRE TO PRODUCE ALMONDS

SACRAMENTO VALLEY 2001

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Almond Kernels	2,000.00	lb	1.00	2,000	
OPERATING COSTS					
Custom:					
Shake Nuts	1.00	acre	70.00	70	
Shake Mummies	1.00	acre	70.00	70	
Hives	2.50	hive	50.00	125	
Sweep Nuts	1.00	acre	40.00	40	
Pickup Nuts	2,000.00	lb	0.04	78	
Haul Nuts	2,000.00	lb	0.01	10	
Hull and Shell	2,000.00	lb	0.06	120	
Leaf Analysis	1.00	acre	2.00	2	
Contract:					
Consultant	1.00	acre	25.00	25	
Irrigation:					
Water - Frost Protection	2.00	acin	3.10	6	
Water - Irrigation	34.00	acin	3.10	105	
Herbicide:					
Gramoxone Extra	.20	pt	5.32	1	
Roundup Ultra	1.50	pt	5.40	8	
Surflan AS	2.00	pt	11.28	23	
Goal 2XL	1.50	pt	13.50	20	
Rodenticide:					
Rodent Bait-Wilco	1.00	lb	5.62	6	
Fungicide:					
Rovral WSP	1.00	lb	25.00	25	
Abound	15.40	floz	2.30	35	
Ziram WDG 76	8.00	lb	2.80	22	
Insecticide:					
Dipel DF	3.00	lb	12.44	37	
Fertilizer:					
UN-32	200.00	lbN	0.29	58	
Zinc Sulfate 36%	30.00	lb	0.50	15	
Potash (SOP) 0-0-52	500.00	lb	0.17	83	
Labor (machine)	10.29	hrs	11.73	121	
Labor (non-machine)	10.92	hrs	9.38	102	
Fuel - Gas	9.38	gal	1.51	14	
Fuel - Diesel	11.66	gal	1.26	15	
Lube				4	
Machinery repair				17	
Interest on operating capital @ 10.51%				34	
TOTAL OPERATING COSTS/ACRE				1,291	
NET RETURNS ABOVE OPERATING COSTS				709	
CASH OVERHEAD COSTS:					
Office Expense				40	
Liability Insurance				6	
Sanitation Fees				8	
Safety Training				0	
Property Taxes				55	
Property Insurance				8	
Investment Repairs				17	
TOTAL CASH OVERHEAD COSTS/ACRE				134	
TOTAL CASH COSTS/ACRE				1,426	

UC COOPERATIVE EXTENSION
Table 3 continued

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Buildings				48	
Fuel Tanks & Pumps				6	
Shop Tools				13	
Irrigation System w/micro sprinkler				79	
Pruning Equipment				3	
Establishment Costs				212	
Land				211	
Equipment				73	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				645	
TOTAL COSTS/ACRE				2,071	
NET RETURNS ABOVE TOTAL COSTS				-71	

UC COOPERATIVE EXTENSION
Table 4. MONTHLY CASH COSTS - ALMONDS
SACRAMENTO VALLEY - 2001

Beginning JAN 01 Ending DEC 01	JAN 01	FEB 01	MAR 01	APR 01	MAY 01	JUN 01	JUL 01	AUG 01	SEP 01	OCT 01	NOV 01	DEC 01	TOTAL
Cultural:													
Winter Sanitation	70												70
Pruning/Alternate Years	40												40
Brush Disposal/Alternate Years	39												39
Weed Control - Mow Middle 5X		4		4	4	4	4	4					22
Pollination		125											125
Irrigation - Frost Protection		9											9
Weed Control - Spot Spray			12										12
Pest Control - Gophers			10										10
Fertilize-N @ irrigation				31			31						62
Irrigation				5	16	32	32	10	10	5			109
Pest Control-Shothole/Brown Rot		54	43	41									138
Weed Control-Preharvest Spray								13					13
Weed Control-Dormant Strip											48		48
Fertilize-Zinc Sulfate Foliar											21		21
Fertilize-Potash											85		85
Pickup Truck Use	6	6	6	6	6	6	6	6	6	6	6	6	66
ATV Use	3	3	3	3	3	3	3	3	3	3	3	3	31
Consultant Fees	2	2	2	2	2	2	2	2	2	2	2	2	25
Leaf Analysis							2						2
TOTAL CULTURAL COSTS	159	201	76	91	30	46	79	37	20	15	164	10	928
Harvest:													
Shake								70					70
Hand Rake								12					12
Sweep								40					40
Pickup and Haul								88					88
Hull and Shell								120					120
TOTAL HARVEST COSTS								330					330
Interest on operating capital	1	3	4	5	5	5	6	9	-1	-1	-1	0	34
TOTAL OPERATING COSTS/ACRE	160	204	80	95	35	51	85	376	19	14	163	10	1,291
Overhead:													
Office Expense	3	3	3	3	3	3	3	3	3	3	3	3	40
Liability Insurance	6												6
Sanitation Service		8											8
Safety Training	0	0	0	0	0	0	0	0	0	0	0		0
Property Taxes				28								28	55
Property Insurance	8												8
Investment Repairs	1	1	1	1	1	1	1	1	1	1	1	1	17
TOTAL CASH OVERHEAD COSTS	19	12	5	33	5	5	5	5	5	5	5	32	134
TOTAL CASH COSTS/ACRE	179	217	84	128	40	56	90	381	24	19	168	42	1,426

UC COOOPERATIVE EXTENSION

Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

SACRAMENTO VALLEY - 2001

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
01	65HP 5410 2WD Tractor	29,708	12	7,427	3,258	124	186	3,567
01	ATV 550 Kawasaki	5,790	12	1,448	635	24	36	695
01	Brush Rake - 10'	1,453	25	145	119	5	8	132
01	Front End Loader	4,440	15	444	460	16	24	501
01	Mower - Flail 10'	5,000	10	500	665	18	28	711
01	Orchard Sprayer 500 G	18,850	10	3,333	2,402	74	111	2,587
01	Pickup Truck 1/2 T	25,740	5	11,536	4,209	124	186	4,520
01	Weed Sprayer 100 G	3,550	10	628	452	14	21	487
TOTAL		94,531		25,461	12,201	400	600	13,201
60% of New Cost*		56,719		15,277	7,321	240	360	7,921

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
Buildings	52,000	20		4,795	173	260	781	6,009
Establishment Costs	239,900	22		21,152	0	1,200	0	22,351
Fuel Tanks & Pumps	6,514	20	651	584	24	36	130	774
Irrigation Sys w/micro sprinkler	95,000	25		7,933	316	475	380	9,104
Land	315,000	25	315,000	21,105	0	3,150	0	24,255
Pruning Equipment	1,887	10		265	6	9	188	469
Shop Tools	12,903	15	1,161	1,343	47	70	232	1,692
TOTAL INVESTMENT	723,204		316,812	57,176	566	5,200	1,711	64,654

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	105	acre	5.45	572
Office Expense	100	acre	40.00	4,000
Safety Training	100	acre	0.27	27
Sanitation Fees	100	acre	7.56	756

UC COOPERATIVE EXTENSION

Table 6. HOURLY EQUIPMENT COSTS

SACRAMENTO VALLEY - 2001

			COSTS PER HOUR						
		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
01	65HP 5410 2WD Tractor	365.60	5.35	0.20	0.30	1.31	4.63	5.94	11.76
01	ATV 550 Kawasaki	200.00	1.90	0.07	0.11	0.41	1.09	1.50	3.58
01	Brush Rake - 10'	16.70	4.28	0.19	0.29	0.19	0.00	0.19	4.95
01	Front End Loader	16.70	16.56	0.59	0.88	0.62	0.00	0.62	18.65
01	Mower - Flail 10'	103.20	3.87	0.11	0.16	1.08	0.00	1.08	5.21
01	Orchard Sprayer 500 G	100.00	14.41	0.44	0.67	3.17	0.00	3.17	18.69
01	Pickup Truck 1/2 T	325.00	7.77	0.23	0.34	1.91	4.34	6.25	14.59
01	Weed Sprayer 100 G	100.00	2.71	0.08	0.13	0.94	0.00	0.94	3.86

UC COOPERATIVE EXTENSION
Table 7. RANGING ANALYSIS
SACRAMENTO VALLEY

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ALMONDS

	YIELD (kernel lb/acre)						
	1,400	1,600	1,800	2,000	2,200	2,400	2,600
OPERATING COSTS/ACRE:							
Cultural Cost	928	928	928	928	928	928	928
Harvest Cost	231	264	297	330	363	396	429
Interest on operating capital	32	33	33	34	34	35	35
TOTAL OPERATING COSTS/ACRE	1,192	1,225	1,258	1,291	1,325	1,358	1,391
TOTAL OPERATING COSTS/LB	0.85	0.77	0.70	0.65	0.60	0.57	0.54
CASH OVERHEAD COSTS/ACRE	135	135	135	135	135	135	135
TOTAL CASH COSTS/ACRE	1,326	1,359	1,393	1,426	1,459	1,493	1,526
TOTAL CASH COSTS/LB	0.95	0.85	0.77	0.71	0.66	0.62	0.59
NON-CASH OVERHEAD COSTS/ACRE	645	645	645	645	645	645	645
TOTAL COSTS/ACRE	1,971	2,004	2,037	2,071	2,104	2,137	2,170
TOTAL COSTS/LB	1.41	1.25	1.13	1.04	0.96	0.89	0.83

NET RETURN PER ACRE **ABOVE OPERATING COSTS** FOR ALMOND

PRICE	YIELD (kernel lb/acre)						
$/lb	1,400	1,600	1,800	2,000	2,200	2,400	2,600
0.70	-212	-105	2	109	215	322	429
0.80	-72	55	182	309	435	562	689
0.90	68	215	362	509	655	802	949
1.00	208	375	542	709	875	1,042	1,209
1.10	348	535	722	909	1,095	1,282	1,469
1.20	488	695	902	1,109	1,315	1,522	1,729
1.30	628	855	1,082	1,309	1,535	1,762	1,989

NET RETURN PER ACRE **ABOVE CASH COST** FOR ALMOND

PRICE	YIELD (kernel lb/acre)						
$/lb	1,400	1,600	1,800	2,000	2,200	2,400	2,600
0.70	-346	-239	-133	-26	81	188	295
0.80	-206	-79	47	174	301	428	555
0.90	-66	81	227	374	521	668	815
1.00	74	241	407	574	741	908	1,075
1.10	214	401	587	774	961	1,148	1,335
1.20	354	561	767	974	1,181	1,,388	1,595
1.30	494	721	947	1,174	1,401	1,628	1,855

NET RETURN PER ACRE **ABOVE TOTAL COST** FOR ALMOND

PRICE	YIELD (kernel lb/acre)						
$/lb	1,400	1,600	1,800	2,000	2,200	2,400	2,600
0.70	-991	-884	-777	-671	-564	-457	-350
0.80	-851	-724	-597	-471	-344	-217	-90
0.90	-711	-564	-417	-271	-124	23	170
1.00	-571	-404	-237	-71	96	263	430
1.10	-431	-244	-57	129	316	503	690
1.20	-291	-84	123	329	536	743	950
1.30	-151	76	303	529	756	983	1,210