

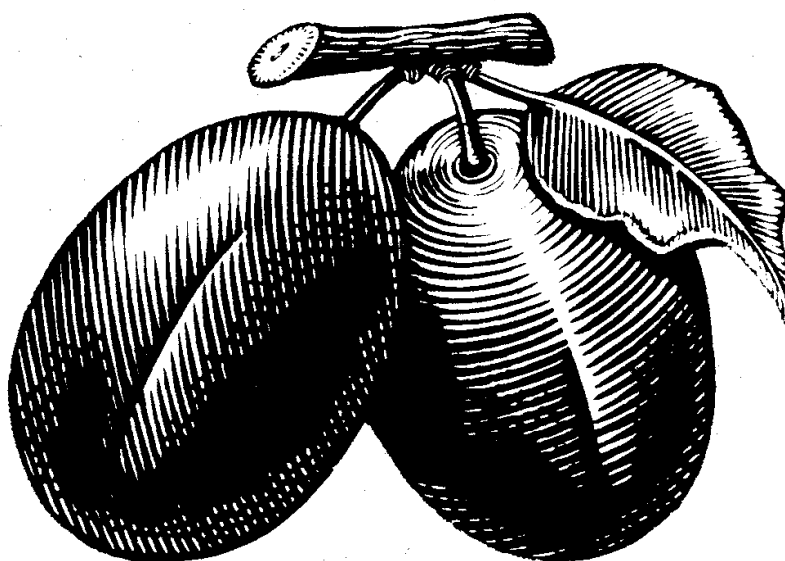
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1997

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS  
TO ESTABLISH A PRUNE ORCHARD AND PRODUCE  
*~PRUNES~*



*FRENCH VARIETY*  
IN THE SOUTHERN SAN JOAQUIN VALLEY

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# UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

## GENERAL INFORMATION FOR ESTABLISHING A PRUNE ORCHARD AND PRODUCING PRUNES *French Variety* in the Southern San Joaquin Valley - 1997

The detailed costs for orchard establishment and prune production in the Southern San Joaquin 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. The use of trade names is not an endorsement or a recommendation. 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.	Sample Costs Per Acre To Establish A Prune Orchard
Table 2.	Costs Per Acre To Produce Prunes
Table 3.	Costs And Returns Per Acre To Produce Prunes
Table 4.	Monthly Cash Costs Per Acre To Produce Prunes
Table 5.	Whole Farm Annual Equipment, Investment And Business Overhead Costs
Table 6.	Hourly Equipment Costs
Table 7.	Ranging Analysis
Table 8.	Costs And Returns/Breakeven Analysis

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, (916) 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

## GENERAL ASSUMPTIONS FOR ESTABLISHING A PRUNE ORCHARD AND PRODUCING PRUNES *French Variety* in the Southern San Joaquin Valley - 1997

The following is a description of some general assumptions pertaining to sample costs to establish a prune orchard and produce prunes in the Southern San Joaquin 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. Some of these costs and practices may not be applicable to your situation nor used during every production year. Additional ones not indicated may be needed. 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 40 acres of land. Thirty five 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. Property costs \$4,000 per acre. Because only 35 of the 40 acres is planted with prunes, land is valued at \$4,571 per producing acre. Land is not depreciated.

**Trees.** The variety of prune is Improved French. The trees are planted at a more conventional spacing of 18' X 20', 121 trees per acre. Some newer orchards are being planted to higher density such as 18' X 18', 134 trees per acre. 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 40 years.

**Irrigation System.** A total of 50 acre-inches of water is applied during the growing season and in one post-harvest irrigation for a mature prune orchard. Water is delivered to the orchard from the district ditch through and underground pipe and alfalfa valve system. The life of the irrigation system is estimated at 25 years. The irrigation system is installed before the orchard is planted.

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.

The orchard is irrigated using a flood irrigation system with permanent berms (raised rows) on which the trees are planted. Berms are put up in the second season and remain for the life of the orchard. Irrigating the orchard during the first two years is accomplished by running water down furrows made on each side of the tree rows. This type of application could reduce the amount of water applied during the early years, but is not assumed in this study. No assumption is made about effective rainfall.

## Orchard Establishment Cultural Practices and Material Inputs

This orchard is established on ground that has been previously planted to field or row crops. The land is assumed to be deep, well drained and either a class I or II soil. Growers should have nematode sampling done before deciding whether or not to fumigate.

**Site Preparation.** Land preparation begins with deep ripping the soil profile to 5 to 6 feet to break up layered soil for improved root and water penetration. Ripping is performed where cemented hardpans exist. The ground is disced twice after ripping to break up large clods of soil and smooth the field in advance of planting the trees. Following discing the ground is laser leveled flat so high and low spots are removed in order to allow for efficient irrigation. The orchard site is leveled to obtain 75% irrigation (flood or furrow) efficiency. The complete acreage is fumigated with methyl bromide to manage soil pathogens and pests. A treatment of soil-residual herbicide is applied to the orchard and incorporated with a disc after leveling.

Ripping, laser leveling, and fumigation are performed by contract or custom operators. All operations that prepare the orchard for planting are done the year prior to planting, but costs are shown in the first year. This orchard is established on ground that has been previously planted to other crops.

**Planting:** Planting the orchard starts by marking tree sites with small stakes. Then holes are dug and trees planted. Later trunks are treated with white, water-based paint so they are protected from sunburn. New trees are topped soon after planting to encourage trunk and scaffold development. In the second year, 0.5% of the trees or 1 tree per acre will be lost and replanted.

**Pruning:** Regular pruning begins in the second year and hours required to perform this task and costs increase annually. The Long pruning method is used to train immature trees and bring them into production. Pruning is performed in winter months.

**Irrigation.** Water cost for irrigation is a blend of district and pumped water. Price per acre foot for water will vary from grower to grower in this region depending on particular irrigation district, and/or various well characteristics, and other irrigation factors. In this study, water is calculated to cost \$30 per acre foot. The amount of water applied to the orchard during the establishment period varies each year and is shown in Table A.

Table A. Water Use For Establishment And Production Years

Year	Acre Inches/Acre/Year <sup>1</sup>	Annual Cost/Acre
1	20	\$50
2	20	\$50
3	27	\$68
4	40	\$100
5+	50	\$120

<sup>1</sup> 25% excess water is delivered but not used by the trees do to runoff, evaporation, etc.

Water is delivered to the orchard in furrows along the tree rows during the first two years. Starting in the third year, Berms are made along the tree rows and water is flooded between them. No assumption is made about effective rainfall. The life of the irrigation system is estimated at 40 years.

**Fertilization.** Nitrogen is the major nutrient required for proper tree growth and optimum yields. Nitrogen fertilizer is applied in a liquid form, UN 32 (32% nitrogen), at increasing rates during orchard establishment. Annual rates of actual N are shown in Table B.

Year	Ounces Of N/Tree	Pounds Of N/Acre	Gallons Of UN 32/Acre
1	2	15	4.2
2	4	30	8.5
3	7	50	14.1
4	10	75	21.1
5+	13	100	28.2

**Weed Management.** Chemical weed control in the orchard begins in spring and summer of the first year with three applications of a contact herbicide, Roundup which is used to control emerged weeds as "spot sprays" where needed. That first fall a residual herbicide is sprayed along the tree rows for weed control through the following growing season. Tillage the first two seasons and mowing of row middles thereafter helps manage vegetation on the orchard floor. Discing and mowing are the mechanical weed control practice used in this study, though orchard cultivators or other tillage equipment might also be used.

**Insect and Disease Management.** During the developmental years insect control is initiated in the fall/winter of the 2nd year and disease control in the fourth. Insects of concern include San Jose scale, peach twig borer, and various aphid specie. Disease management is directed towards brown rot and prune russet or lacy scab during bloom. All insect and disease treatments are made by custom ground applications.

**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 \$6,158 per acre or \$215,530 for the 35 acre orchard. Establishment cost is depreciated beginning in the fifth year over the remaining 21 of the 25 years that the orchard is assumed to be in production.

### Production Cultural Practices and Material Inputs

**Pruning.** There are several pruning strategies for prune trees. In this study, a conventional pruning method is used and is done in the winter months by a contract pruning company. Prunings are placed in the row middles and pushed into piles out of the orchard by a tractor and brush rake. The piles are later burned.

**Fertilization.** Mature tree nutrition is determined by leaf analysis in July. Nitrogen is applied at a rate of 100 pounds of N per acre. Fertilizer is in a liquid form (UN 32 - 32% nitrogen) and applied with the irrigation water in April and June, 66% and 34% respectively. Zinc deficiencies may occur which would require a zinc sulfate foliar application. Potassium deficiency can greatly impact prune production and tree growth and

may also require a potassium sulfate application. Potassium sulfate is soil applied almost anytime of the year when deficiencies are detected.

**Weed Control.** Weeds in mature orchards are controlled with the same combination of chemical and cultural (mowing) practices as one being established. Annual weeds are controlled in the tree row during the fall with a strip spray of residual herbicide. Perennial weeds that are not controlled by the fall residual spray receive three spot sprays of a contact herbicide.

**Insect and Disease Management.** Several insect and disease pests are treated each year. An annual dormant insecticide spray is applied in mid-February to control San Jose scale, peach twig borer, and aphids. No other insect or mite control is needed during the season.

Fungicide sprays are applied prebloom and at full bloom to control brown rot and lacy scab. Although no other chemical disease control is practiced, current research has shown promise for a preharvest controls for brown rot. This may become an additional pest control practice. All insect and disease treatments are made by custom ground applications.

Pesticides, rates, and cultural practices mentioned in this cost study are a few of those listed in the UC IPM Prune Pest Management Guidelines and Prune Orchard Management. 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.** Harvest starts in the fourth year after the orchard is planted. The prunes are mechanically harvested with a shaker and fruit is collected in a catching frame, often combined with the shaker. All costs for contracted harvest operations are charged on fresh (undried) tons. Yield maturity is reached in the seventh year. In this cost study, the crop is harvested and hauled by a contracted harvesting company, although some growers harvest their prunes themselves. Drying costs are paid by the grower on a fresh weight basis.

Field sizing is a practice to remove undersized fruit in the field so unsalable prunes are not dried. Culled prunes are left on the orchard floor and shredded.

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 in Harvest costs in Tables 1 and 2, with the cost of grower performed harvest and hauling costs.

**Assessments.** Under a state marketing order, mandatory assessment fees are collected by the California Prune Board (CPB). These assessments are charged to the grower to pay for prune marketing and advertising programs. The assessment averages about \$30 per dry ton and is paid by the grower.

**Yields and Returns.** As noted in the previous section, French prunes begin bearing an economic crop in the fourth year after planting. Typical annual yields for prunes are measured in dry tons per acre and are shown in Table C. The industry averages 3.3 fresh tons per one dry ton. Additionally, 5% of the gross dry yield is lost to trash, undersized, and off-grade fruit. Average fruit size varies inversely with yield. These yields are from the fourth year of orchard establishment to maturity.

Table C. Annual Yield Per Acre For Establishment And Production Years

Year	Tons Per Acre		
	Fresh	Dry	
		Gross	Net
4	0.5	0.15	0.14
5	1.9	0.75	0.71
6	5.0	1.50	1.43
7	6.7	2.00	1.90
8+	13.3	4.00	3.80

An estimated price of a \$800 per dry ton 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 7, 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 prunes 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 French prune production.

The market for prunes can be volatile in both price and demand. Growers do not have control over either of these market components. Additionally, establishment of prune orchards and the equipment required to properly handle the crop is very capital intensive. Risk is caused by factors such as a change in the demand for French prunes, oversupply, or crop losses. Due to risk involved, access to a market is crucial. A market channel should be determined before any prune orchards are planted and brought into production.

Prunes require dehydration to develop the dry product. Prune dryers and drying space within dryers are limited. Before prunes are planted, it is important to ascertain where the eventual drying will take place.

**Labor.** Hourly wages for workers are \$8.00 and \$5.15 per hour for machine and non-machine workers, respectively. Adding 34% for Workers Compensation, Social Security, Medicare, insurance, and other possible benefits gives the labor rates shown of \$10.72 and \$6.90 per hour for machine labor and non-machine labor, respectively. The percentage charged for benefits varies depending upon whether or not growers utilize labor contractors or hire their own laborers. For those growers hiring their own labor, benefit percentages may be lower than 34%.

On March 1, 1997, the minimum wage increased from \$4.25 per hour to \$5.00 per hour. It rose to \$5.15 per hour on September 1, 1997 and will increase to \$5.75 per hour by March 1, 1998. The wage rates for non-machine labor used in this study reflects the September 1, 1997 rate. Growers using wage rates different from those shown in this report may adjust their labor costs by subtracting or adding the appropriate amounts.

Labor time 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. Wages for a manager are not included as 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.

*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 10.00% 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 0.713% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$469 for the entire farm.

*Office Expense* Office and business expenses are estimated at \$100 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 \$220 annually. This cost includes delivery and servicing of toilets. Cash overhead costs are included in Tables 1-5.

**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 Southern San Joaquin 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 1-3, and 5. 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. The calculation for annual capital recovery costs is as follows.

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



*Salvage Value.* Salvage value is an estimate of the remaining market value of an investment at the end of its useful life. It is calculated differently for different investments. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. Salvage value is calculated 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. Salvage value for investments can vary. The purchase price and salvage value for certain equipment and investments are shown in Table 5.

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

*Interest Rate.* The interest rate of 8.25% used to calculate capital recovery cost is the USDA-ERS's ten year average of California's agricultural sector longrun 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.

**Equipment Cash 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 fuel, lubrication, and repairs.

In allocating equipment costs on a per acre basis, the following hourly charges are calculated first and shown in Table 6. 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 2 is 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) for a given operation to account for fueling, moving equipment, and setup time. Prices for on-farm delivery of diesel and gasoline are \$0.97 and \$1.30 per gallon, respectively.

## REFERENCES

1. Cooperative Extension, University of California, Division of Agriculture and Natural Resources. 1985. Prune Orchard Management. Pub. 21410. Cooperative Extension, University of California, Division of Agriculture and Natural Resources. Oakland, CA.
2. University of California. 1993. Prune Pest Management Guidelines. pub. 7. In M. L. Flint (ed.) UC IPM Pest Management Guidelines. Pub. 3339. Integrated Pest Management Education and Publications. University of California, Division of Agriculture and Natural Resources. Oakland, CA.

For information concerning the above mentioned references contact Southern San Joaquin Valley  
or your local county Cooperative Extension office.

Table 1.

SAMPLE COSTS PER ACRE TO ESTABLISH A PRUNE ORCHARD  
SOUTHERN SAN JOAQUIN VALLEY - 1997

Labor Rates: \$10.72/hr. machine labor

Trees Per Acre: 121

\$6.90/hr. non-machine labor

Long Term Interest Rate: 8.25%

Fiscal Year	Cost Per Acre							
	1st	2nd	3rd	4th	5th	6th	7th	8th
Net Dry Tons Per Acre				0.14	0.71	1.43	1.90	3.80
<b>Planting Costs:</b>								
Land Preparation - Subsoil	250							
Land Preparation - Disc 2X	15							
Land Preparation - Laser Level	125							
Land Preparation - Fumigate 100% Of Acreage	1,485							
Weed Control - Preplant Herbicide	39							
Incorporate Herbicide - Disc	7							
Survey, Mark, Dig Holes & Plant	363	3						
Trees: 121 Per Acre @ 4.30 ea., (0.5% in 2nd year)	558	5						
Paint Trees	14							
<b>TOTAL PLANTING COSTS</b>	<b>2,856</b>	<b>8</b>						
<b>Cultural Costs:</b>								
Pruning	12	24	36	48	61	121	182	182
Brush Disposal				13	13	18	18	18
Fertilizer - Nitrogen	16	22	30	41	51	51	51	51
Weed Control - Dormant Strip		22	22	22	22	22	22	22
Weed Control - Spot Spray	19	19	19	19	19	19	19	19
Disease Control - Brown Rot				72	72	72	72	72
Disease Control - Full Bloom				43	43	43	43	43
Disc 4X	22	22						
Mow 4X			26	26	26	26	26	26
Furrow Out 4X	20	20						
Put Up Tree Berms		6						
Irrigate	84	84	102	134	159	159	159	159
Insect Control - Dormant	30	30	59	59	59	59	59	59
Leaf Analysis				1	1	1	1	1
Consulting Services				15	15	15	15	15
Pickup Truck Use	145	145	145	145	145	145	145	145
<b>TOTAL CULTURAL COSTS</b>	<b>348</b>	<b>394</b>	<b>439</b>	<b>638</b>	<b>686</b>	<b>751</b>	<b>812</b>	<b>812</b>
<b>Harvest Costs:</b>								
Shake & Catch				18	88	175	235	465
Haul To Dryer				4	20	40	54	106
Dry Prunes				33	163	325	436	865
<b>TOTAL HARVEST COSTS</b>				<b>55</b>	<b>271</b>	<b>540</b>	<b>725</b>	<b>1,436</b>

Table 1. continued

**Assessments:**

California Prune Board				4	21	43	57	113
<b>TOTAL ASSESSMENT COSTS</b>				4	21	43	57	113
<b>Interest On Operating Capital @ 10.00%</b>	277	13	13	28	31	39	46	52
<b>TOTAL OPERATING COSTS/ACRE</b>	3,481	415	452	725	1,009	1,373	1,640	2,413
				Cost Per Acre				
Fiscal Year	1st	2nd	3rd	4th	5th	6th	7th	8th
Net Dry Tons Per Acre				0.14	0.71	1.43	1.90	3.80
<b>Cash Overhead Costs:</b>								
Office Expense	114	114	114	114	114	114	114	114
Sanitation Fees	6	6	6	6	6	6	6	6
Liability Insurance	13	13	13	13	13	13	13	13
Property Taxes	61	60	60	60	60	60	60	60
Property Insurance	43	43	43	43	43	43	43	43
Investment Repairs	63	63	63	63	63	63	63	63
<b>TOTAL CASH OVERHEAD COSTS</b>	300	299	299	299	299	299	299	299
<b>TOTAL CASH COSTS/ACRE</b>	3,781	714	751	1,024	1,308	1,672	1,939	2,712
<b>INCOME/ACRE FROM PRODUCTION</b>				112	568	1,144	1,520	3,040
<b>NET CASH COSTS/ACRE FOR THE YEAR</b>	3,781	714	751	912	740	528	419	
<b>PROFIT/ACRE ABOVE CASH COSTS</b>								328
<b>ACCUMULATED NET CASH COSTS/ACRE</b>	3,781	4,495	5,246	6,158	6,898	7,426	7,845	7,517
<b>Non-Cash Overhead Costs (Capital Recovery):</b>								
Land @ 4,571/Producing Acre	377	377	377	377	377	377	377	377
Shop Building	116	116	116	116	116	116	116	116
Furrow Irrigation System	34	34	34	34	34	34	34	34
Shop Tools	18	18	18	18	18	18	18	18
Pruning Equipment	2	2	2	2	2	2	2	2
Equipment	155	138	129	131	131	131	131	131
<b>TOTAL NON-CASH OVERHEAD COST</b>	702	685	676	678	678	678	678	678
<b>TOTAL COST/ACRE FOR THE YEAR</b>	4,483	1,399	1,427	1,702	1,986	2,350	2,617	3,390
<b>INCOME/ACRE FROM PRODUCTION</b>				112	568	1,144	1,520	3,040
<b>TOTAL NET COST/ACRE FOR THE YEAR</b>	4,483	1,399	1,427	1,590	1,418	1,206	1,097	350
<b>NET PROFIT/ACRE ABOVE TOTAL COST</b>								
<b>TOTAL ACCUMULATED NET COST/ACRE</b>	4,483	5,882	7,309	8,899	10,317	11,523	12,620	12,970

Table 2.

COSTS PER ACRE TO PRODUCE PRUNES  
SOUTHERN SAN JOAQUIN VALLEY - 1997

Labor Rates: \$10.72/hr. machine labor  
\$6.90/hr. non-machine labor

Yield: 3.8 Net Dry Tons Per Acre  
Long Term Interest Rate: 8.25%

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:								
Pruning	0.00	0	0	0	182	182		
Brush Disposal	0.40	15	2	0	0	18		
Weed Control - Dormant Strip	0.25	3	2	17	0	22		
Insect Control - Dormant Spray	0.00	0	0	39	20	59		
Pest Control - Brown Rot	0.00	0	0	52	20	72		
Pest Control - Full Bloom	0.00	0	0	23	20	43		
Mow Middles 4X	1.33	17	9	0	0	26		
Weed Control - Spot Spray 3X	0.75	10	5	4	0	19		
Irrigate	5.00	35	0	125	0	159		
Fertilizer - Nitrogen	0.00	0	0	41	10	51		
Shaker Thin Fruit	0.00	0	0	0	73	73		
Pickup Truck Use	8.14	105	41	0	0	145		
Leaf Analysis	0.00	0	0	0	1	1		
Consultant Services	0.00	0	0	0	15	15		
<b>TOTAL CULTURAL COSTS</b>	<b>15.87</b>	<b>185</b>	<b>58</b>	<b>302</b>	<b>340</b>	<b>885</b>		
Harvest:								
Shake & Catch	0.00	0	0	0	465	465		
Haul To Dryer	0.00	0	0	0	106	106		
Dry Prunes	0.00	0	0	0	865	865		
<b>TOTAL HARVEST COSTS</b>	<b>0.00</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1436</b>	<b>1436</b>		
Assessment:								
California Prune Board Assessment	0.00	0	0	113	0	113		
<b>TOTAL ASSESSMENT COSTS</b>	<b>0.00</b>	<b>0</b>	<b>0</b>	<b>113</b>	<b>0</b>	<b>113</b>		
Interest on operating capital @ 10.00%						55		
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>185</b>	<b>58</b>	<b>414</b>	<b>1776</b>	<b>2488</b>		

Table 2.Continued

COSTS PER ACRE TO PRODUCE PRUNES

SOUTHERN SAN JOAQUIN VALLEY - 1997

Labor Rates:\$10.72/hr. machine labor

Yield: 3.8 Net Dry Tons Per Acre

\$6.90/hr. non-machine labor

Long Term Interest Rate: 8.25%

			Total	Your
			Cost	Cost
=====				
CASH OVERHEAD:				
Office Expense			114	
Liability Insurance			13	
Sanitation Fees			6	
Property Taxes			91	
Property Insurance			65	
Investment Repairs			63	
			-----	
TOTAL CASH OVERHEAD COSTS			352	
-----				
TOTAL CASH COSTS/ACRE			2840	
-----				
NON-CASH OVERHEAD:				
Investment	Per producing	-- Annual Cost --		
-----	Acres	Capital Recovery		
	-----	-----		
Land	4571	377	377	
Buildings	1122	116	116	
Irrigation System	400	34	34	
Shop Tools	157	18	18	
Pruning Tools	6	2	2	
Prune Orchard Establishment	6158	627	627	
Equipment	956	131	131	
			-----	
TOTAL NON-CASH OVERHEAD COSTS	13370	1306	1306	
-----				
TOTAL COSTS/ACRE			4146	
=====				

Table 3.

COSTS AND RETURNS PER ACRE TO PRODUCE PRUNES  
SOUTHERN SAN JOAQUIN VALLEY - 1997

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Prunes	3.80	Ton	800.00	<u>3040</u>	
TOTAL GROSS RETURNS FOR PRUNES				<u>3040</u>	
OPERATING COSTS					
Custom:					
Prune	121.00	Tree	1.50	182	
Ground Application	3.00	Acre	20.00	60	
Shaker Thinning	121.00	Tree	0.60	73	
Shake & Catch	13.30	Ton	35.00	465	
Haul To Dryer	13.30	Ton	8.00	106	
Dryer Charge	13.30	Ton	65.00	865	
Leaf Analysis	1.00	Acre	1.00	1	
PCA Fees	1.00	Acre	15.00	15	
Herbicide:					
Princep	4.00	Lb	4.35	17	
Roundup	0.75	Pint	5.83	4	
Insecticide:					
Dormant Oil	6.00	Gal	3.29	20	
Diazinon 50 W	4.00	Lb	4.72	19	
Fungicide:					
Rovral 50 WP	2.00	Lb	26.24	52	
Captan 50 W	6.00	Lb	3.82	23	
Irrigation:					
Water	50.00	AcIn	2.50	125	
Fertilizer:					
UN 32	100.00	Lb N	0.41	41	
Rent:					
Fertilizer Tank Rental	2.00	Acre	5.00	10	
Assessment:					
California Prune Board	3.80	Ton	30.00	114	
Labor (machine)	13.05	hrs	10.72	140	
Labor (non-machine)	6.50	hrs	6.90	45	
Fuel - Gas	20.35	gal	1.30	26	
Fuel - Diesel	10.32	gal	0.97	10	
Lube				5	
Machinery repair				16	
Interest on operating capital @ 10.00%				<u>55</u>	
TOTAL OPERATING COSTS/ACRE				<u>2488</u>	
NET RETURNS ABOVE OPERATING COSTS				<u>552</u>	

Table 3.Continued

CASH OVERHEAD COSTS:	
Office Expense	114
Liability Insurance	13
Sanitation Fees	6
Property Taxes	91
Property Insurance	65
Investment Repairs	<u>63</u>
<u>TOTAL CASH OVERHEAD COSTS/ACRE</u>	<u>352</u>
<u>TOTAL CASH COSTS/ACRE</u>	<u>2840</u>
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):	
Land	377
Buildings	116
Irrigation System	34
Shop Tools	18
Pruning Tools	2
Prune Orchard Establishment	627
Equipment	<u>131</u>
<u>TOTAL NON-CASH OVERHEAD COSTS/ACRE</u>	<u>1306</u>
<u>TOTAL COSTS/ACRE</u>	<u>4146</u>
<u>NET RETURNS ABOVE TOTAL COSTS</u>	<u>-1106</u>

Table 4.

MONTHLY CASH COSTS PER ACRE TO PRODUCE PRUNES  
SOUTHERN SAN JOAQUIN VALLEY - 1997

Beginning NOV 96 Ending OCT 97	NOV 96	DEC 96	JAN 97	FEB 97	MAR 97	APR 97	MAY 97	JUN 97	JUL 97	AUG 97	SEP 97	OCT 97	TOTAL
<b>Cultural:</b>													
Pruning	182												182
Brush Disposal	18												18
Weed Control - Dormant Strip		22											22
Insect Control - Dormant Spray				59									59
Pest Control - Brown Rot				72									72
Pest Control - Full Bloom				43									43
Mow Middles 4X						6	6	6		6			26
Weed Control - Spot Spray						6	6	6		6			19
Irrigate						16	32	32	32	32	16		159
Fertilizer - Nitrogen						25					25		51
Shaker Thin Fruit							73						73
Pickup Truck Use	12	12	12	12	12	12	12	12	12	12	12	12	145
Leaf Analysis									1				1
Consultant Services	1	1	1	1	1	1	1	1	1	1	1	1	15
<b>TOTAL CULTURAL COSTS</b>	<b>213</b>	<b>36</b>	<b>13</b>	<b>187</b>	<b>13</b>	<b>68</b>	<b>124</b>	<b>58</b>	<b>46</b>	<b>58</b>	<b>55</b>	<b>13</b>	<b>885</b>
<b>Harvest:</b>													
Shake & Catch										465			465
Haul To Dryer										106			106
Dry Prunes										865			865
<b>TOTAL HARVEST COSTS</b>										<b>1436</b>			<b>1436</b>
<b>Assessment:</b>													
California Prune Board										113			113
<b>TOTAL ASSESSEMNT COSTS</b>										<b>113</b>			<b>113</b>
Interest on oper. capital	2	2	2	4	4	4	5	6	6	20	-0	-0	55
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>214</b>	<b>38</b>	<b>16</b>	<b>191</b>	<b>17</b>	<b>72</b>	<b>130</b>	<b>64</b>	<b>53</b>	<b>1627</b>	<b>54</b>	<b>13</b>	<b>2488</b>
<b>OVERHEAD:</b>													
Office Expense	10	10	10	10	10	10	10	10	10	10	10	10	114
Liability Insurance			13										13
Sanitation Fees	1	1	1	1	1	1	1	1	1	1	1	1	6
Property Taxes			45						45				91
Property Insurance			32						32				65
Investment Repairs	5	5	5	5	5	5	5	5	5	5	5	5	63
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>15</b>	<b>15</b>	<b>106</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>93</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>352</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>230</b>	<b>53</b>	<b>122</b>	<b>206</b>	<b>33</b>	<b>87</b>	<b>145</b>	<b>79</b>	<b>145</b>	<b>1642</b>	<b>70</b>	<b>28</b>	<b>2840</b>



Table 5.

WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS  
SOUTHERN SAN JOAQUIN VALLEY - 1997

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
97	70 HP 2WD Tractor	28850	15	5617	3219	123	172	3514
97	Brush Rake - 10'	1450	25	41	138	5	7	151
97	Mower - Flail 10'	5000	10	884	693	21	29	744
97	Pickup Truck - 1/2 Ton	17240	7	1724	3148	68	95	3310
97	Weed Sprayer - 100 Gal	3228	10	571	448	14	19	480
TOTAL		55768		8837	7646	230	323	8200
60% of New Cost *		33461		5302	4588	138	194	4920

\* Used to reflect a mix of new and used equipment.

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
						Insur- ance	Taxes	Repairs	
INVESTMENT									
	Buildings	39253	20		4073	140	196	785	5194
	Irrigation System	14000	40		1206	50	70	1210	2536
	Land	160000		160000	13200	1141	1600	0	15941
	Prune Orchard Establishment	215530	21		21931	768	1078	0	23778
	Pruning Tools	200	3	20	72	1	1	50	124
	Shop Tools	5500	15	550	633	22	30	151	835
TOTAL INVESTMENT		434483		160570	41114	2121	2975	2196	48407

Table 5. Continued

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	40.00	Acre	11.73	469
Office Expense	40.00	Acre	100.00	4000
Sanitation Fees	35.00	Acre	6.29	220

Table 6.

HOURLY EQUIPMENT COSTS  
SOUTHERN SAN JOAQUIN VALLEY - 1997

Yr Description	Actual Hours Used	----- COSTS PER HOUR -----						Total Oper.	Total Costs/Hr.
		Capital Recovery	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube			
97 70 HP 2WD Tractor	105.2	18.36	0.70	0.98	1.18	3.83	5.01	25.05	
97 Brush Rake - 10'	14.0	5.92	0.23	0.32	0.19	0.00	0.19	6.66	
97 Mower - Flail 10'	46.6	8.92	0.27	0.38	1.06	0.00	1.06	10.63	
97 Pickup Truck - 1/2	285.0	6.63	0.14	0.20	1.25	3.74	4.99	11.96	
97 Weed Sprayer - 100 Gal	35.0	7.67	0.23	0.33	0.85	0.00	0.85	9.08	

Table 7.

RANGING ANALYSIS  
SOUTHERN SAN JOAQUIN VALLEY - 1997

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE PRUNES

	YIELD (TON/ACRE)						
	2.5	3.0	3.5	4.0	4.5	5.0	5.5
OPERATING COSTS/ACRE:							
Cultural Cost	885	885	885	885	885	885	885
Harvest Cost	1019	1223	1427	1630	1834	2038	2242
Interest on operating capital	50	52	54	55	57	59	61
TOTAL OPERATING COSTS/ACRE	1954	2159	2365	2570	2776	2981	3187
TOTAL OPERATING COSTS/TON	782	720	676	643	617	596	579
CASH OVERHEAD COSTS/ACRE	352	352	352	352	352	352	352
TOTAL CASH COSTS/ACRE	2306	2511	2717	2922	3128	3333	3539
TOTAL CASH COSTS/TON	922	837	776	731	695	667	643
NON-CASH OVERHEAD COSTS/ACRE	1306	1306	1306	1306	1306	1306	1306
TOTAL COSTS/ACRE	3612	3817	4023	4228	4434	4639	4845
TOTAL COSTS/TON	1445	1272	1149	1057	985	928	881

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR PRUNES

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	2.5	3.0	3.5	4.0	4.5	5.0	5.5
Prunes							
650.00	-329	-209	-90	30	149	269	388
700.00	-204	-59	85	230	374	519	663
750.00	-79	91	260	430	599	769	938
800.00	46	241	435	630	824	1019	1213
850.00	171	391	610	830	1049	1269	1488
900.00	296	541	785	1030	1274	1519	1763
950.00	421	691	960	1230	1499	1769	2038

Table 7. Continued

NET RETURNS PER ACRE ABOVE CASH COSTS FOR PRUNES

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PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Prunes	2.5	3.0	3.5	4.0	4.5	5.0	5.5
650.00	-681	-561	-442	-322	-203	-83	36
700.00	-556	-411	-267	-122	22	167	311
750.00	-431	-261	-92	78	247	417	586
800.00	-306	-111	83	278	472	667	861
850.00	-181	39	258	478	697	917	1136
900.00	-56	189	433	678	922	1167	1411
950.00	69	339	608	878	1147	1417	1686

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NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR PRUNES

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PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Prunes	2.5	3.0	3.5	4.0	4.5	5.0	5.5
650.00	-1987	-1867	-1748	-1628	-1509	-1389	-1270
700.00	-1862	-1717	-1573	-1428	-1284	-1139	-995
750.00	-1737	-1567	-1398	-1228	-1059	-889	-720
800.00	-1612	-1417	-1223	-1028	-834	-639	-445
850.00	-1487	-1267	-1048	-828	-609	-389	-170
900.00	-1362	-1117	-873	-628	-384	-139	105
950.00	-1237	-967	-698	-428	-159	111	380

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Table 8.

COSTS AND RETURNS / BREAKEVEN ANALYSIS  
SOUTHERN SAN JOAQUIN VALLEY - 1997

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	3040	2488	552	2840	200	4146	-1106

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	106400	87090	19310	99404	6996	145106	-38706

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price To Cover		
			Operating Costs	Cash Costs	Total Costs
Prunes	3.8	Ton	654.81	747.40	1091.02

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (/Unit)	Breakeven Yield To Cover		
			Operating Costs	Cash Costs	Total Costs
Prunes	Ton	800.00	3.1	3.6	5.2