UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2001

SAMPLE COSTS TO PRODUCE
PROCESSING
TOMATOES

SAN JOAQUIN VALLEY

Double-row seeded

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UC COOPERATIVE EXTENSION

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San Joaquin Valley - 2001

INTRODUCTION

The sample costs to produce processing tomatoes in the San Joaquin Valley of California are presented in this study. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on those production procedures considered typical for this crop and area, but will not apply to every situation. Sample costs for labor, materials, equipment and custom services are based on current figures. Some costs and practices presented in this study may not be applicable to your situation. A blank column, "*Your Costs*", is provided in Tables 1 and 2 to enter your costs.

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

STUDY CONTENTS

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

ASSUMPTIONS

The following assumptions pertain to sample costs to produce processing tomatoes in the 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 practices listed may not be needed nor used during every production year. Additional ones not indicated may be needed. Cultural practices and costs for the production of processing tomatoes vary by grower and region, and variations can be significant. The practices and inputs used in this cost study serve as a sample or guide, only. These costs are presented on an annual, per acre basis. **The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products**.

Farm. The hypothetical field and row-crop farm consists of 4,000 non-contiguous acres of rented land. Processing tomatoes, which are rotated with other crops, are planted on 1,200 acres and 2,800 acres are planted to cotton, cantaloupes, lettuce, onions, garlic, melons, sugarbeets, broccoli, small grains, and/or alfalfa.

CULTURAL PRACTICES and MATERIAL INPUTS

Land Preparation. Primary tillage which includes laser leveling, discing, rolling, subsoiling, land leveling, and listing beds occurs in November of the year preceding planting. Fields are disced twice followed by chiseling and a final discing. The ground is smoothed with a triplane. Beds on five-foot centers are made with a six-row lister and then shaped with a bed-shaper cultivator.

Planting. Planting begins in late January and is spread over a four-month period. In this report a hybrid variety is seeded two rows per bed in early March. Double rows on a bed are a common practice early in the season in order to obtain a large plant population. Beginning in March, due to warmer weather and better stand establishment, growers will also plant single rows on a bed. Plants are thinned to stand by a hand thinning crew 30 to 40 days after planting.

Fertilization. A liquid preplant fertilizer, 10-34-0 at 350 pounds per acre, is applied during bed shaping. The bulk of applied nitrogen is sidedressed during the season at 165 pounds of N per acre as UN-32.

Irrigation. Water costs in the San Joaquin Valley vary by water district and will cost the grower from around $30 to $290 per acre. The irrigation water is this study is supplied by the water district at $54 per acre-foot ($4.50/acin) and cost the grower $135 per acre. Six-acre inches are sprinkled in two to three irrigations to germinate the seed and establish a stand. This is followed by nine subsequent furrow irrigations at 7 to 14 day intervals. A total of 2.5 acre-feet (30-acre inches) are applied to the crop in this study; six-inches through sprinklers and 24-inches down the furrow.

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

Insects and Diseases. An air application of Lannate® is applied in mid to late season to control armyworms. Also, an application of sulfur dust is applied to control russet mites.

Weeds. A combination of hand weeding and mechanical cultivation is used for weed control. Vapam is bladed on six-inch bands into the bed preplant. Depending on the weed problems, growers may use Shadeout® in place of Vapam at two ounces per treated acre on a six-inch band. The material and application costs are similar for both products. The crop is mechanically cultivated with sled-mounted cultivators two times during the season. Seedling tomatoes are hand thinned and weeded by a contract labor crew. Hand weeding is repeated within two months.

Harvest. All fruit is mechanically harvested using two tomato harvesters owned by the grower. Typically growers with this acreage of processing tomatoes will also own tractors, trailer dollies, generators, lights, and harvest support equipment. Six manual sorters, a harvester driver, and two bulk-trailer tractor operators are used for each harvester. On average, 1.5 loads at 25 tons per load are harvested per hour with two (one day and one night) shifts of 10 hours each. Harvest efficiency includes down time and transportation between fields. The processor pays the transportation of the fruit from the field to the processing plant.

Costs for harvest operations are shown in Tables 1 and 3 while the equipment compliment is listed in Tables 4 and 5. If tomatoes are custom harvested, harvest expense should be subtracted from harvest costs in Tables 1 and 3 and all related equipment should be subtracted from investment costs in Table 4. A custom harvest charge would then be added to harvest costs in Tables 1 and 3.

Growers may choose to own harvesting equipment, purchased either new or used, or hire a custom harvester. Many factors are important in deciding which harvesting option a grower uses. These considerations and appropriate methods of analysis are discussed in *"Acquiring Alfalfa Hay Harvest Equipment: A Financial Analysis of Alternatives"*.

Yields. Average unweighted annual crop yields in the San Joaquin Valley over the past ten years ranged from 31.83 to 39.40 tons per acre. The lowest yield during the last ten years was 28.20 tons in Merced County, while the highest yield, 41.59 tons was in Fresno County. In 1999, San Joaquin county harvested 31,200 acres of processing tomatoes; Merced, 16,014; Fresno, 115,000; and Kern 3,600. The average county yields from 1990 to 1999 are shown in Table A. In this study, 36 tons per acre are used.

Returns. Growers produce tomatoes under contract from various food processing companies. Average unweighted prices ranged from $46.71 to $58.02 per ton over the last ten years and are shown in Table A.

Table A. Average Yield and Price for Processing Tomatoes, San Joaquin Valley 1990 - 1999 [1/]

	San Joaquin County		Merced County		Fresno County		Kern County		Average (Unweighted)	
Year	Ton/ac	$/ton	Ton/ac	$/ton	Ton/ac	$/ton	Ton/ac	$/ton	Ton/ac	$/ton
1999	36.48	58.00	40.18	57.16	41.50	57.00	39.42	59.90	39.40	58.02
1998	31.41	55.00	35.97	52.47	35.77	53.00	34.33	54.60	34.37	53.77
1997	34.43	51.00	38.02	50.12	39.15	51.00	39.60	51.00	37.80	50.78
1996	34.80	53.00	34.94	52.72	39.80	52.00	34.60	53.60	36.04	52.83
1995	38.49	52.00	36.96	53.33	38.67	54.00	33.60	52.00	36.93	52.83
1994	35.40	48.50	35.66	51.77	41.59	51.00	35.40	49.20	37.01	50.12
1993	32.80	47.30	34.81	48.47	35.79	47.00	33.90	46.50	34.33	47.32
1992	37.70	47.90	34.75	46.75	35.21	46.00	38.80	46.20	36.62	46.71
1991	31.30	55.60	31.10	54.10	30.78	52.30	34.80	54.00	32.00	54.00
1990	30.90	61.90	28.20	54.34	35.50	52.00	32.70	55.20	31.83	55.86
Avg.	34.37	53.02	35.06	52.12	37.38	51.53	35.72	52.22	35.63	52.22

[1/] Source: Agricultural Commissioner's Annual Crop Report: San Joaquin, Merced, Fresno, Kern Counties – 1990, 91, 92, 93, 94, 95, 96, 97, 98, 99.

Assessments. Under a state marketing order a mandatory assessment fee is collected and administered by the Processing Tomato Advisory Board (PTAB). This assessment pays for inspection and grading of fruit, and varies between inspection stations. Inspection fees range from $6.36 to $8.90 per load with an average of $6.75. Both growers and processors are charged for half of the fee; growers pay $3.72 per load in this study. A truckload is assumed to be 25 tons. Tomato growers are also assessed a fee for the Curly Top Virus Control Program (CTVCP) administered by the California Department of Food and Agriculture (CDFA). Growers in District 2 (San Joaquin Valley) are charged $0.106 per ton by CDFA for program costs.

Additionally, several voluntary organizations assess member growers to fund their activities. California Tomato Growers Association (CTGA) represents growers' interest in negotiating contract prices with processors. CTGA membership charges are $0.17 per ton. The California Tomato Research Institute (CTRI) fund projects for crop improvement. CTRI membership charges are $0.07 per ton.

Labor. Basic hourly wages for workers are $8.50 and $6.25 per hour for machine operators and non-machine (irrigators and manual laborers) workers, respectively. Adding 34% for employer's share of federal and state payroll taxes, insurance, and other benefits raises the total labor costs to $11.39 per hour for machine operators and $8.38 per hour for non-machine labor. The labor for operations involving machinery is 20% higher than the operation time to account for the additional time involved in equipment set up, moving, maintenance and repair.

Risk. Risks associated with processing tomato production are not assigned a production cost. All acres are contracted prior to harvest and it is assumed all tonnage-time delivery contracts are met. No excess acres are grown to fulfill contracts. While this study makes an effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of processing tomato production.

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, land rent, field sanitation, crop insurance, and investment 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 two on a per acre basis.

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

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.666% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,303 for the entire farm or $0.326 per acre.

Office Expense. Office and business expenses are estimated at $30 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc. Cash overhead costs are found in Tables 1, 2, 3 and 4.

Land Rent. Land is valued at $2,000 to $3,500 per acre and can be rented at a flat rate or as a percentage of gross income. Land in this study is rented on a per acre basis with the landowner receiving $150 per acre. The land rented includes developed wells and irrigation system. The landowner is responsible for the maintenance of the irrigation system.

Field Sanitation. Sanitation services provide portable toilet and washing facilities for the ranch during the crop season. The cost includes delivery and weekly service. Costs will vary depending upon the crops and number of portable units required.

Crop Insurance. The insurance protects the grower from crop losses due to adverse weather conditions, fire, unusual diseases and/or insects, wildlife, earthquake, volcanic eruption, and failure of the irrigation system. The grower can choose the protection level at 50% to 75% of production history or county yields. In this study, the premium is $26.44 per acre for a 65% guarantee level.

Non-cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment used for processing tomatoes may be purchased new or used, this study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs (equipment and investments) are shown in Tables 1, 2, 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 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. The calculation for the annual capital recovery costs is as follows:

$$\left[\left(\text{Purchase Price} - \text{Salvage Value}\right) \times \left(\text{Capital Recovery Factor}\right)\right] + \left[\text{Salvage Value} \times \text{Interest Rate}\right]$$

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

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

Irrigation System. The irrigation system owned by the grower consists of non-wheel sprinkler pipe, main lines, gated pipe, and booster pumps.

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 fuel, lubrication, and repairs. In allocating the equipment costs on a per acre basis, the hourly charges are calculated and shown in Table 5.

Repairs, Fuel and Lube. 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 $1.26 and $1.51 per gallon, respectively.

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

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For information concerning the above or other University of California publications, contact UC DANR Communications Services at 1-800-994-8849, online at www.ucop.edu, or your local county UC Cooperative Extension office.

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Table 1. COSTS PER ACRE TO PRODUCE TOMATOES

SAN JOAQUIN VALLEY - 2001

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					
		Labor Cost	Fuel ,Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Disc 2X	0.25	3	8	0	0	12	
Subsoil	0.20	3	7	0	0	9	
Triplane	0.28	4	7	0	0	11	
Disc	0.09	1	3	0	0	4	
List Beds	0.14	2	3	0	0	5	
Shape Beds & Fertilize	0.25	3	8	54	0	66	
Weed Control - Vapam	0.14	2	3	45	0	50	
Remove Dirt Cap	0.14	2	1	0	0	3	
Weed Control - Hoe & Thin	0.00	0	0	0	30	30	
Weed Control - Layby	0.40	5	10	5	0	21	
Weed Control - Hoe	0.00	0	0	0	15	15	
Cultivate 2X	0.40	5	6	0	0	12	
Plant - Direct Seeded	0.34	5	4	206	0	214	
Irrigate - Sprinkle	4.50	38	0	27	0	65	
Irrigate - Furrow	1.89	16	0	108	0	124	
Fertilize - Sidedress N	0.20	3	3	65	5	75	
Open Ditch	0.02	0	0	0	0	1	
Close Ditch & Drag	0.02	0	0	0	0	1	
Train Vines	0.21	3	5	0	0	7	
Insect Control - Worms	0.00	0	0	26	5	31	
Insect Control - Mites	0.00	0	0	6	10	16	
Pickup Truck Use	0.44	6	3	0	0	9	
TOTAL CULTURAL COSTS	9.90	102	72	542	65	780	
Harvest:							
Open Harvest Lane - 7% acres	0.01	0	0	0	0	0	
Harvest	0.95	125	144	0	0	269	
In Field Hauling	0.95	26	21	0	0	47	
TOTAL HARVEST COSTS	1.91	151	165	0	0	316	
Assessment:							
PTAB Inspection Fees	0.00	0	0	4	0	4	
CTVCP CTGA CTRI Fees	0.00	0	0	7	0	7	
TOTAL ASSESSMENT COSTS	0.00	0	0	12	0	12	
Postharvest:							
Disc Crop Residue 2X	0.20	3	7	0	0	9	
TOTAL POSTHARVEST COSTS	0.20	3	7	0	0	9	
Interest on operating capital @ 10.51%						42	
TOTAL OPERATING COSTS/ACRE		255	244	553	65	1,159	
CASH OVERHEAD:							
Office Expense						30	
Land Rent						150	
Liability Insurance						0	
Field Sanitation						1	
Crop Insurance						26	
Property Taxes						4	
Property Insurance						3	
Investment Repairs						1	
TOTAL CASH OVERHEAD COSTS						215	
TOTAL CASH COSTS/ACRE						1,374	

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Table 1. Continued

			Total Cost	Your Costs
NON-CASH OVERHEAD:				
Investment	Per producing Acre	-- Annual Cost -- Capital Recovery		
Shop Building	16	1	1	
Storage Building	7	1	1	
Fuel Tanks & Pumps	5	0	0	
Shop Tools	3	0	0	
Fuel Wagon	0	0	0	
Tool Carrier	4	0	0	
Gated Pipe	1	0	0	
Pipe - Sprinkler	2	0	0	
Pipe - Main Line	14	2	2	
Truck Tractor	12	1	1	
Trailer - Lowbed	2	0	0	
Trailer - Pipe #1	0	0	0	
Trailer - Pipe #2	0	0	0	
Equipment	600	86	86	
TOTAL NON-CASH OVERHEAD COSTS	669	93	93	
TOTAL COSTS/ACRE			1,467	

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Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE TOMATOES
SAN JOAQUIN VALLEY - 2001

	Quantity /Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Tomatoes	36.00	ton	51.50	1,854	
OPERATING COSTS					
Seed:					
Tomato Seed	85.00	thou	2.42	206	
Irrigation:					
Water - Surface	30.00	acin	4.50	135	
Contract:					
Thin	1.00	acre	15.00	15	
Hoe Weeds	2.00	acre	15.00	30	
Rent:					
Fertilizer Rig	1.00	acre	5.00	5	
Fertilizer:					
10-34-0	350.00	lb	0.15	54	
UN-32	165.00	lbN	0.39	65	
Fumigant:					
Vapam HL	10.00	gal	4.50	45	
Fungicide:					
Sulfur, Dust 98%	40.00	lb	0.16	6	
Insecticide:					
Lannate 90 SP	1.00	lb	26.05	26	
Herbicide:					
Trilin 5	0.18	gal	27.80	5	
Custom:					
Air Application Spray	1.00	acre	5.00	5	
Air Application Dust	40.00	lb	0.25	10	
Assessment:					
CPTAB	33.00	ton	0.14	4	
CDFA-CTVP	1.00	ton	0.02	0	
CTGA	30.00	ton	0.17	5	
CTRI	30.00	ton	0.07	2	
Labor (machine)	9.03	hrs	11.39	103	
Labor (non-machine)	18.19	hrs	8.38	152	
Fuel - Gas	1.31	gal	1.51	2	
Fuel - Diesel	66.52	gal	1.26	84	
Lube				13	
Machinery repair				145	
Interest on operating capital @ 10.51%				42	
TOTAL OPERATING COSTS/ACRE				1,159	
NET RETURNS ABOVE OPERATING COSTS				695	
CASH OVERHEAD COSTS:					
Office Expense				30	
Land Rent				150	
Liability Insurance				0	
Field Sanitation				1	
Crop Insurance				26	
Property Taxes				4	
Property Insurance				3	
Investment Repairs				1	
TOTAL CASH OVERHEAD COSTS/ACRE				215	
TOTAL CASH COSTS/ACRE				1,374	

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Table 2. Continued

	Value or Cost/acre	Your Cost
NON-CASH OVERHEAD COSTS (Capital Recovery)		
Shop Building	1	
Storage Building	1	
Fuel Tanks & Pumps	0	
Shop Tools	0	
Fuel Wagon	0	
Tool Carrier	0	
Gated Pipe	0	
Pipe - Sprinkler	0	
Pipe - Main Line	2	
Truck Tractor	1	
Trailer - Lowbed	0	
Trailer - Pipe #1	0	
Trailer - Pipe #2	0	
Equipment	86	
TOTAL NON-CASH OVERHEAD COSTS/ACRE	93	
TOTAL COSTS/ACRE	1,467	
NET RETURNS ABOVE TOTAL COSTS	387	

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Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE TOMATOES

SAN JOAQUIN VALLEY - 2001

Beginning NOV 99 Ending OCT 00	NOV 99	DEC 99	JAN 00	FEB 00	MAR 00	APR 00	MAY 00	JUN 00	JUL 00	AUG 00	SEP 00	OCT 00	TOTAL
Cultural:													
Disc 2X	12												12
Subsoil	9												9
Triplane	11												11
Disc	4												4
List Beds	5												5
Shape Beds & Fertilize	66												66
Weed Control - Vapam				50									50
Remove Dirt Cap					3								3
Plant - Direct Seeded					214								214
Irrigate - Sprinkle					65								65
Weed Control-Cultivate 2X					12								12
Weed Control-Thin & Hoe					30								30
Fertilize - Sidedress N						75							75
Weed Control - Layby						21							21
Open Ditch						0			0				1
Irrigate-Furrow						14	27	41	41				124
Weed Control - Hoe						15							15
Close Ditch & Drag									0	0			1
Train Vines									7				7
Insect Control - Worms									31				31
Insect Control - Mites									16				16
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1		9
TOTAL CULTURAL COSTS	108	1	1	50	325	126	28	42	98	1	1		780
Harvest:													
Open Harvest Lane - 7% acres										0			0
Harvest										269			269
In Field Hauling										47			47
TOTAL HARVEST COSTS										316			316
Assessment:													
PTAB Inspection Fees										4			4
CTVCP CTGA CTRI Fees										7			7
TOTAL ASSESSMENT COSTS										12			12
Postharvest:													
Disc Crop Residue 2X											9		9
TOTAL POSTHARVEST COSTS											9		9
Interest on operating capital	1	1	1	1	4	5	6	6	7	10	(0)		42
TOTAL OPERATING COSTS/ACRE	109	2	2	52	329	131	34	48	104	339	10		1,159
OVERHEAD:													
Office Expense	3	3	3	3	3	3	3	3	3	3	3	3	30
Land Rent												150	150
Liability Insurance			0										0
Field Sanitation	0	0	0	0	0	0	0	0	0	0	0		1
Crop Insurance												26	26
Property Taxes				2					2				4
Property Insurance				1					1				3
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL CASH OVERHEAD COSTS	3	3	3	6	3	3	3	3	6	3	3	179	215
TOTAL CASH COSTS/ACRE	112	4	5	58	332	134	37	51	110	341	13	179	1,374

UC COOPERATIVE EXTENSION

Table 4. ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SAN JOAQUIN VALLEY - 2001

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead Insur-ance	Cash Overhead Taxes	Total
01	110HP 2WD Tractor	54,000	10	15,951	6,411	233	350	6,994
01	130HP 2WD Tractor 2	62,500	10	18,462	7,420	270	405	8,095
01	130HP 2WD Tractor 1	62,500	10	18,462	7,420	270	405	8,095
01	155HP 2WD Tractor	90,000	10	26,585	10,685	388	583	11,656
01	200HP Crawler	156,000	10	46,080	18,521	673	1,010	20,204
01	280HP Crawler	166,500	10	49,181	19,768	718	1,078	21,564
01	62HP 2WD Tractor	29,708	10	8,775	3,527	128	192	3,848
01	92HP 2WD Tractor	39,775	10	11,749	4,722	172	258	5,151
01	Bed Shaper - 3 Row	9,653	12	1,337	1,120	37	55	1,211
01	Cultivator-Sled	5,362	12	743	622	20	31	673
01	Disc - Offset 18'	14,000	12	1,939	1,624	53	80	1,757
01	Disc - Offset 26'	40,433	12	5,600	4,691	153	230	5,074
01	Disc - Stubble 16'	12,944	12	1,793	1,502	49	74	1,624
01	Ditcher - V	7,800	12	1,080	905	30	44	979
01	Generator-Lights 1	3,819	7	974	588	16	24	628
01	Generator-Lights 2	3,819	7	974	588	16	24	628
01	Harvester-Tomato 1	300,000	8	10,000	48,673	1,032	1,550	51,255
01	Harvester-Tomato 2	300,000	8	10,000	48,673	1,032	1,550	51,255
01	Incorporator - 15'	22,000	9	4,396	2,962	88	132	3,182
01	Lister - 3 Row 16'	2,838	15	284	294	10	16	320
01	Pickup 3/4 Ton	24,500	5	10,980	4,007	118	177	4,302
01	Pickup Truck - 1/2	17,655	7	1,766	3,036	65	97	3,198
01	Planter w/Sled3Row	8,500	10	1,503	1,083	33	50	1,166
01	Saddle Tank - 300G 1	2,145	5	165	490	8	12	509
01	Saddle Tank 300G 2	2,145	5	165	490	8	12	509
01	Scraper - Drag 10'	2,581	18	172	246	9	14	269
01	Subsoiler - 16'	7,200	10	1,273	918	28	42	988
01	Trailer Dollie 1	1,311	15	126	136	5	7	148
01	Trailer Dollie 2	1,311	15	126	136	5	7	148
01	Trailer Dollie 3	1,311	15	126	136	5	7	148
01	Trailer Dollie 4	1,311	15	126	136	5	7	148
01	Triplane - 16'	20,109	12	2,785	2,333	76	114	2,524
01	Vine Diverter	19,305	10	3,414	2,460	76	114	2,649
01	Vine trainer	4,800	10	480	639	18	26	683
TOTAL		1,497,835		257,572	206,961	5,846	8,777	221,583
	60% of New Cost *	898,701		154,543	124,176	3,507	5,266	132,950

*Used to reflect a mix of new and used equipment

UC COOPERATIVE EXTENSION
Table 4. continued

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Fuel Tanks & Pumps	19,835	20	1,984	1,779	73	109	397	2,358
Fuel Wagon	1,975	10	198	263	7	11	40	321
Gated Pipe	5,712	20	571	512	21	31	100	665
Pipe - Main Line	57,024	10	5,700	7,588	209	314	358	8,469
Pipe - Sprinkler	9,279	10	928	1,235	34	51	510	1,830
Shop Building	65,216	25	6,522	5,338	239	359	652	6,588
Shop Tools	13,072	20	1,307	1,172	48	72	131	1,423
Storage Building	26,308	20	2,631	2,359	96	145	526	3,126
Tool Carrier	15,118	15	1,512	1,567	55	83	756	2,462
Trailer - Lowbed	7,695	15	769	798	28	42	103	971
Trailer - Pipe #1	1,935	7	194	333	7	11	39	389
Trailer - Pipe #2	1,935	7	194	333	7	11	39	389
Truck Tractor	48,849	15	4,885	5,063	179	269	377	5,888
TOTAL INVESTMENT	273,953		27,395	28,340	1,004	1,507	4,028	34,878

ANNUAL BUSINESS OVERHEAD

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Crop Insurance	1,200	acre	26.44	31,728
Field Sanitation	4,000	acre	0.67	2,680
Land Rent	1,200	acre	150.00	180,000
Liability Insurance	4,000	acre	0.33	1,320
Office Expense	4,000	acre	30.00	120,000

Table 5.

UC COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
SAN JOAQUIN VALLEY - 2000

			COSTS PER HOUR						
		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insurance	Taxes	Repairs	Fuel & Lube	Total Operating	Total Costs/Hr.
01	110HP 2WD Tractor	1,199.50	3.21	0.12	0.17	2.43	9.25	11.68	15.18
01	130HP 2WD Tractor 2	1,205.20	3.69	0.13	0.20	2.81	10.93	13.74	17.77
01	130HP 2WD Tractor 1	1,194.60	3.73	0.14	0.20	2.81	10.93	13.74	17.81
01	155HP 2WD Tractor	1,200.20	5.34	0.19	0.29	4.06	13.03	17.09	22.91
01	200HP Crawler	1,589.50	6.99	0.25	0.38	4.01	16.82	20.83	28.46
01	280HP Crawler	1,591.10	7.45	0.27	0.41	4.28	23.55	27.83	35.97
01	62HP 2WD Tractor	1,167.00	1.81	0.07	0.10	1.34	4.41	5.75	7.73
01	92HP 2WD Tractor	1,254.70	2.26	0.08	0.12	1.79	6.55	8.34	10.81
01	Bed Shaper - 3 Row	300.00	2.24	0.07	0.11	1.93	0.00	1.93	4.35
01	Cultivator-Sled	645.10	0.58	0.02	0.03	1.07	0.00	1.07	1.70
01	Disc - Offset 18'	304.80	3.20	0.10	0.16	2.20	0.00	2.20	5.66
01	Disc - Offset 26'	211.60	13.30	0.43	0.65	6.37	0.00	6.37	20.75
01	Disc - Stubble 16'	240.00	3.75	0.12	0.18	2.04	0.00	2.04	6.10
01	Ditcher - V	172.00	3.16	0.10	0.15	2.09	0.00	2.09	5.51
01	Generator-Lights 1	627.00	0.56	0.02	0.02	0.92	2.90	3.82	4.42
01	Generator-Lights 2	627.00	0.56	0.02	0.02	0.92	2.90	3.82	4.42
01	Harvester-Tomato 1	627.00	46.58	0.99	1.48	112.50	21.73	134.23	183.28
01	Harvester-Tomato 2	627.00	46.58	0.99	1.48	112.50	21.73	134.23	183.28
01	Incorporator - 15'	645.10	2.76	0.08	0.12	6.42	0.00	6.42	9.38
01	Lister - 3 Row 16'	166.00	1.06	0.04	0.06	0.88	0.00	0.88	2.04
01	Pickup 3/4 Ton	266.00	9.04	0.27	0.40	1.58	5.21	6.79	16.50
01	Pickup Truck - 1/2	266.00	6.85	0.15	0.22	1.26	5.06	6.32	13.53
01	Planter w/Sled3Row	405.60	1.60	0.05	0.07	2.26	0.00	2.26	3.99
01	Saddle Tank 300G 1	480.00	0.61	0.01	0.01	0.58	0.00	0.58	1.22
01	Saddle Tank 300G 2	465.10	0.63	0.01	0.01	0.58	0.00	0.58	1.24
01	Scraper - Drag 10'	166.00	0.89	0.03	0.05	0.38	0.00	0.38	1.35
01	Subsoiler - 16'	242.40	2.27	0.07	0.10	1.62	0.00	1.62	4.07
01	Trailer Dollie 1	570.00	0.14	0.01	0.01	0.10	0.00	0.10	0.26
01	Trailer Dollie 2	570.00	0.14	0.01	0.01	0.10	0.00	0.10	0.26
01	Trailer Dollie 3	570.00	0.14	0.01	0.01	0.10	0.00	0.10	0.26
01	Trailer Dollie 4	570.00	0.14	0.01	0.01	0.10	0.00	0.10	0.26
01	Triplane - 16'	331.20	4.23	0.14	0.21	3.02	0.00	3.02	7.60
01	Vine Diverter	120.40	12.26	0.38	0.57	2.23	0.00	2.23	15.43
01	Vine trainer	252.00	1.52	0.04	0.06	2.88	0.00	2.88	4.51

Table 6.

UC COOPERATIVE EXTENSION
RANGING ANALYSIS
SAN JOAQUIN VALLEY - 2001

	YIELD (ton/acre)						
	25.20	28.80	32.40	36.00	39.60	43.20	46.80
OPERATING COSTS/ACRE:							
Cultural Cost	780	780	780	780	780	780	780
Harvest Cost	221	253	285	316	348	380	411
Assessment Cost	8	9	11	12	13	14	15
Postharvest Cost	9	9	9	9	9	9	9
Interest on operating capital	41	41	42	42	42	42	43
TOTAL OPERATING COSTS/ACRE	1,060	1,093	1,126	1,159	1,193	1,226	1,259
TOTAL OPERATING COSTS/TON	42.07	37.96	34.76	32.21	30.11	28.37	26.89
CASH OVERHEAD COSTS/ACRE	215	215	215	215	215	215	215
TOTAL CASH COSTS/ACRE	1,275	1,308	1,341	1,374	1,407	1,440	1,474
TOTAL CASH COSTS/TON	50.59	45.42	41.39	38.17	35.54	33.34	31.49
NON-CASH OVERHEAD COSTS/ACRE	93	93	93	93	93	93	93
TOTAL COSTS/ACRE	1,368	1,401	1,434	1,467	1,500	1,533	1,567
TOTAL COSTS/TON	54.27	48.64	44.26	40.75	37.89	35.50	33.48

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR TOMATOES

PRICE	YIELD (ton/acre)						
$/ton	25.20	28.80	32.40	36.00	39.60	43.20	46.80
36.05	-152	-55	42	138	235	332	428
41.20	-22	93	209	324	439	554	669
46.35	108	242	375	509	643	777	911
51.50	238	390	542	695	847	999	1,152
56.65	367	538	709	880	1,051	1,222	1,393
61.80	497	687	876	1,065	1,255	1,444	1,634
66.95	627	835	1,043	1,251	1,459	1,667	1,875

NET RETURN PER ACRE ABOVE CASH COSTS FOR TOMATOES

PRICE	YIELD (ton/acre)						
$/ton	25.20	28.80	32.40	36.00	39.60	43.20	46.80
36.05	-366	-270	-173	-76	20	117	214
41.20	-237	-121	-6	109	224	339	455
46.35	-107	27	161	294	428	562	696
51.50	23	175	327	480	632	784	937
56.65	153	323	494	665	836	1,007	1,178
61.80	282	472	661	851	1,040	1,229	1,419
66.95	412	620	828	1,036	1,244	1,452	1,660

NET RETURN PER ACRE ABOVE TOTAL COSTS FOR TOMATOES

PRICE	YIELD (ton/acre)						
$/ton	25.20	28.80	32.40	36.00	39.60	43.20	46.80
36.05	-459	-363	-266	-169	-73	24	121
41.20	-329	-214	-99	16	131	246	362
46.35	-200	-66	68	201	335	469	603
51.50	-70	82	235	387	539	691	844
56.65	60	231	401	572	743	914	1,085
61.80	190	379	568	758	947	1,136	1,326
66.95	320	527	735	943	1,151	1,359	1,567

UC COOPERATIVE EXTENSION

Table 7. COSTS AND RETURNS/BREAKEVEN ANALYSIS

SAN JOAQUIN VALLEY - 2000

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)
Tomatoes	1,854	1159	695	1,374	480	1,467	387

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)
Tomatoes	2,224,800	1,391,307	833,493	1,649,081	575,719	1,760,594	464,206

BREAKEVEN PRICES PER YIELD UNIT

			Breakeven Price to Cover		
CROP	Base Yield (Units/Acre)	Yield Units	Operating Costs	Cash Costs	Total Costs
			$ per Yield Unit		
Tomatoes	36.00	ton	32.21	38.17	40.75

BREAKEVEN YIELDS PER ACRE

			Breakeven Yield to Cover		
CROP	Base Price ($/Unit)	Yield Units	Operating Costs	Cash Costs	Total Costs
			Yield Units/Acre		
Tomatoes	51.50	ton	22.50	26.70	28.50