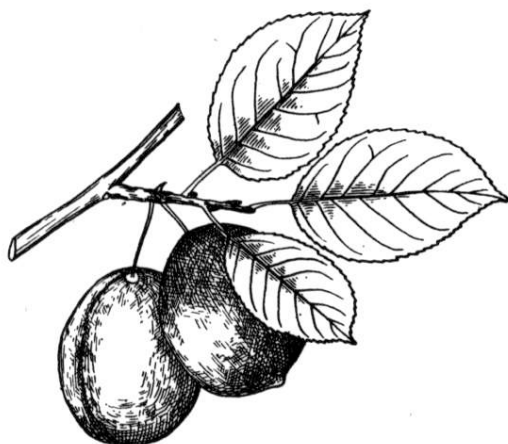


2000

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS
TO ESTABLISH A PLUM ORCHARD AND PRODUCE

PLUMS



FRIAR VARIETY
SOUTHERN SAN JOAQUIN VALLEY

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INTRODUCTION

The detailed costs for establishment of a plum orchard and the production of Friar plums in the Southern San Joaquin Valley are presented in this study. The hypothetical farm used in this report consists of 100 acres of land with five acres being planted to plums.

This study is intended as a guide only. It can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Costs and practices detailed in this study will not be applicable to every situation. A blank, *Your Cost*, column is provided to enter your actual costs.

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This and other studies can be obtained through the Department of Agricultural and Resource Economics, UC Davis (530-752-1515), from the website (agecon.ucdavis.edu) or from selected county Cooperative Extension offices. For an explanation of calculations or assumptions used in this study refer to the attached General Assumptions or call the Department of Agricultural and Resource Economics, University of California – Davis, (530-752-3589).

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ASSUMPTIONS

The assumptions refer to Tables 1 to 8 and pertain to sample costs to establish and produce plums in the southern San Joaquin Valley. The cultural practices shown represent production operations and materials considered typical of a well-managed orchard in the region. Costs, materials, and practices in this study will not apply to all farms. Timing of and types of cultural practices will vary among growers within the region and from season to season due to variables such as variety, weather, soil, and insect and disease pressure. **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 farm consists of 100 acres of land. Five acres are being established as a plum orchard. Other orchard and vine crops are grown on 90 acres and the remaining five acres are roads and farmstead. Land is valued at \$5,790 per producing acre and is not depreciated.

Trees. The plum variety that is planted and produced in this cost study is Friar. The Friar variety accounts for approximately 11% of the acreage and 16% of the plum crop in the Southern San Joaquin Valley. The trees are planted on 14' X 18' spacing or 172 trees per acre. Tree cost is \$4.40 per tree. The life of the orchard at the time of planting is estimated to be 20 years.

Irrigation. Water for irrigation is pumped from a well. Price per acre-foot for pumped water will vary from grower to grower in this region depending on various well characteristics and irrigation factors. In this study, water is pumped from a depth of 85 feet in a 150-foot well and is calculated to cost \$38.16 per acre-foot. The amount of water used by the orchard during its establishment varies each year and is shown in Table A below.

Water is delivered to the orchard from the well through an underground pipe and flood valve system. The orchard is irrigated down furrows that are chemically mowed several times during the growing season. No assumption is made about effective rainfall. The life of the system is estimated at 30 years. This irrigation system is installed before the orchard is planted.

Year	Applied water Acre-Inches
1	20
2	24
3	30
4	36
5	44

Labor. Hourly wages for workers are \$8.23, and \$6.00 per hour for skilled and field labor, respectively. Adding 34% for Workman's Compensation, Social Security, Medicare, insurance, and other possible benefits gives the labor rates shown of \$11.02 per hour for skilled labor, and \$8.04 per hour for field labor. 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 repair. Wages for management are not included as a cash cost. Any return above total costs is considered a return to management and risk.

ESTABLISHMENT CULTURAL PRACTICES AND MATERIAL INPUTS

Land Preparation. This orchard is established on ground that was previously planted to deciduous trees or vines. The site is slip plowed to a depth of six feet to mix the soil and break up natural restricting soil layers. The site is disced three times to prepare the ground before the preplant fumigation. Fumigation is contracted and the fumigant, methyl bromide, is injected over the entire orchard site. Borders are put up later and water is run between the borders to settle the tilled ground. After the soil has dried, the site is laser leveled followed by two passes with an orchard float. The orchard is laid out, trees are planted, and the trunks are protected with wraps. All operations preparing the ground are done in the year prior to planting and are contracted. Layout and planting are done by contractors in the next spring following ground preparation. For purposes of this report all of these operations occur in year one.

The young trees are headed back and pruned in subsequent years. In the second year, two trees per acre are replanted, which are provided free by most nurseries.

Weed Control. The row middles are sprayed 4 to 6 times per year for weed control. An implement known as a crowder is used to pull the irrigation furrows after planting as well as clean them once every 3 to 5 years.

Herbicide treatments in the orchard begin with a strip spray along the tree rows in the first season and switches to a pre-emergent and to spot sprays in the second. Berms are put up along the tree rows during the second year and sprayed to control weeds. Five percent of the acreage is spot sprayed with a contact herbicide.

Pest Control. Treatment for diseases, insects, and mites starts in the winter after planting with a dormant season application for brown rot and mites. An in-season mite spray is added in the second year. Bloom and worm sprays begin in the third year to round out the pest control program.

Fruit Thinning. Thinning begins in the third year and is done by hand. The amount of time required for this operation increases as the yields increase.

Fertilization. Nitrogen fertilizer is applied at increasing rates during the orchard establishment and is shown in Table B. Neutral zinc is also applied with the dormant spray at a rate of 5 pounds per acre in the first year and 10 pounds in each year thereafter.

Year	LBS of N/Acre
1	43
2	65
3	72
4+	125

Establishment Costs. Cost to establish the orchard is used to determine capital recovery expenses, depreciation, and interest on investment, during the production years. The establishments cost are the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing plums through the first year fruit is harvested. The *Total Accumulated Net Cash Cost* in the third year shown in Table 1 represents the establishment cost per acre. For this study, the cost is \$4,229.00 per acre. This establishment cost is depreciated, beginning in the fourth year, over the remaining 17 years of life assumed for the trees.

PRODUCTION CULTURAL PRACTICES AND MATERIAL INPUTS

Pruning and Thinning. Pruning is done by hand in the winter months; December and January in this study. Prunings are shredded in January. Fruit is thinned by hand in April and/or May.

Fertilization. Nitrogen fertilizer is applied in the spring and in the fall following harvest. In some instances nitrogen fertilizer may need to be applied in both spring and late summer. In this study nitrogen is applied at a rate of 125 pounds of N per acre split between March and September. Neutral zinc is mixed with the dormant spray and applied in January at 10 pounds per acre. A foliar application of zinc sulfate is applied in the autumn at leaf fall at 10 pounds per acre.

Weed Management. Furrows are drawn in the first year immediately after planting and are cleaned every three to five years. This is accounted for in this report by averaging the cost over four years. Weeds are controlled in row centers during the spring and summer by two to four chemical mowings using low volume sprays. Weeds on the berms are controlled by pre-emergent herbicides sprayed in the winter.

Insect and Disease Management. A dormant spray, mixed with neutral zinc, is applied annually to control insects, mites, and diseases. In-season preharvest sprays are applied to protect the crop from such pests as codling moth, peach twig borer, leaf rollers, mites and fruit rot.

The pesticides and rates mentioned in this cost study are a few of those that are listed in the *UC IPM Pest Management Guidelines, Plum*. Cultural practices for the production of plum vary from grower to grower and region to region. The practices and inputs used in this cost study serve only as a sample or guide. For additional production information contact your local UC Cooperative Extension farm advisor.

Equipment Cash Costs. Equipment costs fall into three categories: capital recovery, cash overhead, and operating costs. The cash overhead and capital recovery costs will be discussed in later sections. The operating costs consist of fuel, lubrication, and repairs.

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 hp, and type of fuel used. The per acre fuel and repair costs for each operation in Table 2 are determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time (Operation Time in Table 2) to account for fueling, moving equipment, and setup time. Prices for on-farm delivery of diesel and gasoline are \$1.09 and \$1.49 per gallon, respectively.

Harvest. Harvesting starts in the third year after the orchard is planted. As the yields increase harvest costs also increase, until orchard maturity is reached. In this cost study the crop is harvested by the grower's picking crew using ladders and buckets supplied by the packing shed. Fruit is placed into half-ton field bins, and then delivered to the packing shed by a contract hauler. The shed packs and sells the fruit under a contract with the grower.

For growers that own their packing and cooling equipment, and sell their crop, the needed equipment for packing and cooling operations should be inventoried in investment costs on Table 5; operation costs would be

calculated and placed in harvest costs in Tables 1 and 2. All custom charges would be subtracted from harvest costs in Tables 1 and 2.

Assessments. Assessment fees collected by the California Tree Fruit Agreement (CTFA) are based on boxes of plums sold. The CTFA assessment fee is \$0.20 per box.

Yields. As noted above, plums most often begin bearing an economic crop in the third year after planting. Typical annual yields for Friar varieties are measured in boxes per acre and are shown in Table C. These yields are from the third year of orchard establishment to maturity. The weight of a box of plums in this study is 28 pounds.

Year	Boxes/Acre
3	100
4	250
5	500
6	700
7+	900

A portion of the gross yield sent to packing sheds is packed for fresh market. The percent packout is the portion of the crop that meets the fresh market standards. Table D shows the previous five years average net per acre yield in tons and 28 pound boxes for the six major plum-producing counties in the San Joaquin Valley.

Returns. Based on the typical average fruit size and price distribution of Friar plums, an estimated price of \$8.00 per box is used in this study. Table 7 shows net returns and costs at varying yields and prices.

Year	Average Tons/Acre	Average Boxes/Acre
1994	5.72	409
1995	4.19	299
1996	6.08	434
1997	6.48	463
1998	5.66	404

^{1/} Source: CDFA, State Crop Reports, 1994 – 1998 and includes Fresno, Kern, Kings, Madera, Merced, and Tulare Counties.

Risk. The risks associated with producing and marketing plums are significant. 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 that affect the profitability and economic viability of plum production. Crop insurance is a risk management tool available to growers.

OVERHEAD COSTS

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. Cash overhead costs are included in Tables 1 to 5.

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 at 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 10.71% per year. A nominal interest rate is the going market cost of borrowed funds. The rate used in this study is from a commercial lending institution.

Insurance. Insurance for farm investments vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.723% of the average value

of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$455 for the entire farm.

Office Expense. Office and business expenses are estimated at \$50 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

Sanitation Services Sanitation services provide portable toilets for the orchard and cost the farm \$455 annually. This cost includes delivery and servicing of toilets.

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. It is a function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 7.08% 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.

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UC COOPERATIVE EXTENSION
Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH A PLUM ORCHARD
SOUTHERN SAN JOAQUIN VALLEY - 2000
Friar Variety

	Cost Per Acre						
	Fiscal Year:	1	2	3	4	5	6
28 Pound Boxes Per Acre:				100	250	500	700
Planting Costs:							
Land Preparation - Slip Plow	\$220						
Land Preparation - Disc 3X	50						
Land Preparation - Fumigate	500						
Put Up Borders	4						
Irrigate	31						
Land Preparation - Laser Level	125						
Land Preparation - Float 2X	18						
Survey, Mark, Dig Holes & Plant	45						
Trees: 172 Per Acre @ \$4.40 each	757						
Plant and Wrap Trees	69						
TOTAL PLANTING COSTS	1,819						
Cultural Costs:							
Weed Control - Dormant Strip Spray	\$37	\$53	\$53	\$53	\$53	\$53	\$53
Prune		40	92	184	277	415	
Brush Disposal		7	7	7	7	7	
Rope Trees			37		52		
Pest Control - Dormant Spray + Neutral Zinc		50	50	50	50	50	
Pest Control - Bloom Spray			23	23	23	23	
Pest Control - Codling Moth 2X			51	51	51	51	
Thinning - Hand			76	156	322	573	
Put Up Tree Berms		4					
Fertilizer - Nitrogen	22	29	31	49	49	49	
Fertilizer - Zinc Fall	8	8	8	8	8	8	
Furrow Middles 1X	4	1	1	1	1	1	
Irrigate 12X	154	167	186	205	230	230	
Weed Control - Spray Middles 5X (4X Yr 1)	40	50	50	50	50	50	
Weed Control - Spot Spray		4	8	8	8	8	
Pest Control - Mites		60	60	60	60	60	
Pickup Truck Use	100	100	100	100	100	100	
TOTAL CULTURAL COSTS	365	573	831	1,005	1,341	1,678	
Harvest Costs:							
Pick Fruit			73	205	412	578	
Hauls To Shed			9	24	52	74	
Pack Fruit			300	750	1,500	2,100	
Sell			48	120	240	336	
TOTAL HARVEST COSTS			430	1,099	2,204	3,088	
Assessments:							
California Tree Fruit Agreement			20	50	100	140	
TOTAL ASSESSMENT COSTS			20	50	100	140	
Interest On Operating Capital @ 10.71%	231	34	34	48	76	102	
TOTAL OPERATING COSTS/ACRE	2,415	607	1,317	2,202	3,721	5,008	
Cash Overhead Costs:							
Office Expense	50	50	50	50	50	50	
Sanitation Fees	5	5	5	5	5	5	
Liability Insurance	4	4	4	4	4	4	
Property Taxes	63	64	64	86	86	86	
Property Insurance	46	46	46	62	62	62	
Investment Repairs	14	14	14	14	14	14	
TOTAL CASH OVERHEAD COSTS	182	183	183	221	221	221	
TOTAL CASH COSTS/ACRE	2,597	790	1,500	2,423	3,942	5,229	
INCOME/ACRE FROM PRODUCTION			800	2,000	4,000	5,600	
NET CASH COSTS/ACRE FOR THE YEAR	2,597	790	700	423			
PROFIT/ACRE ABOVE CASH COSTS					58	371	
ACCUMULATED NET CASH COSTS/ACRE	2,597	3,387	4,087	4,510	4,452	4,081	

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Table 1. continued

	Cost Per Acre						
	Fiscal Year:	1	2	3	4	5	6
28 Pound Boxes Per Acre:				100	250	500	700
Capital Recovery Cost (7.08% Interest Rate):							
Building		42	42	42	42	42	42
Fuel Tanks & Pumps		7	7	7	7	7	7
Shop Tools		13	13	13	13	13	13
Furrow Irrigation System		12	12	12	12	12	12
Land @ \$5,579/Acre		410	410	410	410	410	410
Equipment		30	37	45	54	64	73
TOTAL CAPITAL RECOVERY COST		514	521	529	538	548	557
TOTAL COST/ACRE FOR THE YEAR		3,111	1,311	2,029	2,961	4,490	5,786
INCOME/ACRE FROM PRODUCTION				800	2,000	4,000	5,600
TOTAL NET COST/ACRE FOR THE YEAR		3,111	1,311	1,229	961	490	186
NET PROFIT/ACRE ABOVE TOTAL COST							
TOTAL ACCUMULATED NET COST/ACRE		3,111	4,422	5,651	6,612	7,102	7,288

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

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Table 2. COSTS PER ACRE TO PRODUCE MATURE PLUMS (Friar Variety)
SOUTHERN SAN JOAQUIN VALLEY - 2000

OPERATION	Cash and Labor Costs per Acre						Total Cost	Your Cost
	Operation Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/Rent	Total Cost		
Cultural:								
Weed Control - Dormant Strip Spray	0.20	3	1	50	0	53		
Prune	64.00	515	0	0	0	515		
Shred Brush	0.43	6	4	0	0	10		
Pest Control - Dormant & Neutral Zinc	0.26	3	3	44	0	50		
Pest Control - Bloom Spray	0.26	3	3	17	0	23		
Pollination - 1 Hive/Acre	0.00	0	0	0	45	45		
Furrow Middles 1X every 4 years	0.05	1	0	0	0	1		
Irrigate 12X	13.25	107	0	140	0	246		
Pest Control - Codling Moth 2X	0.51	7	5	39	0	51		
Thinning – Hand	143.00	1,150	0	0	0	1,150		
Fertilize - Nitrogen Split Application	0.42	14	1	41	0	56		
Fertilize - Fall Zinc	0.26	3	3	4	0	10		
Weed Control - Spray Middles 5X	1.00	13	4	33	0	50		
Weed Control - Spot Spray	0.40	5	2	1	0	8		
Pest Control – Mites	0.26	3	3	54	0	60		
Pickup Truck Use	5.70	75	25	0	0	100		
TOTAL CULTURAL COSTS	229.97	1,907	52	425	45	2,429		
Harvest:								
Pick Fruit	3.71	695	47	0	0	742		
Haul To Shed	0.00	0	0	0	94	94		
Pack Fruit	0.00	0	0	0	2,700	2,700		
Sell	0.00	0	0	0	432	432		
TOTAL HARVEST COSTS	3.71	695	47	0	3,226	3,968		
Assessment:								
CTFA Assessment	0.00	0	0	180	0	180		
TOTAL HARVEST COSTS with ASSESSMENT:	0.00	695	47	180	3,227	4,148		
Interest on operating capital @ 10.71%						127		
TOTAL OPERATING COSTS/ACRE		2,602	100	605	3,271	6,705		
CASH OVERHEAD:								
Office Expense						50		
Liability Insurance						5		
Sanitation Fees						4		
Property Taxes						86		
Property Insurance						62		
Investment Repairs						14		
TOTAL CASH OVERHEAD COSTS						221		
TOTAL CASH COSTS/ACRE						6,926		
CAPITAL RECOVERY COSTS (7.08% Interest Rate):								
Investment		Per producing Acre		--Annual Costs--		Capital Recovery		
Buildings		447		42		42		
Fuel Tanks & Pumps		71		7		7		
Shop Tools		126		13		13		
Irrigation System		140		12		12		
Plum Establishment		4,087		421		421		
Land – Plums		5,790		410		410		
Equipment		583		79		79		
TOTAL CAPITAL RECOVERY COSTS		11,245		984		984		
TOTAL COSTS/ACRE						7,910		

UC COOPERATIVE EXTENSION
Table 3. COSTS AND RETURNS PER ACRE TO PRODUCE MATURE PLUMS (Friar Variety)
SOUTHERN SAN JOAQUIN VALLEY - 2000

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Plums	900.00	Box	8.00	7,200	
TOTAL GROSS RETURNS FOR PLUMS				7,200	
OPERATING COSTS					
Herbicide:					
Surflan 4 AS	2.00	pint	10.73	21	
Goal 2 XL	2.00	pint	14.28	29	
Roundup Ultra	5.30	pint	6.64	35	
Insecticide:					
Dormant Oil	6.00	gal	3.75	18	
Diazinon 50 W	4.00	lb	4.56	18	
Imidan 70WD	4.25	lb	6.17	26	
Sevin 80S	2.50	lb	5.31	13	
Apollo	5.00	oz	10.75	54	
Fertilizer:					
Zinc Sulfate 36%	10.00	lb	0.38	4	
Ammonium Nitrate	125.00	lb N	0.33	41	
Zinc - Neutral	10.00	lb	0.84	8	
Fungicide:					
Break EC	4.00	oz	4.35	17	
Contract:					
Pollination Fee	1.00	hive	45.00	45	
Pack Fruit	900.00	box	3.00	2,700	
Sell	900.00	box	0.48	432	
Irrigation:					
Water	44.00	acin	3.18	140	
Custom:					
Haul - Custom	21.00	bin	4.50	94	
Assessment:					
CTFA Assessment	900.00	box	0.20	180	
Labor (machine)	20.57	hrs	11.02	227	
Labor (non-machine)	295.45	hrs	8.04	2,375	
Fuel - Gas	11.40	gal	1.49	17	
Fuel - Diesel	36.42	gal	1.09	40	
Lube				9	
Machinery repair				34	
Interest on operating capital @ 10.71%				127	
TOTAL OPERATING COSTS/ACRE				6,705	
NET RETURNS ABOVE OPERATING COSTS				495	
CASH OVERHEAD COSTS:					
Office Expense				50	
Liability Insurance				5	
Sanitation Fees				4	
Property Taxes				86	
Property Insurance				62	
Investment Repairs				14	
TOTAL CASH OVERHEAD COSTS/ACRE				221	
TOTAL CASH COSTS/ACRE				6,926	

UC COOPERATIVE EXTENSION
 Table 3. continued

	Cost/Acre	Your Costs
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):		
Buildings	42	
Fuel Tanks & Pumps	7	
Shop Tools	13	
Irrigation System	12	
Plum Establishment	421	
Land - Plums	410	
Equipment	79	
TOTAL NON-CASH OVERHEAD COSTS/ACRE	984	
TOTAL COSTS/ACRE	7,910	
NET RETURNS ABOVE TOTAL COSTS	-710	

UC COOPERATIVE EXTENSION
Table 4. MONTHLY CASH COSTS PER ACRE TO PRODUCE MATURE PLUMS
SOUTHERN SAN JOAQUIN VALLEY - 2000
Friar Variety

Beginning DEC 99 Ending NOV 00	DEC 99	JAN 00	FEB 00	MAR 00	APR 00	MAY 00	JUN 00	JUL 00	AUG 00	SEP 00	OCT 00	NOV 00	TOTAL
CULTURAL:													
Weed Control - Dormant Strip	53												53
Prune	257	257											515
Shred Brush		10											10
Pest Control - Dormant & Zinc		50											50
Pest Control - Bloom Spray			23										23
Pollination - 1 Hive/Acre			45										45
Furrow Middles 1X/4yr					1								1
Irrigate 12X					34	34	56	50	44	29			246
Pest Control - Codling Moth 2X					32		19						51
Thinning - Hand					575	575							1,150
Fertilize - Nitrogen				28						28			56
Weed Control - Spray Middles			10		10		10	10		10			50
Fertilize - Fall Zinc											10		10
Weed Control - Spot Spray						4		4					8
Pest Control - Mites								60					60
Pickup Truck Use	9	9	9	9	9	9	9	9	9	9	9	9	100
TOTAL CULTURAL COSTS	320	326	88	37	661	622	95	133	53	76	19		2,429
HARVEST:													
Pick Fruit								742					742
Haul To Shed								94					94
Pack Fruit								2,700					2,700
Sell								432					432
TOTAL HARVEST COSTS								4,148					4,148
ASSESSMENT:													
CTFA Assessment								180					180
TOTAL ASSESSMENT COSTS								180					180
INTEREST on operating capital	3	6	7	7	13	18	19	57	-1	-1	0		127
TOTAL OPERATING COSTS/ACRE	323	332	94	44	674	640	114	4,339	51	75	19		6,705
OVERHEAD:													
Office Expense	4	4	4	4	4	4	4	4	4	4	4	4	50
Liability Insurance			5										5
Sanitation Fees			4										4
Property Taxes		43						43					86
Property Insurance		31						31					62
Investment Repairs	1	1	1	1	1	1	1	1	1	1	1	1	14
TOTAL CASH OVERHEAD COSTS	5	79	14	5	5	5	5	79	5	5	5	5	221
TOTAL CASH COSTS/ACRE	328	412	108	49	679	646	119	4,418	57	81	24	5	6,926

UC COOPERATIVE EXTENSION
Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SOUTHERN SAN JOAQUIN VALLEY – 2000

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	----Cash Overhead----		Total
						Insur- ance	Taxes	
00	38 HP 2WD Tractor	21,507	15	4,187	2,208	93	128	2,429
00	80 HP 4WD Tractor	46,186	15	8,992	4,741	199	276	5,216
00	Bin Trailers W/Bin	10,500	7	2,679	1,645	48	66	1,758
00	Bin Trailers W/Bin	10,500	7	2,679	1,645	48	66	1,758
00	Crowder - 13'	3,000	15	288	320	12	16	348
00	Orch.Sprayer 500 G	19,741	4	7,266	4,204	98	135	4,437
00	Pickup Truck - 3/4	16,698	7	6,334	2,377	83	115	2,575
00	Pickup Truck - Use	8,000	7	800	1,396	32	44	1,472
00	Shredder - 8' Pull	6,713	10	1,187	874	29	40	942
00	Weed Sprayer 100 gal	3947	10	698	514	17	23	554
TOTAL		146,792		35,110	19,924	659	909	21,489
60% of New Cost*		88,075		21,066	11,954	395	546	12,894

*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	
INVESTMENT								
Buildings	44,693	20		4,245	162	223	894	5,524
Fuel Tanks & Pumps	7,088	20	709	656	28	39	142	865
Irrigation System	14,000	25	1,400	1,188	56	77	154	1,475
Land - Plums	28,950	20	28,950	2,050	209	290	0	2,548
Plum Establishment	20,435	17		2,105	74	102	0	2,281
Shop Tools	12,637	15	1,264	1,344	50	70	253	1,717
TOTAL INVESTMENT	127,803		1,264	11,588	579	801	1,443	14,410

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/		Price/ Unit	Total Cost
	Farm	Unit		
Liability Insurance	100	acre	4.55	455
Office Expense	100	acre	50.00	5,000
Sanitation Fees	100	acre	3.90	390

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
SOUTHERN SAN JOAQUIN VALLEY – 2000

Yr	Description	COST PER HOUR							Total Costs/Hr.	
		Actual Hours Used	Capital Recovery	Cash Overhead			Operating			Total Operate
				Insur- ance	Taxes	Repairs	Fuel & Lube			
00	38 HP 2WD Tractor	800.20	1.66	0.07	0.10	0.38	2.34	2.72	4.55	
00	80 HP 4WD Tractor	1065.10	2.67	0.11	0.16	1.10	4.92	6.02	8.96	
00	Bin Trailers w/Bin	382.00	2.58	0.07	0.10	1.56	0.00	1.56	4.32	
00	Bin Trailers w/Bin	382.00	2.58	0.07	0.10	1.56	0.00	1.56	4.32	
00	Crowder - 13'	132.20	1.45	0.05	0.07	0.77	0.00	0.77	2.35	
00	Orch.Sprayer 500 G	499.70	5.05	0.12	0.16	3.49	0.00	3.49	8.81	
00	Pickup Truck - 3/4	284.20	5.02	0.18	0.24	1.22	3.43	4.65	10.08	
00	Pickup Truck - Used	284.20	2.95	0.07	0.09	0.58	3.43	4.01	7.12	
00	Shredder/Chopper 8'	200.10	2.62	0.09	0.12	2.75	0.00	2.75	5.57	
00	Weed Sprayer 100 G	150.00	2.05	0.07	0.09	1.05	0.00	1.05	3.26	

UC COOPERATIVE EXTENSION
Table 7. RANGING ANALYSIS
SOUTHERN SAN JOAQUIN VALLEY - 2000

COSTS PER ACRE AT VARYING YIELD TO PRODUCE FRIAR PLUM

	YIELD (28 lb box/acre)						
	750	800	850	900	950	1,000	1,050
OPERATING COSTS/ACRE:							
Cultural Cost	2,429	2,429	2,429	2,429	2,429	2,429	2,429
Harvest Cost	3,457	3,688	3,918	4,148	4,379	4,609	4,840
Interest on operating capital	121	123	125	127	129	132	134
TOTAL OPERATING COSTS/ACRE	6,007	6,240	6,472	6,704	6,937	7,170	7,403
TOTAL OPERATING COSTS/BOX	9.33	9.12	8.93	8.77	8.62	8.49	8.37
CASH OVERHEAD COSTS/ACRE	221	221	221	221	221	221	222
TOTAL CASH COSTS/ACRE	6,228	6,461	6,693	6,925	7,158	7,391	7,625
TOTAL CASH COSTS/BOX	8.30	8.08	7.87	7.69	7.53	7.39	7.26
NON-CASH OVERHEAD COSTS/ACRE	978	980	982	984	986	988	990
TOTAL COSTS/ACRE	7,206	7,441	7,675	7,909	8,144	8,379	8,615
TOTAL COSTS/BOX	9.61	9.30	9.03	8.79	8.57	8.38	8.20

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR PLUMS

(\$/box)	YIELD (28 lb box/acre)						
Plums	750	800	850	900	950	1,000	1,050
6.50	-1,132	-1,040	-947	-854	-762	-670	-578
7.00	-757	-640	-522	-404	-287	-170	-53
7.50	-382	-240	-97	46	188	330	472
8.00	-7	160	328	496	663	830	997
8.50	368	560	753	946	1,138	1,330	1,522
9.00	743	960	1,178	1,396	1,613	1,830	2,047
9.50	1,118	1,360	1,603	1,846	2,088	2,330	2,572

NET RETURNS PER ACRE ABOVE CASH COSTS FOR PLUM

\$/box	YIELD (28 lb box/acre)						
Plums	750	800	850	900	950	1,000	1,050
6.50	-1,353	-1,261	-1,168	-1,075	-983	-891	-800
7.00	-978	-861	-743	-625	-508	-391	-275
7.50	-603	-461	-318	-175	-33	109	250
8.00	-228	-61	107	275	442	609	775
8.50	147	339	532	725	917	1,109	1,300
9.00	522	739	957	1,175	1,392	1,609	1,825
9.50	897	1,139	1,382	1,625	1,867	2,109	2,350

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR PLUMS

\$/box	YIELD (28 lb box/acre)						
Plums	750	800	850	900	950	1,000	1,050
6.50	-2,331	-2,241	-2,150	-2,059	-1,969	-1,879	-1,790
7.00	-1,956	-1,841	-1,725	-1,609	-1,494	-1,379	-1,265
7.50	-1,581	-1,441	-1,300	-1,159	-1,019	-879	-740
8.00	-1,206	-1,041	-875	-709	-544	-379	-215
8.50	-831	-641	-450	-259	-69	121	310
9.00	-456	-241	-25	191	406	621	835
9.50	-81	159	400	641	881	1,121	1,360

UC COOPERATIVE EXTENSION
Table 8. COSTS AND RETURNS / BREAKEVEN ANALYSIS
SOUTHERN SAN JOAQUIN VALLEY - 2000
Friar Variety

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Return Above Oper. Costs (1-2)	4. Cash Costs	5. Net Return Above Cash Costs (1-4)	6. Total Costs	7. Net Return Above Total Costs (1-6)
Plum	7,200	6,705	495	6,926	274	7,910	-710

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Return Above Oper. Costs (1-2)	4. Cash Costs	5. Net Return Above Cash Costs (1-4)	6. Total Costs	7. Net Return Above Total Costs (1-6)
Plum	36,000	33,525	2,475	34,631	1,369	39,551	-3551

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price to Cover		
			Operating Costs	Cash Costs	Total Costs
Plum	900	Box	7.45	7.70	8.79

BREAKEVEN YIELD PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield to Cover		
			Operating Costs	Cash Costs	Total Costs
Plum	Box	8.00	838.10	865.80	988.80