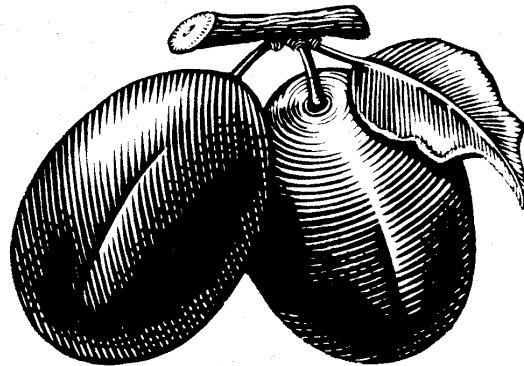

1998

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS
TO ESTABLISH A PRUNE ORCHARD AND PRODUCE

~PRUNES~



SACRAMENTO VALLEY
French Variety & Low-Volume Irrigation

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UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

1998 SAMPLE COSTS TO ESTABLISH A PRUNE ORCHARD AND PRODUCE PRUNES Sacramento Valley

INTRODUCTION

The detailed costs for orchard establishment and prune production in the Sacramento Valley are presented in this study. The hypothetical farm used in this report consists of a total of 40 acres; 35 acres planted to prunes and 5 acres are in farmstead, roads, and pumping stations.

The practices described in this cost study are considered typical for this crop and area. Sample costs given for labor, materials, equipment and contract services are based on current figures. Some costs and practices detailed in this study may not be applicable to your situation. A blank *Your Cost* column is also provided to enter your actual costs on Table 2. Costs Per Acre To Produce Prunes and Table 3. Costs And Returns Per Acre To Produce Prunes. This study is only intended as a guide and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans.

This study consists of General Assumptions for Establishing a Prune Orchard and Producing Prunes and eight tables.

Table 1.	Costs Per Acre to Establish a French Prune Orchard
Table 2.	Costs Per Acre to Produce French Prunes
Table 3.	Monthly Cash Costs Per Acre to Produce French Prunes
Table 4.	Whole Farm Annual Equipment, Investment and Business Overhead
Table 5.	Hourly Equipment Costs
Table 6.	Ranging Analysis
Table 7.	Costs And Returns/Breakeven Analysis
Table 8.	Details of Costs Per Acre to Produce French Prunes

For an explanation of calculations used for the study refer to the attached General Assumptions, call the Department of Agricultural and Resource Economics, Cooperative Extension, University of California, Davis, California, (530) 752-3589 or call the farm advisor in your county.

This and other cost of production studies can be ordered from the Department of Agricultural and Resource Economics, U.C. Davis, or selected county Cooperative Extension offices.

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UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

1998 SAMPLE COSTS TO ESTABLISH A PRUNE ORCHARD AND PRODUCE PRUNES Sacramento Valley

ASSUMPTIONS

The following is a description of some general assumptions pertaining to sample costs to establish a prune orchard and produce prunes in the Sacramento Valley. Practices described should not be considered recommendations by the University of California, but rather represent production procedures considered typical for this crop and area. Costs and practices detailed in this study may not be applicable to all situations. Establishment and cultural practices for the production of prunes vary by grower and region. Variations can be significant. The practices and inputs used in this cost study serve only as a sample or guide. These costs are represented 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.**

Land. The farm consists of 105 acres of land. One hundred acres are planted to prunes and five acres include roads, irrigation systems and farmstead. The orchard is farmed by the owner; additional management costs ranging from \$60 to \$100 per acre occur if practices are contracted. Bare ground is valued at \$3,000 per acre. Because only 100 of the 105 acres is planted with prunes, land is valued at \$3,150 per producing acre.

Trees. The variety is Improved French. The trees are planted at 18' X 18' diamond spacing, 155 trees per acre, leaving 15.6' between rows. Prune trees have a long production life if they are well maintained. The life of the orchard at the time of planting in this study is estimated to be 30 years.

Irrigation System. The cost is based on system pumping 42 acre-inches of water from a depth of 90 feet over 100 acres. Water is pumped to the orchard through permanent, underground pipelines. The cost of pumping water and irrigation labor are included as cultural costs in Tables 1 and 2. The orchard is assumed to have been previously farmed open agricultural ground, therefore a pump and well already exist and the cost of the irrigation system is for the recasing of the well, refurbishment of the pump and motor in addition to the installation of a new underground, permanent pipeline, and driplines. The new irrigation system is installed after the orchard has been laid out and prior to planting. The life of the irrigation system is estimated at 30 years.

The irrigation system is considered an improvement to the property and is shown in the non-cash overhead sections of Tables 1-3 and the Investments portion of Table 5.

ESTABLISHMENT CULTURAL PRACTICES

This orchard is established on ground that has been previously planted to crops. The land is assumed to be deep, well drained class I or II soil.

Site Preparation. If the orchard was previously planted to other tree crops, nematode sampling before planting is advised. Land preparation begins with subsoiling the soil profile to 3 feet in order to break up any compaction to improve root and water penetration. Subsoiling is performed by contract operators. The ground is then disced several times to break up large clods of soil so that the field can be floated. Floating removes high and low spots in the field in order to allow for efficient irrigation. All operations that prepare the orchard for planting are done in the year prior to planting. However, for this study, these costs are included with those incurred in the first year as shown in Table 1. Although fumigation is not included in this study, it may be recommended depending on the outcome of nematode sample analysis.

Planting, Training, and Pruning. Tree sites are marked, holes are dug, trees planted, painted, and a tree wrap is installed. New trees are topped soon after planting. Regular pruning begins in the second year and costs increase annually. In the second year, 2% of the trees or 3 trees per acre will have to be replanted. In the fifth year tree branches are tied with twine to reduce limb breakage.

Fertilization. Nitrogen is the major nutrient required for proper tree growth and optimum yields. Nitrogen fertilizer is applied through the irrigation lines at increasing rates during orchard establishment. Annual rates of actual N are shown in Table A. Potassium is applied annually at maintenance levels. In this study, it is injected through the irrigation system in the form of potassium sulfate (50% K₂O and 18% S) at a rate of 300 pounds of material per acre starting in the fourth year.

Table A. Applied nitrogen during establishment years		
Year	Pounds Per Acre	
	Lbs/Acre of N	Gals/Acre of UN 32
1	25	7.1
2	50	14.2
3	75	21.4
4+	100	28.6

Irrigation. Price per acre foot of water will vary by grower in this region depending on power source, cost, various well characteristics, and other irrigation factors. In this study, water is estimated to cost \$48.60 per acre foot. No assumption is made about effective rainfall. The amount of water applied to the orchard being established varies each year and is shown in Table B.

Table B. Applied irrigation water	
Year	AcFt/Year
1	0.75
2	1.5
3	2.0
4	3.0
5+	3.5

Orchard Floor Management. Chemical weed control in the tree row for this study, begins the first year with both a residual herbicide sprayed along the tree row and spot spraying with a foliar-applied herbicide. In subsequent years the herbicide combination in the dormant strip spray is used for broader spectrum weed control. The summer strip spray again uses foliar-applied herbicides at higher rate. Vegetation in the row middles during the life of the orchard is managed by mowing five times during the growing season.

Insect and Disease Management. In this study, insect control is initiated in the 2nd year. Insects of concern include San Jose scale, peach twig borer, and various aphids and mites. Dormant oil and insecticide are applied using a handgun in the second year during February for control of overwintering insects and mites. An airblast sprayer applies necessary dormant insect spray beginning the third year. One in-season spray is allocated to manage out-breaks of problem insects in the fourth year.

Disease management is directed towards brown rot and prune russet or lacy scab during bloom. Treatments for both begin in the fourth year at green tip and bloom. treatments for prune rust may be required, but are not included in this study.

Establishment Cost. The cost to establish the orchard is used to determine non-cash overhead expenses, depreciation, and interest on investment for production years. The establishment cost are the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing prune trees through the first year fruit is harvested. The *Total Accumulated Net Cash Cost* in the fourth year shown in Table 1, represents the establishment cost per acre. For this study, this cost is \$3,646 per producing acre or \$364,600 for the 100 acre orchard. Orchard establishment cost is amortized over the remaining 26 years of the 30 years that the orchard is assumed to be in production.

PRODUCTION CULTURAL PRACTICES AND INPUTS

Pruning. Pruning is done by hand during the winter months. It is assumed for this study that 28.7 labor hours per acre are required to complete pruning. Prunings are placed into the row middles and shredded using a flail mower.

Fertilization. Mature tree nutrition is determined by leaf analysis in July. Nitrogen is applied at a rate of 100 pounds of N per acre. Nitrogen fertilizer is in a liquid form and injected spring through summer. Potassium levels are maintained with applications of potassium sulfate at 300 pounds of material per acre spring through summer.

Orchard Floor Management. Weeds in mature orchards are controlled with the same combination of chemical and cultural (mowing) practices as one being established.

Insect and Disease Management. Insects and diseases are managed the same as in the fifth year of establishment.

Pesticide Recommendations. For specific pesticides choices and rates consult the *UC_IPM Pest Management Guidelines, Prunes* and *Prune Orchard Management*. Inputs cited in this report are not recommendations. 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.

Harvest. Prunes are mechanically harvested in the fourth year. All costs for contracted harvest operations are charged on fresh (undried) tons. Drying reduces the weight of fresh prunes by approximately

two thirds. Full production is reached in the seventh year. In this cost study, the crop is harvested and hauled by a contracted harvesting company. Drying costs are paid by the grower.

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 replaced with the cost of grower performed harvest and hauling in Harvest costs in Tables 1-3.

Assessments. Under a state marketing order, mandatory assessment fees are collected by the California Prune Board (CPB). This assessment is charged to the grower to fund prune marketing, advertising, and research programs administered by the CPB. The portion of the assessment paid by the grower is \$28 per dry ton.

Yields and Returns. Typical annual yields for prunes are measured in dry tons per acre and are shown in Table C. These yields are from the fourth year of orchard establishment to maturity.

Year	Tons Per Acre	
	Green (3 green tons = 1 dry ton)	Dry
4	2.4	0.80
5	4.0	1.33
6	8.0	2.67
7+	12.0	4.00

Market value is estimated price of \$800 per dry ton or \$0.40 per pound of French prunes is used in this study so that a ranging analysis for different yields and price can be calculated. Returns, shown in Table 6, will vary and the yields and prices used in this cost study are an estimate taking into consideration current situations.

Risk. The risks associated with producing and marketing walnuts 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 prune production.

Risk is caused by various sources of uncertainty which include production, price, and financial. Examples of these are insect damage, a decrease in price, or an increase in interest rates. Due to the risk involved, access to a market is crucial. A market channel should be determined before prune orchards are planted and brought into production.

Labor. Hourly wages for workers are \$7.86, and \$5.75 per hour for skilled, and field workers respectively. Adding 34% for Workers Compensation, Social Security, Medicare insurance, and other possible benefits gives the labor rates shown of \$10.53 per hour for skilled labor, and \$7.71 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. Returns above total costs is considered a return to management and risk.

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 1-5.

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 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 10.46% per year. A nominal interest rate is the going market cost of borrowed funds.

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 7.13% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$625 for the entire farm.

Office Expense Office and business expenses are estimated at \$44 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 \$672 annually. This cost includes delivery and servicing of toilets.

Non-Cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment on prune orchards in the Sacramento Valley might 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 Tables 1-4. They 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). Put another way, it is equivalent to the annual payment on a loan for the investment with the downpayment 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 calculation for the annual capital recovery costs is as follows. The calculation for the annual capital recovery costs is as follows.

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

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its life. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. The life in years is estimated by dividing the wear-out life, as given by American Society of Agricultural Engineers (ASAE) by the annual use in hours. Salvage value is calculated by Boelje and Eidman as

$$\text{New Price} \times \% \text{Remaining Value}$$

Salvage value for other investments including irrigation systems, buildings, and miscellaneous equipment is zero. The salvage value for land is equal to the purchase price because land does not depreciate from use. The purchase price and salvage value for certain equipment and investments are shown in Table 4.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. It is the function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 7.81% 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 real 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, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

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.

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 fuel 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 cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time. Prices for on-farm delivery of diesel and gasoline are \$0.78 and \$1.22 per gallon, respectively.

Acknowledgment. Appreciation is expressed to those growers and other cooperators who provided support for this study.

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University of California. 1981. Prune Orchard Management. Pub. 3269. University of California, Division of Agriculture and Natural Resources. Oakland, CA.

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.

Table 1.

U.C. COOPERATIVE EXTENSION
 SAMPLE COSTS PER ACRE TO ESTABLISH A PRUNE ORCHARD
 SACRAMENTO VALLEY - 1998

Year	Cost Per Acre						
	1st	2nd	3rd	4th	5th	6th	7th
Green Tons Per Acre				2.40	4.80	8.00	12.00
Planting Costs:							
Land Preparation - Subsoil	\$125						
Land Preparation - Disc	13						
Land Preparation - Float	10						
Land Preparation - Build Berms	2						
Layout Orchard, Dig Holes & Plant	279	\$5					
Trees: 155 Per Acre (2% Replant In 2nd Year)	680	13					
Paint & Wrap Trees	28	1					
TOTAL PLANTING COSTS	1,137	19					
Cultural Costs:							
Insect Control - Dormant Spray		22	\$34	\$34	\$38	\$38	\$38
Tie Trees					62		
Pruning & Suckering	40	100	150	200	221	221	221
Brush Disposal				33	33	33	33
Fertilizer - Nitrogen	14	24	29	39	39	39	39
Fertilizer - Potassium				37	37	37	37
Weed Control - Summer Strip Spray	9	11	11	11	11	11	11
Weed Control - Dormant Strip Spray	34	42	42	42	51	51	51
Disease Control - Green Tip				21	39	39	39
Disease Control - Full Bloom				13	22	22	22
Pollination				10	40	40	40
Mow 5X	35	35	35	35	35	35	35
Irrigate	40	76	101	149	149	149	149
Insect Control - In-Season Spray				55	55	55	55
Pickup Truck Use	52	52	52	52	52	52	52
ATV Use	40	40	40	40	40	40	40
Consultant Services	5	5	5	21	21	21	21
Leaf Analysis	1	1	1	1	1	1	1
TOTAL CULTURAL COSTS	270	408	500	793	946	884	884
Harvest Costs:							
Shake, Catch, & Field Size - Contract				63	113	172	258
Haul To Dryer - Contract				19	32	54	81
Dry Fruit - Contract				163	326	520	780
TOTAL HARVEST COSTS				245	471	746	1,119

Table 1. Continued

U.C. COOPERATIVE EXTENSION
 SAMPLE COSTS PER ACRE TO ESTABLISH A PRUNE ORCHARD
 SACRAMENTO VALLEY - 1998

Year	Cost Per Acre						
	1st	2nd	3rd	4th	5th	6th	7th
Green Tons Per Acre				2.40	4.80	8.00	12.00
Assessments:							
California Prune Board				24	48	75	112
TOTAL ASSESSMENT COSTS				24	48	75	112
Interest On Operating Capital @ 10.46%	102	16	25	31	40	40	44
TOTAL OPERATING COSTS/ACRE	1,509	443	525	1,093	1,505	1,745	2,159
Cash Overhead Costs:							
Office Expense	44	44	44	44	44	44	44
Sanitation Fees	6	6	6	6	6	6	6
Liability Insurance	7	7	7	7	7	7	7
Property Taxes	49	50	47	47	44	44	44
Property Insurance	35	36	34	34	34	34	34
Investment Repairs	45	45	45	45	45	45	45
TOTAL CASH OVERHEAD COSTS	186	188	183	183	180	180	180
TOTAL CASH COSTS/ACRE	1,695	631	708	1,252	1,637	1,850	2,227
INCOME/ACRE FROM PRODUCTION				640	1,280	2,133	3,200
NET CASH COSTS/ACRE FOR THE YEAR	1,695	631	708	612	357		
PROFIT/ACRE ABOVE CASH COSTS						283	973
ACCUMULATED NET CASH COSTS/ACRE	1,695	2,326	3,034	3,646	4,003	3,720	2,747
Capital Recovery Cost:							
Land @ \$3,150/Producing Acre	246	246	246	246	246	246	246
Shop Building	42	42	42	42	42	42	42
Furrow Irrigation System	167	167	167	167	167	167	167
Shop Tools	14	14	14	14	14	14	14
Ladders - 10 Total	2	2	2	2	2	2	2
Hand Tools	5	5	5	5	5	5	5
Equipment	132	148	88	88	88	88	88
TOTAL CAPITAL RECOVERY COST	608	624	564	564	564	564	564
TOTAL COST/ACRE FOR THE YEAR	2,303	1,255	1,272	1,816	2,201	2,414	2,791
INCOME/ACRE FROM PRODUCTION				640	1,280	2,133	3,200
TOTAL NET COST/ACRE FOR THE YEAR	2,303	1,255	1,272	1,176	921	281	
NET PROFIT/ACRE ABOVE TOTAL COST							409
TOTAL ACCUMULATED NET COST/ACRE	2,303	3,558	4,830	6,006	6,927	7,208	6,799

Table 2.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE PRUNES
 SACRAMENTO VALLEY - 1998

Labor Rate: \$10.53/hr. machine labor
 \$7.71/hr. non-machine labor

Operating Interest Rate: 10.46%
 Yield per Acre: 4.00 Dry Ton

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre				Total Cost	Your Cost
		Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:							
Insect Control - Dormant	0.19	2	1	24	0	28	
Pruning & Sucker	28.70	221	0	0	0	221	
Chop Brush	0.33	31	2	0	0	33	
Disease Control - Green Tip	0.19	2	1	35	0	39	
Disease Control - Full Bloom	0.19	2	1	19	0	22	
Fertilize - Nitrogen	0.00	0	0	39	0	39	
Fertilize - Potassium	0.00	0	0	37	0	37	
Irrigate	1.85	14	0	146	0	160	
Mow Centers - 5X	1.67	21	10	0	0	31	
Insect Control - In-Season Spray	0.19	2	1	51	0	55	
Pollination	0.00	0	0	0	40	40	
Shaker Thin Fruit	0.00	0	0	0	55	55	
Weed Control - Summer Strip	0.14	2	1	8	0	11	
Weed Control - Dormant Strip	0.14	2	1	49	0	51	
Pickup Truck Use	2.85	36	14	0	0	50	
ATV Use	2.85	36	4	0	0	40	
PCA Service	0.00	0	0	0	21	21	
Leaf Analysis	0.00	0	0	0	1	1	
TOTAL CULTURAL COSTS	39.30	373	36	408	117	934	
Harvest:							
Shake, Catch, & Field Sort	0.00	0	0	0	317	317	
Haul To Dryer	0.00	0	0	0	96	96	
Dry Fruit	0.00	0	0	0	816	816	
TOTAL HARVEST COSTS	0.00	0	0	0	1229	1229	
Assessment:							
California Prune Board	0.00	0	0	120	0	120	
TOTAL ASSESSMENT COSTS	0.00	0	0	120	0	120	
Interest on operating capital @ 10.46%						45	
TOTAL OPERATING COSTS/ACRE		373	36	528	1346	2328	
CASH OVERHEAD:							
Office Expense						44	
Sanitation Fees						7	
Liability Insurance						6	
Property Taxes						65	
Property Insurance						47	
Investment Repairs						45	
TOTAL CASH OVERHEAD COSTS						214	
TOTAL CASH COSTS/ACRE						2542	
NON-CASH OVERHEAD:							
		Per producing		-- Annual Cost --			
<u>Investment</u>		<u>Acres</u>		<u>Capital Recovery</u>			
Buildings		417		42		42	
Shop Tools		124		14		14	
Hand Tools		45		5		5	
Ladders		14		2		2	
Land		3150		246		246	
Low Volume Irrigation System		1661		167		167	
Prune Orchard Establishment		3650		332		332	
Equipment		694		88		88	
TOTAL NON-CASH OVERHEAD COSTS		9754		895		895	
TOTAL COSTS/ACRE						3437	

Table 3.

U.C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE PRUNES
SACRAMENTO VALLEY - 1998

Beginning JAN 98 Ending DEC 98	JAN 98	FEB 98	MAR 98	APR 98	MAY 98	JUN 98	JUL 98	AUG 98	SEP 98	OCT 98	NOV 98	DEC 98	TOTAL
Cultural:													
Insect Control - Dormant	28												28
Pruning & Sucker			221										221
Chop Brush			33										33
Disease Control - Green Tip			39										39
Disease Control - Full Bloom			22										22
Fertilize - Nitrogen				39									39
Fertilize - Potassium				37									37
Irrigate				15	33	30	30	30	22				160
Mow Centers - 5X				6	6	6	6	6					31
Insect Control - In-Season Spray				55									55
Pollination					40								40
Shaker Thin Fruit					55								55
Weed Control - Summer Strip					11								11
Weed Control - Dormant Strip										51			51
Pickup Truck Use	4	4	4	4	4	4	4	4	4	4	4	4	50
ATV Use	3	3	3	3	3	3	3	3	3	3	3	3	40
PCA Service	2	2	2	2	2	2	2	2	2	2			21
Leaf Analysis					1								1
TOTAL CULTURAL COSTS	37	10	325	162	156	45	45	45	32	61	7	7	934
Harvest:													
Shake, Catch, & Field Size								317					317
Haul To Dryer								96					96
Dry Fruit								816					816
TOTAL HARVEST COSTS								1229					1229
Assessment:													
California Prune Board								120					120
TOTAL ASSESSMENT COSTS								120					120
Interest on oper. capital	0	0	3	5	6	6	7	19	-1	-1	-0	-0	45
TOTAL OPERATING COSTS/ACRE	37	10	329	167	162	52	52	1413	31	60	7	7	2328
OVERHEAD:													
Office Expense	4	4	4	4	4	4	4	4	4	4	4	4	44
Sanitation Fees		7											7
Liability Insurance	6												6
Property Taxes	33						33						65
Property Insurance	23						23						47
Investment Repairs	4	4	4	4	4	4	4	4	4	4	4	4	45
TOTAL CASH OVERHEAD COSTS	70	14	7	7	7	7	63	7	7	7	7	7	214
TOTAL CASH COSTS/ACRE	107	24	336	174	169	59	116	1421	39	68	15	15	2542

Table 4.

U.C. COOPERATIVE EXTENSION
 WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SACRAMENTO VALLEY - 1998

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
98	55 HP 2WD Tractor	32269	12	8068	3810	144	202	4155
98	62 HP 2WD Tractor	28850	15	5617	3122	123	172	3417
98	ATV 4WD	4219	7	1600	625	21	29	675
98	Mower - Flail 10'	8380	10	1482	1135	35	49	1219
98	Orchard Sprayer - 500 Gal	19741	10	3491	2674	83	116	2873
98	Pickup Truck - 1/2 Ton	18200	7	6904	2695	90	126	2910
98	Weed Sprayer - 100 Gal	3947	10	698	535	17	23	574
TOTAL		115606		27860	14594	511	717	15823
60% of New Cost *		69364		16716	8757	307	430	9494

* 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	41672	20		4185	149	208	833	5374
Hand Tools	4505	15	451	503	18	25	50	596
Ladders	1371	10	137	193	5	8	0	206
Land	315000	30	315000	24601	2246	3150	0	29997
Low Volume Irrigation System	166094	30		16678	592	830	3322	21423
Prune Orchard Establishment	364600	26		33206	1301	1825	0	36333
Shop Tools	12389	15	1239	1384	49	68	247	1748
TOTAL INVESTMENT	906031		316827	80752	4359	6114	4452	95677

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	100.00	Acre	6.25	625
Office Expense	100.00	Acre	44.00	4400
Sanitation Fees	100.00	Acre	6.72	672

Table 5.

U.C. COOPERATIVE EXTENSION
 HOURLY EQUIPMENT COSTS
 SACRAMENTO VALLEY - 1998

Yr Description	Actual Hours Used	COSTS PER HOUR					Total Oper.	Total Costs/Hr.
		Capital Recovery	- Cash Insur- ance	Overhead - Taxes	Repairs	Operating Fuel & Lube		
98 55 HP 2WD Tractor	256.6	8.91	0.34	0.47	1.39	2.42	3.81	13.52
98 62 HP 2WD Tractor	78.7	23.80	0.94	1.31	1.19	2.73	3.92	29.97
98 ATV 4WD	285.0	1.32	0.04	0.06	0.31	0.94	1.25	2.67
98 Mower - Flail 10'	199.8	3.41	0.11	0.15	1.79	0.00	1.79	5.45
98 Orchard Sprayer - 500 Gal	76.4	21.00	0.65	0.91	2.42	0.00	2.42	24.98
98 Pickup Truck - 1/2 Ton	285.0	5.67	0.19	0.26	1.32	3.51	4.83	10.96
98 Weed Sprayer - 100 Gal	28.6	11.23	0.35	0.49	1.04	0.00	1.04	13.11

Table 6.

RANGING ANALYSIS
 SACRAMENTO VALLEY - 1998

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE PRUNES

	YIELD (TON/ACRE)						
	1.5	2.0	2.5	3.0	3.5	4.0	4.5
OPERATING COSTS/ACRE:							
Cultural Cost	934	934	934	934	934	934	934
Harvest Cost	506	674	843	1012	1180	1349	1517
Interest on operating capital	38	39	41	42	44	45	47
TOTAL OPERATING COSTS/ACRE	1478	1648	1818	1988	2158	2328	2498
TOTAL OPERATING COSTS/TON	985	824	727	663	617	582	555
CASH OVERHEAD COSTS/ACRE							
	214	214	214	214	214	214	214
TOTAL CASH COSTS/ACRE	1691	1861	2031	2201	2371	2542	2712
TOTAL CASH COSTS/TON	1127	931	813	734	678	635	603
NON-CASH OVERHEAD COSTS/ACRE							
	895	895	895	895	895	895	895
TOTAL COSTS/ACRE	2586	2756	2926	3096	3267	3437	3607
TOTAL COSTS/TON	1724	1378	1171	1032	933	859	801

Table 6. Continued

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SACRAMENTO VALLEY - 1998

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR PRUNES

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Prunes	1.5	2.0	2.5	3.0	3.5	4.0	4.5
650.00	-503	-348	-193	-38	117	272	427
700.00	-428	-248	-68	112	292	472	652
750.00	-353	-148	57	262	467	672	877
800.00	-278	-48	182	412	642	872	1102
850.00	-203	52	307	562	817	1072	1327
900.00	-128	152	432	712	992	1272	1552
950.00	-53	252	557	862	1167	1472	1777

NET RETURNS PER ACRE ABOVE CASH COSTS FOR PRUNES

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Prunes	1.5	2.0	2.5	3.0	3.5	4.0	4.5
650.00	-716	-561	-406	-251	-96	58	213
700.00	-641	-461	-281	-101	79	258	438
750.00	-566	-361	-156	49	254	458	663
800.00	-491	-261	-31	199	429	658	888
850.00	-416	-161	94	349	604	858	1113
900.00	-341	-61	219	499	779	1058	1338
950.00	-266	39	344	649	954	1258	1563

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR PRUNES

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Prunes	1.5	2.0	2.5	3.0	3.5	4.0	4.5
650.00	-1611	-1456	-1301	-1146	-992	-837	-682
700.00	-1536	-1356	-1176	-996	-817	-637	-457
750.00	-1461	-1256	-1051	-846	-642	-437	-232
800.00	-1386	-1156	-926	-696	-467	-237	-7
850.00	-1311	-1056	-801	-546	-292	-37	218
900.00	-1236	-956	-676	-396	-117	163	443
950.00	-1161	-856	-551	-246	58	363	668

Table 7.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS / BREAKEVEN ANALYSIS
 SACRAMENTO VALLEY - 1998

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Prunes	3200	2328	872	2542	658	3437	-237

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Prunes	320000	232794	87206	254154	65846	343662	-23662

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price To Cover		
			Operating Costs	Cash Costs	Total Costs
Prunes	4.0	Ton	581.99	635.39	859.16

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield To Cover		
			Operating Costs	Cash Costs	Total Costs
Prunes	Ton	800.00	2.9	3.2	4.3

Table 8.

U.C. COOPERATIVE EXTENSION
 DETAILS OF CASH COSTS PER ACRE TO PRODUCE PRUNES
 SACRAMENTO VALLEY - 1998

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.

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost

GROSS RETURNS					
Prunes	4.00	Dry Ton	800.00	<u>3200</u>	
TOTAL GROSS RETURNS FOR PRUNES				3200	

OPERATING COSTS					
Acaracide:					
Dormant Oil	4.00	Gal	2.95	12	
Insecticide:					
Diazinon 50 WP	4.00	Lb	4.72	19	
Rovral	1.50	Lb	23.60	35	
Javelin WG	2.00	Lb	25.74	51	
Fungicide:					
Captan 50W	6.00	Lb	3.11	19	
Fertilizer:					
UN-32	100.00	Lb N	0.393	39	
Potassium Sulfate	300.00	Lb	0.123	37	
Irrigation:					
Water	36.00	AcIn	4.05	146	
Contract:					
Pollination Fee	1.00	Hive	40.00	40	
Shake & Catch	12.00	Ton	23.50	282	
Field Size Prunes	12.00	Ton	2.90	35	
Haul - Custom	12.00	Ton	8.00	96	
Dry Fruit	12.00	Ton	68.00	816	
Shaker Thinning	1.00	Acre	55.00	55	
Custom:					
PCA Fees	1.00	Acre	21.00	21	
Leaf Analysis	1.00	Acre	1.00	1	
Herbicide:					
Roundup Ultra	1.78	Pint	7.84	14	
Surflan 4 AS	3.04	Pint	10.46	32	
Goal 2 XL	0.76	Pint	14.48	11	
Assessment:					
California Prune Board	4.00	Ton	30.00	120	
Labor (machine)	10.50	Hrs	10.53	111	
Labor (non-machine)	34.05	Hrs	7.71	263	
Fuel - Gas	9.02	Gal	1.22	11	
Fuel - Diesel	9.33	Gal	0.78	7	
Lube				3	
Machinery repair				15	
Interest on operating capital @ 10.46%				<u>45</u>	
TOTAL OPERATING COSTS/ACRE				2328	
NET RETURNS ABOVE OPERATING COSTS				872	

CASH OVERHEAD COSTS:					
Office Expense				44	
Sanitation Fees				7	
Liability Insurance				6	
Property Taxes				65	
Property Insurance				47	
Investment Repairs				<u>45</u>	
TOTAL CASH OVERHEAD COSTS/ACRE				214	
TOTAL CASH COSTS/ACRE				<u>2542</u>	
