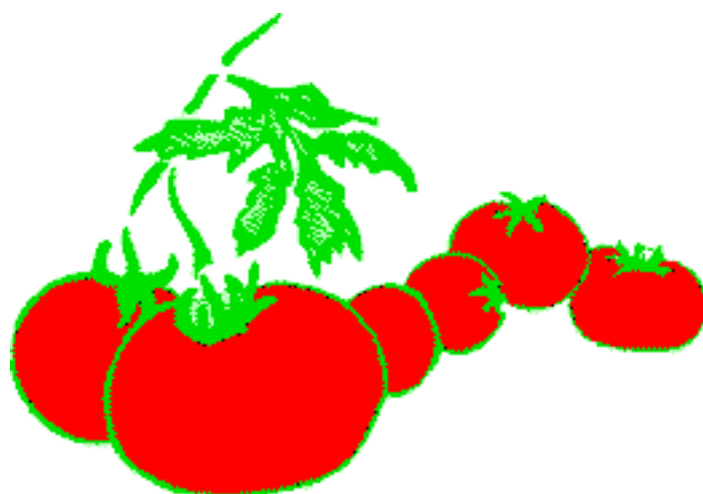

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2000

**SAMPLE COSTS TO PRODUCE
FRESH MARKET**

TOMATOES



SAN JOAQUIN VALLEY

Furrow Irrigated

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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE FRESH MARKET TOMATOES Furrow Irrigated San Joaquin Valley - 2000

INTRODUCTION

The sample costs for furrow irrigated, fresh market tomato production in the San Joaquin Valley are presented in this study. The study is intended as a guide, only, and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. Practices described are based on those production procedures considered typical for this crop and area. Sample costs for labor, materials, equipment and custom services are based on current figures. Cash and non-cash overhead costs are also included. Some costs and practices detailed in this study may not be applicable to your situation. A blank column, “*Your Costs*”, is provided to enter your actual costs in Tables 1 and 2.

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

Sample Cost of Production studies are available for many commodities and can be obtained through the Department of Agricultural and Resource Economics, (530) 752-1515. Current studies, those prepared during the last five years, can be downloaded from the department website (www.agecon.ucdavis.edu), or obtained from selected county Cooperative Extension offices.

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GENERAL ASSUMPTIONS

The following assumptions pertain to sample costs to produce fresh market tomatoes in the San Joaquin Valley. Practices described are not recommendations by the University of California, but rather represent production procedures considered typical for this crop and area, and as such serve only as a sample or guide. Costs are on an annual, per acre basis. All costs, practices, and materials will not be applicable to every situation nor used during every year. Cultural practices vary by grower and region, and variations can be significant. For more information on California fresh market tomato production visit the U.C. Vegetable Research and Information Center website at www.VRIC.ucdavis.edu. **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 Land and Share Rent. This cost of production study is based on a hypothetical 1,200 acre field and row crop farm of which 200 acres are planted to fresh market tomatoes. Other crops grown on the farm and in rotation with tomatoes may include small grains, cantaloupes, mixed melons, cotton, sugar beets, peppers, broccoli, field corn, green and dry beans.

Land in this study is rented on a per acre basis with the landowner receiving \$200 per acre. The land rented includes developed wells and irrigation system. The landowner is responsible for the maintenance of the irrigation system. All costs for the land and the irrigation system including property taxes are incurred by the landowner.

Cultural Practices and Material Inputs

Land Preparation. Primary tillage which includes discing, rolling, subsoiling, land leveling, and listing beds occurs in November of the year preceding planting. Therefore, the crop year in this study is from November through October. Fields are disced twice, then chiseled twice, followed by a finishing pass with the disc. The ground is smoothed in two passes with a triplane. Beds on five-foot centers are made with a six-row lister and are shaped in the spring with a bed-shaper cultivator.

Stand Establishment. The seedlings (transplants) are grown by a commercial greenhouse from seed supplied by the grower. The cost for both seedlings and seed are shown in Table 2. The seedling costs represents the greenhouse charges. Seedlings are planted from March through July using a three-row transplanter. A mid-April planting date is used in this report. The plants are spaced 18 inches apart in a single row on 60 inch beds, for a total of 5,800 plants per acre.

Fertilization. Nitrogen and phosphate are applied as a liquid, preplant fertilizer during bed shaping. Fifty pounds per acre of nitrogen as 10-34-0 and UN-32, and 100 pounds of phosphate per acre as 10-34-0 are incorporated into the beds. Also, potash at 100 pounds per acre is incorporated into the beds prior to planting. One hundred pounds of nitrogen as UN-32 is injected into the irrigation water or sidedressed in two equal applications during the growing season, totaling 150 pounds of nitrogen for the season.

Irrigation. The irrigation water is supplied by the water district at \$41.00 per acre foot (\$3.41 per acre inch). The first irrigation occurs shortly after planting, followed by subsequent irrigations at 8 to 12 day intervals depending on the weather. A total of 36 acre inches is applied to the crop.

Pest Management. All tomato fields will experience some pest incidence, but the specific pests and management will vary between fields due to planting date, location, microclimate, and pest pressure. Integrated pest management is used to control weeds, insects, diseases, and related pests.

Weeds. The most troublesome weeds in tomatoes are dodder, field bindweed, nightshade, and nutsedge. Prior to transplanting, a preemergent herbicide is applied and incorporated into the beds. Weed control for the remainder of the season consists of hand hoeing three to four weeks after planting and three timely mechanical cultivations.

Insects And Diseases. General foliage and fruit feeders are tomato fruitworms, various armyworms, leafminers, russet mites, stink bugs, thrips, and potato aphids. Pinworms are an occasional problem. Although there are many diseases affecting tomatoes, incidence is usually patchy and left untreated. However, early to midseason plantings may require copper protectant applications for bacterial speck or fungicide protection from late blight, while mid to late season plantings may require fungicide applications to prevent or minimize damage from powdery mildew, late blight, and black mold.

In this study late blight (*Phytophthora infestans*), powdery mildew (*Leveillula taurica*), consperse stink bug (*Euschistus conspersus*), russet mite (*Aculops lycopersici*), and armyworm (*Spodoptera spp.*) are the target pests. Late blight and powdery mildew are prevented with two air applications of Quadris fungicide in late April and early May. The insects and mites are controlled with two tank mix air applications, the first in late May and the second in late June. The first application contains Monitor insecticide for stink bug, and wettable sulfur for russet mite and powdery mildew. The second application contains Monitor and wettable sulfur, plus Confirm insecticide for armyworms.

The pesticides and rates mentioned in this cost study are listed in [Integrated Pest Management For Tomatoes](#) and [UC Pest Management Guidelines, Tomato](#). For more information on pest identification, monitoring, and management visit the U.C. 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.

Harvest and Yields. The tomato crop is hand harvested 80 to 110 days after transplanting (mid to late July in this study) by contract labor. Tomatoes are picked and hauled from the field to the packing shed. Custom harvesting of the tomatoes costs \$62 per gross ton plus \$10 per gross ton to haul the tomatoes to the packing shed. Gross crop yields range from 12 to 25 tons per acre in the San Joaquin Valley. The average packout rate ranges from 60-75 percent, netting 8-18 tons per acre of marketable fruit. Average annual net crop yields in the San Joaquin Valley from 1990-1999 ranged from 10.30 to 14.54 tons per acre and are shown in Table A. In general late season tomatoes have lower yields than early season tomatoes.

A bulk-packed box of tomatoes weighs 25 pounds. This study assumes a gross yield of 18 tons and a packout rate of 72% netting 13 tons or 1,040 packed boxes of tomatoes. The \$72 picking and hauling cost per gross ton equates to \$1.25 per packed box. Packing fees vary between sheds and include the costs of packing labor, packaging materials such as cartons and pallets, selling fees, and miscellaneous costs. This study uses a packing fee of \$2.50 per box. The total harvest cost is \$3.75 per packed box.

Returns. Growers may produce some tomatoes under contract, but most are sold on the open market. Weighted average prices in the last ten years ranged from \$327.95 to \$550.79 per ton for growers in the San Joaquin Valley. This price range is equal to \$4.10 to \$6.88 per box. Due to the market fluctuation of prices received by growers, an assumed return price of \$5.50 per box is used in this study. Table 6, Ranging Analysis, shows the net returns above operating costs, cash costs and total costs for various price and yield levels. Differences in fresh market tomato prices and yields can be substantial over the season. Average return prices to growers over the last ten years are shown in Table A.

Table A. Average Yield and Price for Fresh Market Tomatoes, San Joaquin Valley 1990 - 99¹

<u>Year</u>	<u>Yields²</u>		<u>Revenues²</u>	
	<u>Tons/Acre</u>	<u>Boxes/Acre</u>	<u>\$/Ton</u>	<u>\$/Box</u>
1999	12.12	970	336.16	4.20
1998	10.30	824	550.79	6.88
1997	12.93	1,034	382.13	4.78
1996	12.48	998	373.37	4.67
1995	13.53	1,083	346.48	4.33
1994	14.39	1,151	447.00	5.59
1993	14.54	1,163	380.45	4.76
1992	12.52	1,002	402.52	5.03
1991	12.89	1,031	327.95	4.10
1990	13.80	1,104	385.36	4.82

¹Source: County Agricultural Commissioner's Annual Crop Report - Fresno, Merced, San Joaquin Counties. Various issues. ²Weighted averages for Fresno, Merced, San Joaquin Counties.

Assessments. Tomato growers are 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) pay \$0.106 per ton. The California Tomato Commission assesses a fee of \$0.04 per packed box (\$3.20 per ton) to fund research and marketing programs. This fee is typically split between the grower and the packer-shipper.

Labor. Basic hourly wages for workers are \$7.75 and \$6.25 per hour for machine operators and non-machine labor (irrigators and manual laborers), respectively. Adding 34% for the employer's share of federal and state payroll taxes and other possible employer paid benefits raises the total labor costs to \$10.39 per hour for machine operators and \$8.04 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. Wages for managers are not included as a cash cost. Any returns above total costs are considered a return to management and risk.

Risk. Risks associated with fresh market tomato production are not assigned a production cost. The risks associated with fresh market vegetables 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 fresh market vegetable production.

Fresh market vegetables are a high risk enterprise because the market for fresh vegetables is volatile for both price and quantity. Risk is caused by uncontrollable factors such as a decrease in the demand, an oversupply, weather causing planting and harvesting delays, and diseases and insects which may lower quality.

Perishability of fresh vegetables diminishes the opportunity to wait for a better market and price. Because of the risk involved, access to a market is crucial. A market channel should be determined before any tomato production begins.

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, 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 10.71% per year. A nominal interest rate is the typical 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 0.723% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,049 for the entire farm or \$0.87 per acre.

Office Expense. Office and business expenses are estimated at \$50 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc. Cash overhead costs are found in Tables 1, 2, 3 and 4.

Non-cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment used for 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 annual capital recovery costs is as follows.

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

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (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. It is the function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 7.08% used to calculate capital recovery cost is the 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.

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. The fuel, lube, 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 selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

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 fuel type. Prices for on-farm delivery of diesel and gasoline are \$1.09 and \$1.49 per gallon, respectively.

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

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Table 1.

UNIVERSITY of CALIFORNIA COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE FRESH MARKET TOMATO
 Furrow Irrigation
 SAN JOAQUIN VALLEY - 2000

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre				Total Cost	Your Cost
		Labor Costs	Fuel,Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:							
Stubble Disc 2X	0.25	3.12	7.32			10	
Chisel 2X	0.60	7.48	17.33			25	
Land Plane Field 2X	0.28	3.44	8.31			12	
Disc	0.10	1.25	3.10			4	
List Beds	0.20	2.49	5.59			8	
Cultivate 3X	0.79	9.90	7.42			17	
Shape Beds/Fertilize	0.25	3.12	7.31	46.09		57	
Spray & Incorporate Herbicides	0.25	3.12	4.52	5.00		13	
Mulch/Shape Bed/Fertilize	0.25	3.12	4.86	10.00		18	
Transplant Seedlings	0.33	28.28	4.10	261.00		293	
Make Ditches	0.06	0.75	0.93			2	
Disease Control-Blight/Mildew 2X	0.00			34.60	10.00	45	
Irrigate	3.50	28.14		95.48		124	
Insect/Mildew Control 2X	0.00			92.59	10.00	103	
Irrigate & Fertilize	1.00	8.04		56.18		64	
Close Ditch & Drag	0.06	0.75	0.83			2	
Hoe Weeds	0.00				50.00	50	
Pickup Truck Use	0.71	8.90	4.44			13	
TOTAL CULTURAL COSTS	8.64	111.89	76.07	600.94	70.00	859	
Harvest:							
Field Pick					1,116.00	1,116	
Haul To Shed					180.00	180	
Box, Pack & Sell					2,600.00	2,600	
TOTAL HARVEST COSTS					3,896.00	3,896	
Assessment:							
CDFA Curly Top Virus Control				1.38		1	
CA Tomato Commission				20.80		21	
TOTAL ASSESSMENT COSTS				22.18		22	
Postharvest:							
Disc Crop Residue 2X	0.29	3.56	8.32			12	
TOTAL POSTHARVEST COSTS	0.29	3.56	8.32			12	
Interest on operating capital @ 10.71%						63	
TOTAL OPERATING COSTS/ACRE		115.45	84.38	623.12	3,966.00	4,852	
CASH OVERHEAD:							
Rent - Land						200	
Office Expense						50	
Property Taxes						3	
Property Insurance						2	
Investment Repairs						2	
TOTAL CASH OVERHEAD COSTS						256	
TOTAL CASH COSTS/ACRE						5,108	
NON-CASH OVERHEAD:							
	Per producing			Annual Costs			
Investment	Acres			Capital Recovery			
Shop Building	54.35			4.61		5	
Shop Tools	10.89			1.01		1	
Fuel Tanks & Pumps	16.53			1.53		2	
Fuel Wagon	1.65			0.22		0	
Tool Carrier	12.60			1.34		1	
Gated Pipe	4.76			0.44		0	
Equipment	332.73			42.40		42	
TOTAL NON-CASH OVERHEAD COSTS	433.50			51.55		52	
TOTAL COSTS/ACRE						5,160	
TOTAL COST/BOX						4.96	

Table 2.

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
 COSTS and RETURNS PER ACRE to PRODUCE FRESH MARKET TOMATOES
 Furrow Irrigation
 SAN JOAQUIN VALLEY - 2000

	Quantity Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Tomatoes	1,040.00	box	5.50	5,720	
OPERATING COSTS					
Fertilizer:					
10-34-0	290.00	lb	0.14	40	
UN-32	121.00	lb N	0.29	35	
0-0-60 (MOP)	100.00	lb	0.10	10	
Herbicide:					
Trilin 5 (Trifluralin)	0.18	gal	27.80	5	
Seed:					
Tomato Seed Hybrid	5.80	thou	17.00	99	
Transplants:					
Seedlings	5.80	thou	28.00	162	
Fungicide:					
Quadris Flowable	12.40	oz	2.79	35	
Custom:					
Air Application Spray	4.00	acre	5.00	20	
Pick Tomatoes	18.00	ton	62.00	1,116	
Haul Tomatoes	18.00	ton	10.00	180	
Shed Pack Tomatoes	1,040.00	box	2.50	2,600	
Irrigation:					
Water SJV	36.00	acin	3.41	123	
Insecticide:					
Monitor 4 Spray	3.00	pint	13.37	40	
Sulfur DF	40.00	lb	0.85	34	
Confirm 2F	12.00	oz	1.54	18	
Contract:					
Hoeing	1.00	acre	50.00	50	
Assessment:					
CDFA-CTVP	13.00	ton	0.11	1	
CTC (growers share)	13.00	ton	1.60	21	
Labor (machine)	5.31	hrs	10.39	55	
Labor (non-machine)	7.50	hrs	8.04	60	
Fuel - Gas	2.08	gal	1.48	3	
Fuel - Diesel	46.36	gal	1.09	51	
Lube				8	
Machinery repair				23	
Interest on operating capital @ 10.71%				63	
TOTAL OPERATING COSTS/ACRE				4,852	
TOTAL OPERATING COST/BOX				4.67	
NET RETURNS ABOVE OPERATING COSTS				868	

UNIVERSITY of CALIFORNIA COOPERATIVE EXTENSION
Table 2. continued

CASH OVERHEAD COSTS:	
Rent - Land	200
Office Expense	50
Property Taxes	3
Property Insurance	2
Investment Repairs	2
TOTAL CASH OVERHEAD COSTS/ACRE	256
TOTAL CASH COSTS/ACRE	5,108
TOTAL CASH COSTS/BOX	4.91
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY)	
Shop Building	5
Shop Tools	1
Fuel Tanks & Pumps	2
Fuel Wagon	0
Tool Carrier	1
Gated Pipe	0
Equipment	42
TOTAL NON-CASH OVERHEAD COSTS/ACRE	52
TOTAL COSTS/ACRE	5159.67
TOTAL COSTS/BOX	4.96
NET RETURNS/ACRE	560.33
NET RETURNS/BOX	0.54

Table 3

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
 *MONTHLY CASH COSTS PER ACRE TO PRODUCE FRESH MARKET TOMATOES
 Furrow Irrigation
 SAN JOAQUIN VALLEY - 2000

Beginning NOV 99 Ending OCT 00	NOV 99	DEC 99	JAN 00	FEB 00	MAR 00	APR 00	MAR 00	JUN 00	JUL 00	AUG 00	SEP 00	OCT 00	Total
Cultural:													
Stubble Disc 2X	10												10
Chisel 2X	25												25
Land Plane Field	12												12
Disc	4												4
List Beds	8												8
Cultivate 3X					6		6	6					17
Shape Beds/Fertilize					57								57
Spray & Incorporate Herbicide					13								13
Mulch/Shape Bed/Fertilize						18							18
Transplant Seedlings						293							293
Make Ditches						1		1					2
Disease Control-Blight/Mildew						22	22						45
Irrigate						35	18	18	53				124
Insect/Mildew Control 2X							42	61					103
Irrigate & Fertilize 2X							32	32					64
Close Ditch & Drag							1	1	1				2
Hoe Weeds								50					50
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1			13
TOTAL CULTURAL COSTS	61	1	1	1	76	371	122	169	55	1			859
Harvest:													
Field Pick									1,116				1,116
Haul To Shed									180				180
Box, Pack & Sell									2,600				2,600
TOTAL HARVEST COSTS									3,896				3,896
Assessment:													
CDFA Curly Top Virus										1			1
CA Tomato Commission										21			21
TOTAL ASSESSMENT COSTS										22			22
Postharvest:													
Disc Crop Residue 2X										12			12
TOTAL POSTHARVEST COSTS										12			12
Interest on operating capital	1	1	1	1	1	5	6	7	42	0			63
TOTAL OPERATING COSTS/ACRE	61	2	2	2	78	375	127	176	3,993	35			4,852
OVERHEAD:													
Rent - Land				200									200
Office Expense	5	5	5	5	5	5	5	5	5	5			50
Property Taxes			1						1				3
Property Insurance			1						1				2
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL CASH OVERHEAD COSTS	5	5	7	205	5	5	5	5	7	5	0	0	256
TOTAL CASH COSTS/ACRE	66	7	9	207	83	381	132	181	4,001	40	0	0	5,108

*Monthly costs can be adjusted to correspond with various planting dates.

Table 4

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SAN JOAQUIN VALLEY - 2000

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
00	130 HP 2WD Tractor	62,500	10	18,462	7,600	293	405	8,298
00	280 HP Crawler	166,500	10	49,181	20,247	780	1,078	22,106
00	92 HP 2WD Tractor	39,775	10	11,749	4,837	186	258	5,281
00	Bed Shaper - 3 Row	9,653	12	1,337	1,146	40	55	1,241
00	Cultivator Sled	3,745	15	375	398	15	21	434
00	Disc - Offset 18'	14,000	12	1,939	1,662	58	80	1,800
00	Disc - Offset 26'	25,071	12	3,472	2,977	103	143	3,223
00	Disc - Stubble 16'	12,944	12	1,793	1,537	53	74	1,664
00	Ditcher - V	7,800	12	1,080	926	32	44	1,003
00	Incorporator - 15'	15,000	9	2,997	2,061	65	90	2,216
00	Lister - 3 Row 16'	2,838	15	284	302	11	16	329
00	Mulcher - 6 Row	19,260	15	1,926	2,049	77	106	2,232
00	Pickup Truck - 1/2	17,655	7	1,766	3,082	70	97	3,249
00	Saddle Tank - 3001	1,650	10	165	224	7	9	240
00	Saddle Tank - 3002	1,650	10	165	224	7	9	240
00	Scraper - Drag 10'	2,581	18	172	253	10	14	277
00	Subsoiler - 8'	8,022	10	1,419	1,044	34	47	1,125
00	Transplanter 3 Row	6,833	7	683	1,193	27	38	1,257
00	Triplane - 16'	20,109	12	2,785	2,388	83	114	2,585
TOTAL		437,586		101,750	54,150	1,950	2,697	58,796
60% of New Cost*		262,552		61,050	32,490	1,170	1,618	35,278

*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								
Fuel Tanks & Pumps	19,835	20	1,984	1,836	79	109	397	2,421
Fuel Wagon	1,975	10	198	268	8	11	40	327
Gated Pipe	5,712	20	571	529	23	31	100	683
Shop Building	65,216	25	6,522	5,535	259	359	652	6,805
Shop Tools	13,072	20	1,307	1,210	52	72	131	1,465
Tool Carrier	15,118	15	1,512	1,608	60	83	756	2,508
TOTAL INVESTMENT	120,928		12,094	10,986	481	665	2,076	14,208

ANNUAL BUSINESS OVERHEAD

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Office Expense	1,200	acre	50	60,000
Rent - Land	200	acre	200	40,000

Table 5

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
SAN JOAQUIN VALLEY - 2000

Yr	Description	Actual Hours Used	Capital Recovery	Cash Overhead		Operating		Total Oper.	Total Costs/Hr.
				Insur- ance	Taxes	Repairs	Fuel & Lube		
00	130 HP 2WD Tractor	1200.1	3.80	0.15	0.20	2.80	9.46	12.26	16.40
00	280 HP Crawler	1599.6	7.59	0.29	0.40	4.26	20.37	24.63	32.92
00	92 HP 2WD Tractor	1200.4	2.42	0.09	0.13	1.78	5.66	7.44	10.08
00	Bed Shaper - 3 Row	166.0	4.14	0.14	0.20	1.91	0.00	1.91	6.40
00	Cultivator Sled #1	166.9	1.43	0.05	0.07	1.16	0.00	1.16	2.72
00	Disc - Offset 18'	166.0	6.01	0.21	0.29	2.19	0.00	2.19	8.69
00	Disc - Offset 26'	166.0	10.76	0.37	0.52	3.92	0.00	3.92	15.57
00	Disc - Stubble 16'	166.1	5.55	0.19	0.27	2.03	0.00	2.03	8.04
00	Ditcher - V	164.0	3.39	0.12	0.16	2.08	0.00	2.08	5.75
00	Incorporator - 15'	166.0	7.45	0.24	0.33	4.36	0.00	4.36	12.36
00	Lister - 3 Row 16'	166.0	1.09	0.04	0.06	0.88	0.00	0.88	2.06
00	Mulcher - 6 Row	166.0	7.41	0.28	0.38	5.95	0.00	5.95	14.01
00	Pickup Truck - 1/2	266.8	6.93	0.16	0.22	1.25	4.96	6.21	13.52
00	Saddle Tank - 300g #1	120.0	1.12	0.03	0.05	0.23	0.00	0.23	1.43
00	Saddle Tank - 300g #2	120.0	1.12	0.03	0.05	0.23	0.00	0.23	1.43
00	Scraper - Drag 10'	166.0	0.91	0.04	0.05	0.38	0.00	0.38	1.38
00	Subsoiler - 8'	200.0	3.13	0.10	0.14	1.79	0.00	1.79	5.17
00	Transplanter 3 Row	106.7	6.71	0.15	0.21	1.46	0.00	1.46	8.54
00	Triplane - 16'	250.2	5.73	0.20	0.27	3.02	0.00	3.02	9.22

Table 6

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
RANGING ANALYSIS
SAN JOAQUIN VALLEY - 2000

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE FRESH MARKET TOMATOES

	YIELD (box/acre)						
	840	1,040	1,240	1,440	1,640	1,840	2,040
OPERATING COSTS/ACRE:							
Cultural Cost	859	859	859	859	859	859	859
Harvest & Assessment Cost	3,169	3,918	4,667	5,417	6,166	6,915	7,664
Postharvest Cost	12	12	12	12	12	12	12
Interest on operating capital	57	63	70	77	83	90	97
TOTAL OPERATING COSTS/ACRE	4,096	4,852	5,608	6,364	7,120	7,876	8,632
TOTAL OPERATING COSTS/BOX	4.88	4.67	4.52	4.42	4.34	4.28	4.23
CASH OVERHEAD COSTS/ACRE							
CASH OVERHEAD COSTS/ACRE	256	256	256	256	256	256	256
TOTAL CASH COSTS/ACRE	4,353	5,109	5,864	6,620	7,376	8,132	8,888
TOTAL CASH COSTS/BOX	5.18	4.91	4.73	4.60	4.50	4.42	4.36
NON-CASH OVERHEAD COSTS/ACRE							
NON-CASH OVERHEAD COSTS/ACRE	52	52	52	52	52	52	52
TOTAL COSTS/ACRE	4,404	5,160	5,916	6,672	7,428	8,184	8,940
TOTAL COSTS/BOX	5.24	4.96	4.77	4.63	4.53	4.45	4.38

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR FRESH MARKET TOMATOES

PRICE (\$/BOX)	YIELD (box/acre)						
	840	1,040	1,240	1,440	1,640	1,840	2,040
3.85	-862	-848	-834	-820	-806	-792	-778
4.40	-400	-276	-152	-28	96	220	344
4.95	62	296	530	764	998	1,232	1,466
5.50	524	868	1,212	1,556	1,900	2,244	2,588
6.05	986	1,440	1,894	2,348	2,802	3,256	3,710
6.60	1,448	2,012	2,576	3,140	3,704	4,268	4,832
7.15	1,910	2,584	3,258	3,932	4,606	5,280	5,954

NET RETURNS PER ACRE ABOVE CASH COSTS FOR FRESH MARKET TOMATOES

PRICE (\$/box)	YIELD (box/acre)						
	840	1,040	1,240	1,440	1,640	1,840	2,040
3.85	-1,119	-1,105	-1,090	-1,076	-1,062	-1,048	-1,034
4.40	-657	-533	-408	-284	-160	-36	88
4.95	-195	39	274	508	742	976	1,210
5.50	267	611	956	1,300	1,644	1,988	2,332
6.05	729	1,183	1,638	2,092	2,546	3,000	3,454
6.60	1,191	1,755	2,320	2,884	3,448	4,012	4,576
7.15	1,653	2,327	3,002	3,676	4,350	5,024	5,698

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR FRESH MARKET TOMATOES

PRICE (\$/box)	YIELD (box/acre)						
	840	1,040	1,240	1,440	1,640	1,840	2,040
3.85	-1,170	-1,156	-1,142	-1,128	-1,114	-1,100	-1,086
4.40	-708	-584	-460	-336	-212	-88	36
4.95	-246	-12	222	456	690	924	1,158
5.50	216	560	904	1,248	1,592	1,936	2,280
6.05	678	1,132	1,586	2,040	2,494	2,948	3,402
6.60	1,140	1,704	2,268	2,832	3,396	3,960	4,524
7.15	1,602	2,276	2,950	3,624	4,298	4,972	5,646

*Bold Type is yield and return used in study

Table 7

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
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)
Fresh Mkt	5,720	4,852	868	5,180	612	5,160	560

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)
Fresh Mkt	1,144,000	970,471	173,529	102,704	122,296	1,032,014	111,986

BREAKEVEN PRICES PER YIELD UNIT

CROP	Yield Units	Base Yield (Units/Acre)	Breakeven Price to Cover		
			Operating Costs	Cash Costs	Total Costs
Fresh Mkt	box	1040	4.67	4.91	4.96

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield to Cover		
			Operating Costs	Cash Costs	Total Costs
Fresh Mkt	box	5.50	882.20	928.80	938.20