UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2002

SAMPLE COSTS TO PRODUCE
PROCESSING
TOMATOES

SAN JOAQUIN VALLEY-South

Fresno County

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UC COOPERATIVE EXTENSION

SAMPLE COSTS to PRODUCE PROCESSING TOMATOES
San Joaquin Valley South - Fresno County 2002

STUDY CONTENTS

INTRODUCTION

Sample costs to produce processing tomatoes in the San Joaquin Valley – Fresno County 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.

Sample Cost of Production studies for many commodities are available and can be requested through the Department of Agricultural Economics, UC Davis, (530) 752-3589. 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//coststudies.ucdavis.edu.

ASSUMPTIONS

The following assumptions refer to Tables 1 to 6 and pertain to sample costs to produce processing tomatoes in the southern San Joaquin Valley – Fresno County. Practices described are not recommendations by the University of California, but 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. Differences can be significant. In this study, growers planting a larger percentage of double rows will increase seed, weeding/thinning and some fertilizer and chemical costs. Also, depending on the water district, water costs can increase significantly. The practices and inputs used in this cost study serve as a guide, only. **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.

Production Operating Costs

Land Preparation. Fields are disced once followed by subsoiling 18 to 22-inches deep, and two discings. The ground is smoothed in two passes with a triplane. Beds on five-foot centers are made and fertilizer applied with a six-row lister. Beds are then mulched and shaped, and fertilizer incorporated with a bed-shaper cultivator. All operations are done in November and December of the preceding year.

Planting. Planting begins in late January and is spread over a four-month period so the grower can meet the delivery contracts at harvest. In this report 33% (400) of the acres are planted in February and represent the January and February plantings and 67% (800) are planted in April and represent March and April plantings. Hybrid varieties are seeded two rows per bed – 85,000 seed per acre - in January and February, and one row per bed – 65,000 seed per acre - in March and April. Seeding rates per acre range from 70,000 to 85,000 on double rows and 55,000 to 65,000 on single rows. Double rows 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 plant single rows on a bed. Planting patterns vary, some growers' plant single rows during the early season as well as double rows during the late season. Many growers also transplant tomato seedlings on a portion of their acres, but this cost is addressed in a separate study. Plants are thinned to stand by a hand thinning crew 30 to 45 days after planting for the early season and 20 to 30 days beginning with the mid-season planting.

Fertilization. A liquid preplant fertilizer, 10-34-0 at 180 pounds (15 gallons) of material per acre, is applied during bed listing. The bulk of applied nitrogen is sidedressed during the season at 153 pounds of N per acre as UN-32 (44 gallons or 478 pounds of material). At planting, a "popup" fertilizer 7-21-0 at 4 gallons per acre per seed line is placed with the seed. Also, an anti-crustant 2-0-0-12Ca at 7 gallons per acre per seed line is sprayed on a 7-inch band.

Irrigation. Water costs in the San Joaquin Valley vary by water district and costs the grower from $30 to $200 per acre-foot. In this study the Westland Irrigation District supplies the priority one water with no supplemental water included for $50.16 per acre-foot ($4.18/acin). Six-acre inches are sprinkled in two to three irrigations to germinate the seed and establish a stand. In this study, the crop receives two sprinkler irrigations and the third irrigation is applied 50% sprinkled and 50% furrow irrigated. This is followed by subsequent alternate row furrow irrigations (irrigate alternate furrows, the next irrigation in alternate furrows not previously irrigated) at 7 to 14 day intervals. A total of 3.5 acre-feet (42-acre inches) is applied to the crop in this study – 10-acres inches preplant and 32-acres inches during the growing season. Water cost at different rates is shown in Table A.

Table A. Per-acre Water Cost for 3.5 acre-feet.

$/acre-foot	$/acre	$/acre-foot	$/acre
30	105	120	420
40	140	130	455
50	175	140	490
60	210	150	525
70	245	160	560
80	280	170	595
90	315	180	630
100	350	190	665
110	385	200	700

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. For information and pesticide use permits, contact the local county agricultural commissioner's office.

Pest Control Advisor (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisors. In addition the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. In this study the PCA works for a chemical and fertilizer company.

Insects and Diseases. During the second cultivation, Dithane at 2 pounds per acre and Kocide at 2 pounds per acre are applied to control bacterial speck. Sulfur dust is applied by air to control russet mites. An air application of Avaunt or Dipel is applied to the mid and late season plantings (67% of the acres) to control armyworms. Traps for monitoring pinworm are place in the field by the PCA at no cost. No-Mate flowable is applied to 12.5% of the acres (outside edges of field) to control pinworm in the mid-season/late harvest tomatoes. Bravo or Quadris for Black Mold control is also applied to 67% acres (March/April planting) or mid to late season harvest. Another worm spray with Success is applied to the late season harvest (April planting).

Weeds. Hand weeding, herbicides, and mechanical cultivation are used for weed control. Vapam is bladed on six-inch bands into the bed preplant on 33% of the acres. Matrix at two ounces per treated acre on a six-inch band is applied post plant on the remaining 67% and sprinkled in during the first irrigation. The crop is cultivated two times during the season. Seedling tomatoes are hand thinned and weeded by a contract labor crew. Hand weeding is repeated two times and the cost per acre decreases with each weeding. Double row weeding costs are higher than single row.

Crop Protectant. Snow or Sunshield is applied to 25% of the acres to protect the late harvested fruit from sunburn.

Harvest. Over 30% of the growers custom harvest their crop. A custom operator mechanically harvests the tomatoes in this study. Hauling from the field to the cannery is arranged and paid by the canner.

Growers with this acreage that do not custom harvest will likely have two tomato harvesters -- a primary harvester and a second harvester for special harvest situations and as a backup to the primary harvester. The grower will also need tractors, trailer dollies, generators, lights, harvest support equipment, and each harvester will require four manual sorters, a harvester driver, and two bulk-trailer tractor operators. On average, he will harvest 2.0 loads at 25 tons per load per hour with two (one day and one night) shifts of 10 hours each. Growers in this case will subtract the custom harvest charges from the appropriate tables and add in their costs for labor and equipment.

Yields. Average annual crop yields in Fresno County over the past ten years ranged from 30.78 to 41.59 tons per acre. The average county yields from 1991 to 2000 are shown in Table B. In this study, 40 tons per acre are used.

Returns. Growers produce tomatoes under contract from various food processing companies. Average prices ranged from $46.00 to $57.00 per ton over the last ten years and are shown in Table A. Based on current market estimates, $51.50 per ton is used in this study.

Table B. Average Yield & Price - Fresno County

Year	Ton/ac	$/ton
2000	40.20	51.00
1999	41.50	57.00
1998	35.77	53.00
1997	39.15	51.00
1996	39.80	52.00
1995	38.67	54.00
1994	41.59	51.00
1993	35.79	47.00
1992	35.21	46.00
1991	30.78	52.30
Avg.	37.85	51.43

Ag Commissioner Annual Crop Report 1991-

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 $10.00 and $6.75 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 $13.40 per hour for machine operators and $9.05 per hour for non-machine labor. For growers doing their own harvest, 50% or more of the tractor drivers are contracted at the $7.25 labor cost plus overhead. 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.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $1.26 and $1.51 per gallon, respectively. The fuel, lube, 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 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.

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 7.40% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

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 that affect the crop profitability and economic viability.

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.

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 0.660% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,380 for the entire farm or $0.345 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 is rented at a flat rate or as a percentage of gross income. Tomato land in this study is rented on a per acre basis with the landowner receiving $175 per acre with priority 1 water rights. Rents in the area depend upon water available to that land. Land in the area may have priority 1 rights (2.6-acre feet) or priority 2 rights (1.3-acre feet). 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 double portable toilet and washing facilities for the ranch during the crop season. The cost includes delivery and 7 months of weekly service. Costs will vary depending upon the crops and number of portable units required.

Managers Salary. Per acre costs for manager's salaries will vary, depending on farm size and overhead allocations. Manager salaries are estimated at $100,000 plus 34% for benefits or $134,000 annually. In addition there may be area managers or specific crop managers on the ranch. Managerial costs in this study are estimated to be $15.50 per acre and represents an average costs over various size farms as determined by participating growers.

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.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x 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 the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is 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 6.41% 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.

Pipe. The irrigation system owned by the grower consists of 86 10-inch X 40 foot sections of 30-inch mainline, 774 2-inch X 30-foot sprinkler pipe sections, and 47 10-inch X 40-foot sections of gated pipe with 30-inch gate spacing. The grower also owns 10 pipe trailers with hydraulic lifts.

Truck. A two-ton truck containing equipment and materials to repair and service equipment in the field is designated as a service truck.

Equipment. Farm equipment is purchased new or used, but the 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 for equipment and other investments are shown in Tables 3 and 8. 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 and are discussed under operating costs.

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

Acknowledgements. Thank you to the many Fresno County growers, researchers, and consultants who provided input data for this study.

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UC COOPERATIVE EXTENSION

Table 1. COSTS PER ACRE TO PRODUCE TOMATOES

SAN JOAQUIN VALLEY - Fresno County 2002

	Operation	Cash and Labor Costs per Acre					
	Time	Labor	Fuel, Lube	Material	Custom/	Total	Your
Operation	(Hrs/A)	Cost	& Repairs	Cost	Rent	Cost	Cost
Cultural:							
Land Prep-Disc 3X	0.32	5	11	0	0	16	
Land Prep-Subsoil 2X	0.61	10	27	0	0	36	
Land Prep-Triplane 2X	0.24	4	7	0	0	11	
Land Prep/Fertilize-List 6 Bed	0.05	1	1	22	0	24	
Land Prep-Shape/Mulch Bed	0.20	3	4	0	0	7	
Irrigate-Preplant	2.40	65	12	42	0	119	
Weed-Mulch Bare Beds	0.20	3	4	0	0	7	
Weed-Vapam 33% acre	0.07	1	1	15	0	17	
Weed-Vapam Caps Removed 33% acre	0.04	1	1	0	0	1	
Plant/Fertilize	0.30	5	5	215	0	225	
Irrigate-Sprinkle for Plant Establishment	3.20	81	16	39	0	137	
Weed-Cultivate	0.20	3	4	0	0	7	
Weed-Hoe/Thin	0.00	0	0	0	60	60	
Weed/Fertilize-Cultivate/Sidedress	0.20	3	4	40	0	47	
Weed-Mulch/Layby	0.20	3	4	4	0	11	
Weed-Hoe	0.00	0	0	0	38	38	
Weed/Insect-Cultivate/Spray	0.20	3	4	12	0	19	
Weed-Herbicide (Matrix)	0.10	2	2	17	0	20	
Irrigate-Furrow Plant Establishment	0.36	3	0	11	0	14	
Irrigate-Furrow	2.62	24	0	84	0	107	
Disease-Powdery Mildew	0.00	0	0	6	6	13	
Insect-Worms	0.00	0	0	16	4	19	
Insect-Pinworm 17% acre (late)	0.00	0	0	7	1	8	
Disease-Black Mold 67% acres (late)	0.00	0	0	12	4	16	
Insect-Worms 25% acres (late)	0.00	0	0	10	1	11	
Irrigate-Open Ditch	0.00	0	0	0	0	0	
Irrigate-Close Ditch	0.00	0	0	0	0	0	
Train Vines	0.21	3	4	0	0	8	
Whitewash 25% acres (late)	0.00	0	0	5	2	7	
Pickup Truck Use (2 pickups)	0.22	7	3	0	0	10	
TOTAL CULTURAL COSTS	11.94	230	114	557	115	1,017	
Harvest:							
Harvest Jan/Feb plant 33% ac	0.00	0	0	0	125	125	
Harvest Mar/Apr plant 40% ac	0.00	0	0	0	152	152	
Harvest Apr/May plant 27% ac	0.00	0	0	0	103	103	
TOTAL HARVEST COSTS	0.00	0	0	0	380	380	
Assessment:							
Assessments/Fees	0.00	0	0	16	0	16	
TOTAL ASSESSMENT COSTS	0.00	0	0	16	0	16	
Postharvest:							
Disc Crop Residue 2X	0.20	3	7	0	0	10	
TOTAL POSTHARVEST COSTS	0.20	3	7	0	0	10	
Interest on operating capital @ 7.40%						48	
TOTAL OPERATING COSTS/ACRE		233	121	573	495	1,470	

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Table 1. Continued

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cash Overhead:							
Office Expense						30	
Land Rent						175	
Liability Insurance						0	
Field Sanitation						0	
Crop Insurance 65%						26	
Manager Salary						16	
Property Taxes						2	
Property Insurance						2	
Investment Repairs						2	
TOTAL CASH OVERHEAD COSTS						253	
TOTAL CASH COSTS/ACRE						1,723	
Non-Cash Overhead:	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	
Pipe - Gated	3	0				0	
Pipe-Sprinkler774	8	1				1	
PipeMnLine10" 86pi	4	1				1	
Truck-Service 2Ton	31	6				6	
Pipe Trailer (10)	9	1				1	
Equipment	284	41				41	
TOTAL NON-CASH OVERHEAD COSTS	370	54				54	
TOTAL COSTS/ACRE						1,777	

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Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE TOMATOES

SAN JOAQUIN VALLEY - Fresno County 2002

	Rate/Acre	Quantity /Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS						
Tomatoes		40.00	ton	51.50	2,060	
OPERATING COSTS						
Fertilizer:						
10-34-0	180 lb (15 gal)	180.00	lb	0.12	22	
7-21-0 (Popup)	4 gal/seedline	5.37	gal	3.00	16	
N-Cal Anticrustant	1 gal/treated acin	9.32	gal	1.00	9	
UN-32	153 lb N (40 gal)	153.00	lb n	0.26	40	
Fumigant:						
Vapam	10 gal/acre 6” band	3.30	gal	4.50	15	
Herbicide:						
Treflan HP	1.20 pint	1.20	pint	3.48	4	
Matrix DF	2 oz/6” band	1.34	oz	12.68	17	
Fungicide:						
Dithane DF	2 lb	2.00	lb	3.49	7	
Kocide 101	2 lb	2.00	lb	2.55	5	
Sulfur, Dust 98%	35 lb	35.00	lb	0.18	6	
Insecticide:						
Avaunt	3.5 oz	2.35	oz	6.69	16	
Bravo Weatherstik	2.5 pt	1.68	pint	7.43	12	
Success	6 floz	1.50	floz	6.60	10	
NoMate TPW MEC	2.5 oz	0.42	floz	16.25	7	
Crop Protectant:						
Snow	80 lb	20.00	lb	0.26	5	
Irrigation:						
Water- Preplant		10.00	acin	4.18	42	
Water-Growing Season		32.00	acin	4.18	134	
Seed:						
Tomato Seed	85,000 dbl/65,000 sgl	71.60	thou	2.65	190	
Contract:						
Contract Labor double row thin/weed		5.30	hour	8.38	44	
Contract Labor single row thin/weed		6.40	hour	8.38	54	
Custom:						
Air Application Dust		35.00	lb	0.18	6	
Air Application Spray 10 gal		1.76	acre	5.25	9	
Air Application Spray 20 gal		0.25	acre	7.50	2	
Harvest		40.00	ton	9.50	380	
Assessment:						
CDFA-CTVP		40.00	ton	0.02	1	
CTGA		40.00	ton	0.17	7	
CTRI		40.00	ton	0.07	3	
CPTAB		40.00	ton	0.14	5	
Labor (machine)		11.26	hrs	13.40	151	
Labor (non-machine)		9.12	hrs	9.05	83	
Fuel - Gas		1.29	gal	1.51	2	
Fuel - Diesel		48.30	gal	1.26	61	
Lube					9	
Machinery repair					48	
Interest on operating capital @ 7.40%					48	
TOTAL OPERATING COSTS/ACRE					1,470	
NET RETURNS ABOVE OPERATING COSTS					590	

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Table 2. continued

	Quantity /Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS:					
Office Expense				30	
Land Rent				175	
Liability Insurance				0	
Field Sanitation				0	
Crop Insurance 65%				26	
Manager Salary				16	
Property Taxes				2	
Property Insurance				2	
Investment Repairs				2	
TOTAL CASH OVERHEAD COSTS/ACRE				253	
TOTAL CASH COSTS/ACRE				1,723	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Shop Building				1	
Storage Building				1	
Fuel Tanks & Pumps				0	
Shop Tools				0	
Pipe - Gated				0	
Pipe-Sprinkler				1	
Pipe-Main Line				1	
Truck-Service 2-Ton				6	
PipeTrailer (10)				1	
Equipment				41	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				54	
TOTAL COSTS/ACRE				1,777	
NET RETURNS ABOVE TOTAL COSTS				283	

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Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE TOMATOES

SAN JOAQUIN VALLEY - Fresno County 2002

Beginning NOV 01 Ending OCT 02	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTAL
Cultural:													
Land Prep-Disc 3X	16												16
Land Prep-Subsoil 2X	36												36
Land Prep-Triplane 2X	11												11
Land Prep/Fertilize-List		24											24
Land Prep-Shape/Mulch Bed		7											7
Irrigate-Preplant		119											119
Weed-Mulch Bare Beds		7											7
Weed-Vapam 33% ac		17											17
Weed-Vapam Caps Removed 33% ac			1										1
Plant/Fertilize				91		134							225
Irrigate-Sprinkle Plant Establishment				41	26	69							137
Irrigate-Furrow Plant Establishment							14						14
Irrigate-Furrow					4	12	48	27	16				107
Weed-Cultivate					2		5						7
Weed-Hoe/Thin					26		34						60
Weed/Fertilize-Cultivate/Sidedress					16		32						47
Weed-Mulch/Layby					4		8						11
Weed-Hoe							31	7					38
Weed/Insect-Cultivate/Spray							19						19
Weed-Matrix						20							20
Disease-Powdery Mildew								13					13
Insect-Worms									19				19
Insect-Pinworm 17% ac (late)										8			8
Disease-Black Mold 67% ac (late)										16			16
Insect-Worms 25% ac (late)										11			11
Irrigate-Open Ditch						0	0						0
Irrigate-Close Ditch								0		0			0
Train Vines								2	5				8
Whitewash 25% acres(late)										7			7
Pickup Truck Use (2 pickup)	1	1	1	1	1	1	1	1	1	1	1		10
TOTAL CULTURAL COSTS	64	175	2	133	79	237	192	49	41	43	1		1,017
Harvest:													
Harvest Jan/Feb plant 33%									125				125
Harvest Mar/Apr plant 40%										152			152
Harvest Apr/May plant 27%											103		103
TOTAL HARVEST COSTS									125	152	103		380
Assessment:													
Assessments/Fees										16			16
TOTAL ASSESSMENT COSTS										16			16
Postharvest:													
Disc Crop Residue 2X											10		10
TOTAL POSTHARVEST COSTS											10		10
Interest on operating capital	0	1	1	2	3	4	5	6	7	8	9		48
TOTAL OPERATING COSTS/ACRE	64	177	4	135	82	242	197	55	173	219	122		1,470

UC COOPERATIVE EXTENSION
Table 3. continued

Beginning NOV 01 Ending OCT 02	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	JUL 02	AUG 02	SEP 02	OCT 02	TOTAL
OVERHEAD:													
Office Expense	3	3	3	3	3	3	3	3	3	3	3	3	30
Land Rent												175	175
Liability Insurance			0										0
Field Sanitation	0	0	0	0	0	0	0	0	0	0	0		0
Crop Insurance 65%				26									26
Manager Salary	1	1	1	1	1	1	1	1	1	1	1	1	16
Property Taxes				1					1				2
Property Insurance				1					1				2
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL CASH OVERHEAD COSTS	4	4	4	32	4	4	4	4	6	4	4	179	253
TOTAL CASH COSTS/ACRE	68	181	8	167	86	246	201	59	179	223	126	179	1,723

UC COOPERATIVE EXTENSION

Table 4. ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

SAN JOAQUIN VALLEY - Fresno County 2002

ANNUAL INVESTMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
02	110HP 7410 2WD Tractor	60,044	6	24,757	8,851	280	424	9,555
02	125HP2000gal Booster Pump 2	18,000	5	5,863	3,288	79	119	3,486
02	125HP2000gal Booster Pump 1	18,000	5	5,863	3,288	79	119	3,486
02	150HP 7810 4WD Tractor 1	102,012	8	35,601	13,143	454	688	14,285
02	150HP 7810 4WDTractor 2	102,012	8	35,601	13,143	454	688	14,285
02	225HP 8400T Track Tractor	160,000	10	47,261	18,634	684	1,036	20,354
02	340HP 75E Track	171,600	10	50,688	19,985	734	1,111	21,830
02	Cultivator - 3 Row 1	10,725	5	3,494	1,959	47	71	2,077
02	Cultivator -3 Row 2	10,725	5	3,494	1,959	47	71	2,077
02	Disc - Stubble 18'	45,045	5	14,673	8,228	197	299	8,724
02	Ditcher - V	7,800	12	1,080	888	29	44	962
02	Injector - 15'	4,834	5	1,575	883	21	32	936
02	Lister - 6 Row	18,232	5	5,939	3,330	80	121	3,531
02	Mulcher - 15' 1	20,507	5	6,680	3,746	90	136	3,971
02	Mulcher - 15' 2	20,507	5	6,680	3,746	90	136	3,971
02	Pickup Truck - 1/2	17,655	7	1,766	3,000	64	97	3,161
02	Pickup Truck - 3/4	17,655	7	1,766	3,000	64	97	3,161
02	Planter - 3 Row	8,919	10	1,577	1,117	35	52	1,205
02	Planter - 6 Row	15,015	6	4,328	2,478	64	97	2,638
02	Rear Blade 15'	4,500	15	432	458	16	25	498
02	Saddle Tank 2-200 Gal	4,575	5	1,490	836	20	30	886
02	SaddleTank 2-200 Gal 2	4,575	5	1,490	836	20	30	886
02	Scraper - Drag 10'	2,581	18	172	240	9	14	263
02	Spray Boom - 20'	482	5	157	88	2	3	93
02	Subsoiler1 6' 9-shank	32,175	5	10,481	5,877	141	213	6,231
02	Triplane - 16'	20,109	10	3,556	2,519	78	118	2,716
02	Vine trainer	4,800	10	480	629	17	26	673
TOTAL		903,084		276,944	126,148	3,894	5,900	135,942
	60% of New Cost *	541,850		166,166	75,689	2,336	3,540	81,565

*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	1,734	72	109	397	2,312
Pipe - Gated	10,850	10		1,502	36	54	217	1,809
Pipe-Sprinkler 774 sections	33,865	10		4,689	112	169	677	5,647
PipeMain Line 10" 86 sections	17,286	10		2,393	57	86	346	2,883
PipeTrailer (10)	35,000	10	700	4,794	118	179	700	5,790
Shop Building	65,216	25	6,522	5,185	237	359	652	6,432
Shop Tools	13,072	20	1,307	1,143	47	72	131	1,393
Storage Building	26,308	20	2,631	2,300	96	145	526	3,066
Truck-Service 2-Ton	125,000	5	25,000	25,599	495	750	2,500	29,344
TOTAL INVESTMENT	346,432		38,144	49,339	1,269	1,923	6,146	58,677

ANNUAL BUSINESS OVERHEAD

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Crop Insurance 65%	1,200	acre	26.44	31,728
Field Sanitation	4,000	acre	0.48	1,920
Land Rent	1,200	acre	175.00	210,000
Liability Insurance	4,000	acre	0.34	1,360
Manager Salary	4,000	acre	15.50	62,000
Office Expense	4,000	acre	30.00	120,000

UC COOPERATIVE EXTENSION

Table 5. HOURLY EQUIPMENT COSTS

SAN JOAQUIN VALLEY - Fresno County 2002

			COSTS PER HOUR						
		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insurance	Taxes	Repairs	Fuel & Lube	Total Operating	Total Costs/Hr.
02	110HP 7410 2WD Tractor	1,993.40	2.66	0.08	0.13	2.84	9.25	12.09	14.97
02	125HP2000g Booster Pump 2	4,224.00	0.47	0.01	0.02	3.24	1.45	4.69	5.19
02	125HP2000g Boost Pump 1	3,168.00	0.62	0.01	0.02	3.24	1.45	4.69	5.35
02	150HP 7810 4WD Tractor 1	1,989.70	3.96	0.14	0.21	2.70	12.61	15.31	19.62
02	150HP 7810 4WDTractor 2	1,987.40	3.97	0.14	0.21	2.70	12.61	15.31	19.62
02	225HP 8400T Track Tractor	1,599.70	6.99	0.26	0.39	4.14	18.92	23.06	30.69
02	340HP 75E Track	1,599.90	7.49	0.28	0.42	4.44	28.59	33.03	41.22
02	Cultivator - 3 Row 1	398.00	2.95	0.07	0.11	2.38	0.00	2.38	5.51
02	Cultivator -3 Row 2	400.00	2.94	0.07	0.11	2.38	0.00	2.38	5.49
02	Disc - Stubble 18'	629.60	7.84	0.19	0.28	7.60	0.00	7.60	15.91
02	Ditcher - V	152.10	3.51	0.12	0.18	2.11	0.00	2.11	5.90
02	Injector - 15'	240.00	2.21	0.05	0.08	1.89	0.00	1.89	4.23
02	Lister – 6 Row	400.20	4.99	0.12	0.18	3.80	0.00	3.80	9.09
02	Mulcher - 15' 1	400.20	5.62	0.13	0.20	2.38	0.00	2.38	8.33
02	Mulcher - 15' 2	400.00	5.62	0.13	0.20	2.38	0.00	2.38	8.33
02	Pickup Truck - 1/2	266.00	6.77	0.14	0.22	1.26	5.06	6.32	13.45
02	Pickup Truck - 3/4	266.00	6.77	0.14	0.22	1.26	5.06	6.32	13.45
02	Planter - 3 Row	226.80	2.96	0.09	0.14	2.39	0.00	2.39	5.57
02	Planter - 6 Row	135.20	11.00	0.28	0.43	4.22	0.00	4.22	15.93
02	Rear Blade 15'	133.00	2.06	0.07	0.11	0.89	0.00	0.89	3.14
02	Saddle Tank 2-200 Gal 1	893.20	0.56	0.01	0.02	1.25	0.00	1.25	1.84
02	SaddleTank 2-200 Gal 2	438.00	1.14	0.03	0.04	1.25	0.00	1.25	2.46
02	Scraper - Drag 10'	154.10	0.94	0.04	0.05	0.38	0.00	0.38	1.40
02	Spray Boom - 20'	358.00	0.15	0.00	0.01	0.13	0.00	0.13	0.29
02	Subsoiler1 6' 9-shank	727.20	4.85	0.12	0.18	7.45	0.00	7.45	12.59
02	Triplane - 16'	290.40	5.21	0.16	0.24	3.06	0.00	3.06	8.67
02	Vine trainer	252.00	1.50	0.04	0.06	2.88	0.00	2.88	4.48

UC COOPERATIVE EXTENSION

Table 6. RANGING ANALYSIS

SAN JOAQUIN VALLEY - Fresno County 2002

	YIELD (ton/acre)						
	28.00	32.00	36.00	40.00	44.00	48.00	52.00
OPERATING COSTS/ACRE:							
Cultural Cost	1,017	1,017	1,017	1,017	1,017	1,017	1,017
Harvest Cost	266	304	342	380	418	456	494
Assessment	13	14	15	16	17	18	19
Postharvest Cost	10	10	10	10	10	10	10
Interest on operating capital	46	47	47	48	49	49	50
TOTAL OPERATING COSTS/ACRE	1,352	1,392	1,431	1,471	1,511	1,550	1,590
TOTAL OPERATING COSTS/TON	**48.29**	**43.50**	**39.75**	**36.78**	**34.34**	**32.29**	**30.58**
CASH OVERHEAD COSTS/ACRE	253	253	253	253	253	253	253
TOTAL CASH COSTS/ACRE	1,605	1,645	1,684	1,724	1,764	1,803	1,843
TOTAL CASH COSTS/TON	**57.32**	**51.41**	**46.78**	**43.10**	**40.09**	**37.56**	**35.44**
NON-CASH OVERHEAD COSTS/ACRE	54	54	54	54	54	54	54
TOTAL COSTS/ACRE	1,659	1,699	1,738	1,778	1,818	1,857	1,897
TOTAL COSTS/TON	**59.25**	**53.09**	**48.28**	**44.45**	**41.32**	**38.69**	**36.48**

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD (ton/acre)						
$/ton	28.00	32.00	36.00	40.00	44.00	48.00	52.00
42.50	-162	-32	99	229	359	490	620
45.50	-78	64	207	349	491	634	776
48.50	6	160	315	469	623	778	932
51.50	90	256	423	589	755	922	1,088
54.50	174	352	531	709	887	1,066	1,244
57.50	258	448	639	829	1,019	1,210	1,400
60.50	342	544	747	949	1,151	1,354	1,556

NET RETURNS PER ACRE **ABOVE CASH** COSTS

PRICE	YIELD (ton/acre)						
$/ton	28.00	32.00	36.00	40.00	44.00	48.00	52.00
42.50	-415	-285	-154	-24	106	237	367
45.50	-331	-189	-46	96	238	381	523
48.50	-247	-93	62	216	370	525	679
51.50	-163	3	170	336	502	669	835
54.50	-79	99	278	456	634	813	991
57.50	5	195	386	576	766	957	1,147
60.50	89	291	494	696	898	1,101	1,303

NET RETURNS PER ACRE **ABOVE TOTAL** COSTS

PRICE	YIELD (ton/acre)						
$/ton	28.00	32.00	36.00	40.00	44.00	48.00	52.00
42.50	-469	-339	-208	-78	52	183	313
45.50	-385	-243	-100	42	184	327	469
48.50	-301	-147	8	162	316	471	625
51.50	-217	-51	116	282	448	615	781
54.50	-133	45	224	402	580	759	937
57.50	-49	141	332	522	712	903	1,093
60.50	35	237	440	642	844	1,047	1,249