
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2003

SAMPLE COSTS TO ESTABLISH
AN APRICOT ORCHARD AND PRODUCE

APRICOTS

for PROCESSING



SAN JOAQUIN VALLEY

Micro-Sprinkler Irrigation

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San Joaquin Valley - 2003

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INTRODUCTION

Sample costs to establish an apricot orchard and produce apricots under micro-sprinkler irrigation in the San Joaquin Valley are presented in this study. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on 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) 752-4424. Current studies can be downloaded from the department website <http://coststudies.ucdavis.edu> or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

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ASSUMPTIONS

The assumptions refer to Tables 1 to 8 and pertain to sample costs to establish an orchard and produce apricots for processing in the San Joaquin Valley under micro-sprinkler irrigation. Practices described represent production practices and materials considered typical of a well-managed orchard in the region. The costs, materials, and practices shown in this study will not apply to all situations. Establishment and production cultural practices vary by grower and the differences can be significant. **The use of trade names and cultural practices 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 or cultural practices.**

Land. The hypothetical farm consists of 100 contiguous acres farmed by the owner. Apricot establishment and production are on 20 acres and other tree crops are planted on 75 acres. Roads, irrigation systems and farmstead occupy 5 acres.

Establishment Operating Costs

Only a few apricot orchards have been planted in the last ten years, therefore information on orchard establishment costs from apricot growers are limited. Establishment information in this study is derived from farm advisors, plum and peach costs studies and former apricot cost studies.

Land Preparation. The new orchard is planted (established) on land previously planted to trees or vines. The land is assumed to be well drained and either a class I or II soil.

Orchard Removal. In September the trees are pushed over and removed by a commercial operator. The cost includes removing the trees and orchard cleanup – stump removal, root removal and general cleanup by hand. Fees vary considerably for orchard removal.

Land Preparation. The field is ripped two to three feet deep in two directions to break up layered or compacted soil. In the southern portion of the valley, it is common to rip to four feet in a single pass. The field is then laser leveled. The land is disked two times in different directions, the tree row fumigated using Telone, and berms made. Custom operators do the operations, including fumigation, to prepare the orchard for planting. Methyl Bromide fumigation untarped will cost over \$1,500 per acre. Most land preparation is done in the year prior to planting, but costs are shown in the first year.

Planting. In January, contract labor companies who specialize in orchard planting do the planting operation. They dig the planting holes, plant, prune (top), and place a tree guard around the trunk. The tree guards protect against above ground rodents, herbicide sprays, and sunburn. In the second year, 2% or 3 trees per acre are replanted.

Trees. No specific variety is planted in this study. Representative varieties may include but are not limited to Patterson and Westley. Planting densities may range from 110 to 250 trees per acre. In this study, 145 trees per acre are planted on a 15-foot X 20-foot spacing. The life of the orchard at the time of planting is estimated to be 20 years.

Fertilization. Fertilizer rates in this study are typical nutrient requirements, but do not take into account soil and water nitrogen. In the first year, Nitrogen (N) as ammonium nitrate is applied in July. The fertilizer is hand applied near the base of the trees. Beginning in July of the second year, the Nitrogen as UN32 is applied through the micro-sprinkler system. Annual rates of actual N used in this study are shown in Table A. Leaf samples are taken in July for nutrient analysis and the fertilizers applied according to analysis recommendations.

Year:	1	2	3	4	5	6+
lbs/acre						
N:	12	24	40	75	75	75

Training/Pruning. Training and pruning in the first year is done during the dormant season – December in this study. Beginning in the second year pruning is done in July and/or August. The trees are mechanically topped in the fifth and subsequent years. A labor contractor does the pruning and stacks the prunings in the row middles. The grower shreds the prunings using a flail mower/shredder.

Irrigation. Water is pumped from a reservoir, through an infiltration system into the micro-sprinkler system. In this study water costs \$2.92 per acre-inch and the pumping cost \$3.63 per acre-inch. No assumption is made about effective rainfall. The drip irrigation line is laid out in January after planting at which time 2 acre-inches of water is applied to the trees. Bubblers are used at each tree for irrigation through the first year. The micro sprinklers are installed in the second year and moved to the center of the trees. The amount of water applied each year is shown in Table B.

Year	AcIn/Yr
1	20
2	24
3	30
4+	36

Pest Management. The pesticides and rates mentioned in this cost study as well as other materials available are listed in *UC Integrated Pest Management Guidelines, Apricots* available online at www.imp.ucdavis.edu. Pesticides mentioned in the study are commonly used, but are not recommendations.

Weeds. In January after the trees are planted, the tree row is sprayed with Surflan and Goal. The resident vegetation in the row middles is allowed to grow and the middles are mowed three times – February, April and June. Beginning in the first year and in subsequent years a spot spray using Roundup is applied to the tree row in March, May and July.

Insects. Beginning in the second year, a delayed dormant spray in January or early February with Superior Oil, Asana, and Kocide (copper) controls peach twig borer (PTB), San Jose scale (SJS), aphids, and mite eggs. Pesticide label rates are reduced during the first two years, because of the small tree size – 50% and 75% respectively.

Diseases. In the third year, brown rot, shothole, and powdery mildew are treated at full bloom with Rally and Ziram.

Vertebrates. Beginning in the second year, gophers in this study are managed with poison bait applied in the spring. The cost includes the bait, labor and All Terrain Vehicle (ATV) use.

Harvest. Hand harvesting for apricots begins in the third year. See Harvest in production section for procedures.

Year	Tons
3	3.0
4	6.0
5	7.0
6+	10.0

Yields and Returns Estimated annual yields for apricots are measured in tons or boxes. Estimated yields in tons are shown in Table C.

Production Operating Costs

Pruning. The trees are topped mechanically and are hand pruned in July and/or August. The pruning is done from the ground (no ladders). Pruning costs include the hand pruning and labor for stacking the prunings in the row middles for shredding. The grower chops the prunings with a flail mower/shredder. Tree vigor, size, spacing, previous pruning, and limb disease are a few of the factors that can affect pruning costs and may be much higher or lower than those in the study. In some situations, pruning may require the removal of limbs too large to be shredded. When this happens, the grower pushes or hauls the limbs to a pile at the edge of the orchard and burns the material.

Fruit Thinning. In April the fruit are thinned by hand using contract labor. Small fruit in April is thinned by hand using mallets and/or knocking sticks. Total thinning costs vary by the grower’s approach, crop set, and the number of trees per acre.

Irrigation. Water is pumped from a reservoir, through an infiltration system into the micro-sprinkler system. In this study water costs \$2.92 per acre-inch (\$35 per acre-foot) and the pumping cost from the reservoir \$3.63 per acre-inch. The irrigation costs includes the water, pumping costs, and irrigation labor. A total of 36 acre-inches of water is applied to the orchard. Water costs in the San Joaquin Valley vary by water district and costs to the grower can range from \$30 to \$200 per acre-foot. No assumption is made about effective rainfall, evaporation, and runoff.

Fertilization. Nitrogen as UN-32 at 75 pounds per acre is applied in July through the micro-sprinklers. Some growers apply calcium as a foliar spray with the pesticide applications and/or as a soil application. Potassium sulfate may also be needed in some areas. Fertilizer rates in this study are typical nutrient requirements, but do not take into account soil and water nitrogen. Leaf samples are taken in July for nutrient analysis and the fertilizers should be applied according to analysis recommendations. Leaf samples in this study are calculated at one per 10 acres and analyzed for both major and minor nutrients. The cost includes the labor to collect and prepare the samples and the lab fees

Pest Management. The pesticides and rates mentioned in this cost study as well as other available pesticides, pest identification, monitoring, and management are available on the UC Integrated Pest Management website at www.ipm.ucdavis.edu. For information and pesticide use permits, contact the local county agricultural commissioner's office. Adjuvants – spreaders, stickers, buffers – may be used with some pesticide and herbicide applications but are not included as a cost in this study.

Pest Control Adviser (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisers. In addition the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCA’s or receive the service as part of a service

agreement with an agricultural chemical and fertilizer company. The grower in this study uses the service of the chemical and fertilizer company. A typical PCA fee for tree crops is \$35 to \$45 per acre, but varies depending on the amount of service provided.

Weeds. A dormant strip spray using pre-emergent herbicides (Surflan, Goal) to control weeds in the tree rows is applied in January. In February, March, April, and May, post emergent spot sprays (Roundup) are applied on the berms. Resident species are grown as a ground cover in the middles and are mowed three times (February, April, June prior to harvest).

Insects. Asana for peach twig borer control is applied in February with the delayed dormant disease spray. Imidan is applied in May for worm control (peach twig borer and leaf rollers)

Disease. A delayed dormant spray using Superior Oil, and Kocide (Copper) is applied with the insect spray in February. Rally and Vanguard are applied mid-March (bloom) to control brown rot, shot hole, and powdery mildew. A second treatment for brown rot and shothole using Break and Ziram is applied in March, and Rally is applied again in April for mildew.

Vertebrate Pest. Poison squirrel bait is applied in the spring by hand using the ATV.

Harvest. Harvest begins in late May or early June. The orchard is harvested twice, the second time is fruit that was not ripe the first time. A contract labor crew of 8 to 10 pickers plus one sorter picks the crop. In addition the grower furnishes three tractors and drivers, three bin trailers, bins, and a forklift. The bins and forklift are not included in the harvest costs but are shown as an investment expense (Non-Cash Overhead). It is assumed that one crew can pick 3.1 tons per hour and that all of the grower equipment will be operating during that time. Larger acreages will require more crews and equipment. The fruit is hauled to the processing plant by a contract operator.

Yields and Returns. Yields for fresh market apricots range from 8 to 12 tons per acre. A typical yield averaged over the production life of the orchard and used in this study is 10 tons. A price of a \$275 per ton based on 2003 projected markets is used in this study to determine potential profits/losses. Returns will vary depending on the market, fruit quality, and yield.

Processor. Costs are not included in this study.

Assessment. No specific fees are addressed in this study.

ATV/Pickup. The ATV is used for baiting gophers and is included in that cost. Additional ATV use for monitoring the orchard and checking the irrigation system is shown under ATV and assumes the ATV travels 500 miles per year or 25 miles per acre. Business use of the pickup is assumed to be 20 miles per acre.

Labor. Labor rates of \$13.77 per hour for machine operators and \$9.75 for general labor includes payroll overhead of 45%. The basic hourly wages are \$9.50 for machine operators and \$6.75 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for orchard/fruit crops (code 0016), and a percentage for other possible benefits.

Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2003 (California Department of Insurance). Labor for operations involving machinery are 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 field repair.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (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 \$1.11 and \$1.58 per gallon, respectively. The fuel prices are a January 2003 average based on four California delivery locations. The cost includes a 2.25% sales tax (effective September 2001) on diesel fuel and 7.25% sales tax on gasoline. Gasoline also includes federal and state excise tax, which can be refunded for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in the "Cost Per Acre to Produce" table is determined by multiplying the total hourly operating cost in the "Hourly Equipment Costs" table for each piece of equipment used from the Operation Time (Hrs/A) column 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.

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 7.14% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

Risk. Production risks should not be minimized. While this study makes every 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 crop production.

Cash Overhead Costs

(Tables 1-7)

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, equipment repairs, and management.

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.

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 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$516 for the entire farm.

Crop Insurance. The insurance is based on reported grower costs. The amount of coverage is not defined in this study.

Office Expense. Office and business expenses are estimated at \$105 per producing acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, shop and office utilities, and miscellaneous administrative charges.

Sanitation Services. Contract labor is used on the farm in which the contractor furnishes the sanitation facilities, therefore a cost is not shown in this study. Sanitation services that provide single portable toilets and washbasin for the orchard cost approximately \$112 per month. The monthly service charge is an average of four to six California sanitation companies and locations.

Management/Supervisor Salaries. The grower farms the orchard; therefore no salaries are included for management. Returns above costs are considered a return to management.

Investment Repairs. Annual maintenance is calculated as two percent of the purchase price.

Non-Cash Overhead Costs

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

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 $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$.

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 wear out 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 the tables.

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 6.41% used to calculate capital recovery cost is the USDA-ERS's 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.

Establishment Cost. Costs to establish the orchard are used to determine capital recovery expenses, depreciation, and interest on investment for the production years. Establishment cost is the sum of the costs for land preparation, planting, trees, cash overhead and production expenses for growing the trees through the first year that apricots are harvested minus any returns from production. The Total Accumulated Net Cash Cost on Table 1, in the third year represents the establishment cost. For this study the cost is \$3,046 per acre or \$60,920 for the 20-acre orchard. The establishment cost is spread over the remaining 17 years of the 20 years the orchard is in production.

Irrigation System. Micro-sprinkler lines are laid out prior to planting. The labor cost for laying out the line and changing from bubblers to micro-sprinkler is included in the irrigation system cost. A 25 horsepower pump, reservoir and filtration/injector station is newly installed and is shown as a pumping station. The pumping station is assumed to be sufficient for 40 acres of crop production, although portions of the system may be capable of providing for a larger portion of the ranch. The water flows into the reservoir from the district and the water is pumped from the reservoir into the system.

Land. Land values for cropland with district water in the San Joaquin Valley in the southern region range from \$2,300 to \$5,000 per acre and in the northern region, \$5,000 to 9,500. Land in this study is valued at \$5,900 per acre or \$6,211 per producing acre.

Building. The buildings total 2,400 square feet and are metal building/buildings on a cement slab.

Tools. This includes shop tools, hand tools, and miscellaneous field tools such as pruning tools.

Fuel Tanks. Two 350-gallon fuel tanks using gravity feed are on metal stands. The tanks are setup in a cement containment pad that meets federal, state, and county regulations.

Equipment. Farm equipment is purchased new or used, but the 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 for equipment and other investments are shown in Tables 3 and 8. 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 and are discussed under operating costs.

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

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For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

UC COOPERATIVE EXTENSION
Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH AN APRICOT ORCHARD
 SAN JOAQUIN VALLEY - 2003

Crop Year = January to December	Year:	Cost Per Acre			
		1st	2nd	3rd	4th
Yield (tons):				3.00	6.00
Planting Costs:					
Orchard Removal		265			
Land Preparation - Subsoil 2X		300			
Land Preparation - Disc 2X		40			
Land Preparation - Level		160			
Land Prep-Fumigate		200			
Land Prep-Berms		15			
Trees: 145 Per Acre @ \$4.25 ea., (3 in 2nd year)		616	13		
Survey, Mark, Dig Holes & Plant		268	15		
TOTAL PLANTING COSTS		1,864	28		
Cultural Costs:					
Pruning, Training		39	69	98	117
Brush Disposal				5	5
Fertilizer - Nitrogen		10	9	14	25
Thin Fruit-Hand				15	17
Weed Control - Winter Strip Spray		96	96	96	96
Weed Control - Mow Middles		15	15	15	15
Weed Control - In-Season Spot Sprays		45	45	45	45
Disease Control - Dormant (Asana, Oil, Kocide)			32	44	57
Irrigate		149	176	219	256
Insect Control - PTB (Asana)					18
Disease Control - Brown Rot, Mildew (Rally, Ziram)				37	47
Rodent Control			13	13	13
Pickup Truck Use		15	15	15	15
ATV Use		36	36	36	36
TOTAL CULTURAL COSTS		405	506	652	762
Harvest Costs:					
Pick and Haul				370	739
TOTAL HARVEST COSTS				370	739
Interest On Operating Capital @ 7.14%		97	7	10	14
TOTAL OPERATING COSTS/ACRE		2,366	541	1,032	1,515
Cash Overhead Costs:					
Office Expense		105	105	105	105
Liability Insurance		5	5	5	5
Property Taxes		85	76	78	80
Property Insurance		16	10	11	11
Investment Repairs		34	34	35	35
TOTAL CASH OVERHEAD COSTS		245	230	234	236
TOTAL CASH COSTS/ACRE		2,611	771	1,266	1,751
INCOME/ACRE FROM PRODUCTION				825	1,650
NET CASH COSTS/ACRE FOR THE YEAR		2,611	771	441	101
PROFIT/ACRE ABOVE CASH COSTS					
ACCUMULATED NET CASH COSTS/ACRE		2,611	3,382	3,823	3,924

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Table 1. continued

	Cost Per Acre				
	Year:	1st	2nd	3rd	4th
Yield (ton):				3.00	6.00
Capital Recovery					
Land	388	388	388	388	
Shop Building	49	49	49	49	
Fuel Tanks	1	1	1	1	
Sprinkler Irrigation System	53	53	53	53	
Irrigation Pumping Plant	33	33	33	33	
Shop/Hand Tools	9	9	9	9	
Bins			9	9	
Forklift	20	20	20	20	
Equipment	233	123	116	124	
TOTAL INTEREST ON INVESTMENT	786	676	678	686	
TOTAL COST/ACRE FOR THE YEAR	3,397	1,447	1,944	2,437	
INCOME/ACRE FROM PRODUCTION			825	1,650	
TOTAL NET COST/ACRE FOR THE YEAR	3,397	1,447	1,119	787	
NET PROFIT/ACRE ABOVE TOTAL COST					
TOTAL ACCUMULATED NET COST/ACRE	3,397	4,844	5,963	6,750	

UC COOPERATIVE EXTENSION
Table 2. COSTS PER ACRE TO PRODUCE APRICOTS
 SAN JOAQUIN VALLEY - 2003

Operation	Operation	Cash and Labor Costs per acre					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/Rent			
Cultural:								
Pest:Delayed Dormant (Asana, Oil, Kocide)	0.33	6	3	49	0	58		
Pest:Brown Rot/Shothole/Mildew (Rally,Vanguard)	0.33	6	3	40	0	49		
Pest:Brown Rot/Shothole (Break ,Ziram)	0.33	6	3	40	0	49		
Pest:Mildew (Rally)	0.33	6	3	20	0	28		
Pest:Worm-PTB/OLR	0.33	6	3	38	0	47		
Pest:Rodent Bait	0.42	7	1	6	0	13		
Weed-Strip 30% acres (Goal, Surflan)	0.25	4	1	90	0	96		
Weed:Strip-Spot (Roundup)	1.02	17	6	38	0	61		
Weed:Mow Middles	0.74	12	8	0	0	20		
Thin Fruit:Hand	0.00	0	0	73	0	73		
Irrigate	2.10	16	0	236	0	256		
Leaf Analysis	0.04	0	0	3	0	3		
Fertilize- through micro sprinklers (UN32)	0.01	0	0	23	0	24		
Top Trees	0.00	0	0	45	0	45		
Prune	0.00	0	0	326	0	326		
Chop Brush	0.33	6	3	0	0	9		
ATV Miscellaneous Use	1.00	17	2	0	0	18		
Pickup Use	0.67	11	4	0	0	15		
TOTAL CULTURAL COSTS	8.24	122	40	846	0	1,007		
Harvest:								
Harvest:Hand Pick	0.00	0	0	1,000	0	1,000		
Harvest:Equipment	9.57	158	47	0	0	205		
Harvest:Haul	0.00	0	0	100	0	100		
TOTAL HARVEST COSTS	9.57	158	47	1,100	0	1,305		
Interest on operating capital @ 7.14%						20		
TOTAL OPERATING COSTS/ACRE		280	87	1,946	0	2,333		
CASH OVERHEAD:								
Office Expense						105		
Liability Insurance						5		
Crop Insurance						45		
Property Taxes						100		
Property Insurance						25		
Investment Repairs						35		
TOTAL CASH OVERHEAD COSTS						316		
TOTAL CASH COSTS/ACRE						2,648		
NON-CASH OVERHEAD (Investments):								
		Producing Acre		Annual Cost		Capital Recovery		
Buildings		547		49		49		
Fuel Tanks		21		1		1		
Shop/Field Tools		68		9		9		
Forklift-Field		221		20		20		
Irrigation System -Micro sprinklers		600		53		53		
Irrigation System - Pump Station		375		33		33		
Bins (30) 1,000 lb		63		9		9		
Land		6,211		388		388		
Establishment Costs		3,823		371		371		
Equipment		1,472		151		151		
TOTAL NON-CASH OVERHEAD COSTS		13,402		1,085		1,085		
TOTAL COSTS/ACRE						3,734		

UC COOPERATIVE EXTENSION
Table 3. COSTS AND RETURNS PER ACRE TO PRODUCE APRICOTS
 SAN JOAQUIN VALLEY - 2003

	Quantity /Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Apricots - Fresh	10.00	ton	275.00	2,750	
OPERATING COSTS					
Insecticide:					
Asana XL	10.00	floz	1.04	10	
Superior Spray Oil	5.00	gal	3.19	16	
Imidan 70W	4.25	lb	9.00	38	
Fungicide:					
Kocide 101	8.00	lb	2.89	23	
Rally 40W	8.00	oz	4.90	39	
Vanguard WG	5.00	oz	4.09	20	
Break EC	4.00	floz	4.90	20	
Ziram 76DF	6.00	lb	3.39	20	
Rodenticide:					
Rodent Bait-Wilco	1.00	lb	5.62	6	
Herbicide:					
Surflan AS	3.60	pt	16.96	61	
Goal 2XL	1.80	pt	16.25	29	
Roundup Ultra Max	4.32	pt	8.75	38	
Contract/Custom:					
Thin Fruit	145.00	tree	0.50	73	
Leaf Analysis (1 sample/10 acres)	0.10	each	30.00	3	
Top Trees Mechanical	1.00	acre	45.00	45	
Prune	145.00	tree	1.00	145	
Harvest Hand	10.00	ton	100.00	1,000	
Haul Fruit	10.00	ton	10.00	100	
Irrigation:					
Water-District	36.00	acin	2.92	105	
Water-PGE Pumping	36.00	acin	3.63	131	
Fertilizer:					
UN-32	75.00	lb N	0.31	23	
Labor (machine)	18.80	hrs	13.77	259	
Labor (non-machine)	2.15	hrs	9.79	21	
Fuel - Gas	2.56	gal	1.58	4	
Fuel - Diesel	43.32	gal	1.11	48	
Lube				8	
Machinery repair				27	
Interest on operating capital @ 7.14%				20	
TOTAL OPERATING COSTS/ACRE				2,333	
NET RETURNS ABOVE OPERATING COSTS				417	
CASH OVERHEAD COSTS:					
Office Expense				105	
Liability Insurance				5	
Crop Insurance				45	
Property Taxes				100	
Property Insurance				25	
Investment Repairs				35	
TOTAL CASH OVERHEAD COSTS/ACRE				316	
TOTAL CASH COSTS/ACRE				2,648	

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				49	
Fuel Tanks				1	
Shop/Field Tools				9	
Forklift-Field				20	
Irrigation System -Micro sprinklers				53	
Irrigation System - Pump Station				33	
Bins (30) 1,000 lb				9	
Land				388	
Establishment Costs				371	
Equipment				151	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				1,085	
TOTAL COSTS/ACRE				3,734	
NET RETURNS ABOVE OPERATING COSTS				-984	

UC COOPERATIVE EXTENSION
Table 4. MONTHLY CASH COSTS PER ACRE TO PRODUCE APRICOTS
 SAN JOAQUIN VALLEY - 2003

Beginning JAN 03	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 03	03	03	03	03	03	03	03	03	03	03	03	03	
Pest:Delay Dormant (Asana,Oil,Kocide)		58											58
Pest:BrnRot/Shothole/Mildw (Rally,Vangard)			49										49
Pest:BrnRot/Shothole (Break,Ziram)			49										49
Pest:Mildew (Rally)				28									28
Pest:Worm-PTB/OLR (Asana)					47								47
Pest:Rodent Bait				13									13
Weed-Strip 30% acre (Goal,Surflan)	96												96
Weed:Strip-Spot (Roundup)		15	15	15	15								61
Weed:Mow Middles		5	5	5	5								20
Thin Fruit:Hand			73										73
Irrigate		18	37	55	18	18	37	18	18				256
Leaf Analysis							3						3
Fertilize UN32							24						24
Top Trees							45						45
Prune								145					145
Chop Brush									9				9
ATV Miscellaneous Use	2	2	2	2	2	2	2	2	2	2	2	2	18
Pickup Use	1	1	1	1	1	1	1	1	1	1	1	1	15
TOTAL CULTURAL COSTS	99	99	229	119	125	21	111	166	30	3	3	3	1,007
Harvest:													
Harvest:Hand Pick						1,000							1,000
Harvest:Equipment						205							205
Harvest:Haul						100							100
TOTAL HARVEST COSTS						1,305							1,305
Interest on operating capital	1	1	3	3	4	12	-2	-1	0	0	0	0	20
TOTAL OPERATING COSTS/ACRE	99	100	232	122	129	1,338	110	165	30	3	3	3	2,333
OVERHEAD:													
Office Expense	12	12	12	12	12	12	12	12	12				105
Liability Insurance							5						5
Crop Insurance		45											45
Property Taxes				50								50	100
Property Insurance	25												25
Investment Repairs	3	3	3	3	3	3	3	3	3	3	3	3	35
TOTAL CASH OVERHEAD COSTS	40	60	15	64	15	15	20	15	15	3	3	53	316
TOTAL CASH COSTS/ACRE	139	160	246	187	143	1,353	130	180	44	6	6	55	2,648

UC COOPERATIVE EXTENSION
Table 5. RANGING ANALYSIS
 SAN JOAQUIN VALLEY - 2003

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE APRICOTS

	YIELD (ton/acre)						
	7.00	8.00	9.00	10.00	11.00	12.00	13.00
OPERATING COSTS/ACRE:							
Cultural Cost	1,007	1,007	1,007	1,007	1,007	1,007	1,007
Harvest Cost	914	1,044	1,175	1,305	1,436	1,566	1,697
Interest on operating capital	18	18	19	20	21	22	22
TOTAL OPERATING COSTS/ACRE	1,939	2,069	2,201	2,332	2,464	2,595	2,726
Total Operating Costs/Ton	277	259	245	233	224	216	210
CASH OVERHEAD COSTS/ACRE							
TOTAL CASH COSTS/ACRE	2,254	2,384	2,517	2,648	2,780	2,911	3,042
Total Cash Costs/Ton	322	298	280	265	253	243	234
NON-CASH OVERHEAD COSTS/ACRE							
TOTAL COSTS/ACRE	3,333	3,465	3,600	3,733	3,867	4,000	4,133
Total Costs/Ton	476	433	400	373	352	333	318

NET RETURNS PER ACRE ABOVE OPERATING COSTS

\$/ton	YIELD (ton/acre)						
	7.00	8.00	9.00	10.00	11.00	12.00	13.00
200.00	-539	-469	-401	-332	-264	-195	-126
225.00	-364	-269	-176	-82	11	105	199
250.00	-189	-69	49	168	286	405	524
275.00	-14	131	274	418	561	705	849
300.00	161	331	499	668	836	1,005	1,174
325.00	336	531	724	918	1,111	1,305	1,499
350.00	511	731	949	1,168	1,386	1,605	1,824

NET RETURNS PER ACRE ABOVE CASH COSTS

\$/ton	YIELD (ton/acre)						
	7.00	8.00	9.00	10.00	11.00	12.00	13.00
200.00	-854	-784	-717	-648	-580	-511	-442
225.00	-679	-584	-492	-398	-305	-211	-117
250.00	-504	-384	-267	-148	-30	89	208
275.00	-329	-184	-42	102	245	389	533
300.00	-154	16	183	352	520	689	858
325.00	21	216	408	602	795	989	1,183
350.00	196	416	633	852	1,070	1,289	1,508

NET RETURNS PER ACRE ABOVE TOTAL COSTS

\$/ton	YIELD (ton/acre)						
	7.00	8.00	9.00	10.00	11.00	12.00	13.00
200.00	-1,933	-1,865	-1,800	-1,733	-1,667	-1,600	-1,533
225.00	-1,758	-1,665	-1,575	-1,483	-1,392	-1,300	-1,208
250.00	-1,583	-1,465	-1,350	-1,233	-1,117	-1,000	-883
275.00	-1,408	-1,265	-1,125	-983	-842	-700	-558
300.00	-1,233	-1,065	-900	-733	-567	-400	-233
325.00	-1,058	-865	-675	-483	-292	-100	92
350.00	-883	-665	-450	-233	-17	200	417

UC COOPERATIVE EXTENSION
Table 6. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT AND BUSINESS OVERHEAD
 SAN JOAQUIN VALLEY - 2003

ANNUAL EQUIPMENT COSTS

Yr Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
					Insur- ance	Taxes	
03 35HP 4WD Tractor	20,500	20	2,630	1,754	78	116	1,948
03 55HP 5320 2WD Tractor	24,605	20	3,157	2,105	94	139	2,338
03 75HP JD5510 MFWD	42,000	20	5,389	3,594	160	237	3,991
03 ATV 550 Kawasaki	5,790	15	1,127	558	23	35	616
03 Bin Trailer (3-Bin) #1	1,600	20	83	140	6	8	154
03 Bin Trailer (3-Bin) #2	1,600	20	83	140	6	8	154
03 Bin Trailer (3-Bin) #3	1,600	20	83	140	6	8	154
03 Mower/Flail 8'	9,000	15	864	905	33	49	988
03 Orchard Sprayer 500 Gallon	19,741	20	1,029	1,729	70	104	1,903
03 Pickup Truck 1/2 Ton	25,740	10	7,603	2,969	113	167	3,248
03 Weed Sprayer 100 Gallon	3,550	15	341	357	13	19	390
TOTAL	155,726		22,389	14,392	602	891	15,885
60% of New Cost *	93,436		13,433	8,635	361	534	9,531

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
Bins (30) 1,000 lb	6,000	10		825	20	30	120	995
Buildings 2,400 sqft	52,000	20		4,626	176	260	781	5,843
Orchard Establishment	76,460	17		7,429	258	382	0	8,070
Forklift-Field 2-Ton	21,000	20		1,868	71	105	420	2,464
Fuel Tanks 2-350 gallon	2,000	35	300	139	8	11	40	199
Irrigation Pump Station	15,000	20		1,334	51	75	300	1,760
Irrigation System/Micro Sprinklers	12,000	20		1,068	41	60	240	1,408
Land	590,000	20	590,000	36,875	0	5,900	0	42,775
Shop/Field Tools	6,500	10		894	22	33	130	1,078
TOTAL INVESTMENT	780,960		590,300	55,058	647	6,856	2,031	64,592

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Crop Insurance	20	acre	45.00	900
Liability Insurance	95	acre	5.43	516
Office Expense	95	acre	105.00	10,000

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY - 2003

		COSTS PER HOUR							
Yr	Description	Actual Hours Used	Capital Recovery	Cash Overhead			Operating		Total Costs/Hr.
				Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
03	35HP 4WD Tractor	799.60	1.32	0.06	0.09	0.47	2.19	2.66	4.13
03	55HP 5320 2WD Tractor	600.10	2.10	0.09	0.14	1.00	3.45	4.45	6.78
03	75HP JD5510 MFWD	799.80	2.70	0.12	0.18	0.97	4.70	5.67	8.67
03	ATV 550 Kawasaki	133.40	2.51	0.11	0.16	0.41	1.14	1.55	4.32
03	Bin Trailer (3-Bin) #1	149.80	0.56	0.02	0.03	0.23	0.00	0.23	0.85
03	Bin Trailer (3-Bin) #2	149.80	0.56	0.02	0.03	0.23	0.00	0.23	0.85
03	Bin Trailer (3-Bin) #3	149.80	0.56	0.02	0.03	0.23	0.00	0.23	0.85
03	Mower/Flail 8'	133.40	4.07	0.15	0.22	4.03	0.00	4.03	8.48
03	Orchard Sprayer 500 Gallon	100.30	10.34	0.42	0.62	3.09	0.00	3.09	14.47
03	Pickup Truck 1/2 Ton	13.30	133.62	5.07	7.50	1.07	4.54	5.61	151.81
03	Weed Sprayer 100 Gallon	100.40	2.13	0.08	0.12	0.93	0.00	0.93	3.26

UC COOPERATIVE EXTENSION
Table 8. OPERATIONS WITH EQUIPMENT
 SAN JOAQUIN VALLEY - 2003

Operation	Operation Month	Equipment		Material	Rate/acre	Unit
		Tractor	Implement			
Cultural:						
Pest- Delayed Dormant	February	75HP MFWD	Orchard Sprayer	Asana XL	10.00	floz
				Kocide 101	8.00	lb
				Superior Oil	5.00	gal
Pest-Brown, Shothole, Mildew	March	75HP MFWD	Orchard Sprayer	Vanguard	5.00	oz
				Rally	4.00	oz
Pest-Brown Rot, Shothole		75HP MFWD	Orchard Sprayer	Break EC	4.00	floz
				Ziram	6.00	lb
Pest-Mildew	April	75HP MFWD	Orchard Sprayer	Rally	4.00	oz
Pest-Worm (PTB, OLR)	May	75HP MFWD	Orchard Sprayer	Imidan	4.25	lb
Pest-Rodent	April	ATV		Rodent Bait	1.00	lb
Weed-Spray Tree Row (30% acres)	January	55HP 2WD	Weed Sprayer	Surflan	3.60	pint
				Goal 2XL	1.80	pint
Weed - Strip Spot Spray	February	55HP 2WD	Weed Sprayer	Roundup UltraMax	1.08	pint
	March	55HP 2WD	Weed Sprayer	Roundup UltraMax	1.08	pint
	April	55HP 2WD	Weed Sprayer	Roundup UltraMax	1.08	pint
	May	55HP 2WD	Weed Sprayer	Roundup UltraMax	1.08	pint
Weed - Mow Middles	February	75HP MFWD	Mower/Flail			
Weed - Mow Middles	March	75HP MFWD	Mower/Flail			
	April	75HP MFWD	Mower/Flail			
	May	75HP MFWD	Mower/Flail			
Thin Fruit - Hand	March			Labor -Contract		
Irrigate	February			Water + Labor	2.57	acin
	March			Water + Labor	5.15	acin
	April			Water + Labor	7.71	acin
	May			Water + Labor	7.71	acin
	June			Water + Labor	2.57	acin
	July			Water + Labor	5.15	acin
	August			Water + Labor	2.57	acin
	September			Water + Labor	2.57	acin
Leaf Analysis	July			Analysis + Labor		
Fertilize UN32 through drip	July			UN32	75.00	lb N
Top Trees	July			Custom		
Prune	August			Custom		
Shred Prunings	September	75HP MFWD	Mower/Flail			
Harvest	June			Contract		
Haul				Contract		
Harvest Equipment		35HP 4WD	Bin Trailer			
		55HP 2WD	Bin Trailer			
		75HP MFWD	Bin Trailer			