
1999

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

~ *FIELD CORN* ~



SAN JOAQUIN VALLEY

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INTRODUCTION

The detailed costs to produce field corn in San Joaquin Valley of California are presented in this study. The hypothetical farm used in this report consists of 1,200 acres of which 300 acres of field corn production.

This study consists of Assumptions for producing field corn and seven tables. It is intended as a guide only. It can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Sample costs given for labor, materials, equipment and contract services are based on current figures. Some costs and practices detailed in this study may not be applicable to every situation. A blank, *Your Cost*, column is provided to enter your actual costs on Table 1 Costs Per Acre to Produce Field Corn and Table 2 Costs and Returns Per Acre To Produce Field Corn.

Tables included:

Table 1.	Costs Per Acre To Produce Field Corn
Table 2.	Costs And Returns Per Acre To Produce Field Corn
Table 3.	Monthly Cash Costs Per Acre To Produce Field Corn
Table 4.	Whole Farm Annual Equipment, Investment And Business Overhead Costs
Table 5.	Hourly Equipment Costs
Table 6.	Ranging Analysis
Table 7.	Cost And Returns/Breakeven Analysis

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

Other small grain and forage crop cost studies are available for commodities grown in the San Joaquin Valley. For those interested in this and other studies, they can be requested through the Department of Agricultural Economics, U.C. Davis, (530) 752-3589 or (530) 752-1515, or from selected county Cooperative Extension offices. There is a nominal charge.

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ASSUMPTIONS

Land and Share Rent. This report is based on a 1,200 acre field and row crop farm of which 300 acres are producing field corn and 900 acres are planted to alfalfa hay, cotton, processing tomatoes, wheat, sugar beets, beans, and other small grains.

Land in this study is leased on a cash-rent basis with the land owner receiving \$100 per acre. The land rented includes developed wells and irrigation system. The grower owns a shop and an equipment yard to fix and store equipment. Land rent appears as a cash overhead cost in Tables 1-4.

Irrigation System. An irrigation district supplies water, though growers may supplement this with well water in some areas. The amount of water used to irrigate corn will vary in the San Joaquin Valley. Irrigation districts in the Valley were surveyed for water pricing and the cost of pumping well water was calculated. District and well water costs were combined to obtain an average cost for water. The cost of irrigation water for this cost study is \$2.20 per acre-inch or \$26.40 per acre-foot.

The permanent irrigation system consists of buried mainline. This part of the system is already in place when the land is purchased. The cost of the irrigation system is included in the of land rent which is shown in Business Overhead Costs on Table 4.

Labor. Basic hourly wages for workers are \$8.12 per hour for machine operators and \$5.75 per hour for non-machine workers. Adding 34% for SDI, FICA, insurance and other benefits raises the total labor costs to \$11.00 per hour for machine operators and \$7.71 per hour 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.

Production Cultural Practices and Material Inputs

Tables 1-3 show the costs associated with ground preparation, planting, growing, and harvesting corn silage. Land preparations begin in the summer and the crop is harvested in September of the following year.

Land Preparation. In November, prior to they year corn is planted, five tons of manure per acre are spread on the fields. Primary tillage begins in December by chiseling to a depth of 18 to 24 inches to fracture any soil compaction and improve water infiltration. The fields are disced twice in spring to break up large clods of soil and incorporate a pre-emergent herbicide (Eradicane®) sprayed while discing. Beds are listed up and cultivated with a rolling cultivator for weed control. Borders are pulled and eight acre-inches are run down the

furrows to pre-irrigate before planting. Later the ditches are closed and disced over to smooth the field ends prior to planting.

Subsoiling, discing, pulling and knocking down borders are performed with either a 200 crawler or 130 hp wheel tractor, while a 90 hp wheel tractor is used to spray, and cultivate. Planting, applications of some herbicides and fertilizers, a miticide treatment, and harvest operations are contracted with commercial companies or suppliers.

Planting. Field corn is planted in March at a rate of 34,000 seeds per acre. No fertilizers or seed treatments are applied at planting.

Fertilization. As mentioned in the Land Preparation section, manure is applied at a rate of five tons per acre in November to provide a preplant nitrogen source. Two months after planting, in May, 150 pounds of nitrogen is custom sidedressed onto the crop. An additional 90 pounds of N is split into three water-run applications during June and July irrigations.

Irrigation. The price of irrigation includes water cost and labor expense. A preplant irrigation of 8 acre-inches is made in March. The amount of water applied preplant will vary depending on soil moisture from winter rains. After planting, seven irrigations totaling 36 acre-inches of water are furrow run onto the planted fields. Nitrogen fertilizer is injected into three June and July irrigations. Growing season irrigations start in May and end in August.

Weed Control. Post plant weed control consists of a variety of mechanical and chemical practices. Soon after planting, two mechanical cultivations are performed, one in April and one in May. In between the cultivations a custom application of a postemergent herbicide (Accent) is applied to maintain weed control until harvest.

Insect Control. Several insect and mite pests attack corn, but mites are the only one assumed to reach an economic threshold requiring treatment in this study. An application of a miticide (Comite) is applied to manage the mite population. Monitoring pest populations is essential for good control. Field sweeps coupled with recommended threshold guidelines can help growers determine when or if to treat.

The pesticides and rates mentioned in this cost study are a few of those that are listed in the U.C. Pest Management Guidelines, Corn. 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. Contact your local farm advisor for advice on production practices.

Equipment Cash Costs. Equipment costs are fall into three categories; capital recovery, cash overhead, and operating costs. The cash overhead and capital recovery costs will be discussed in later sections. The operating costs consist of fuel, lubrication, and repairs.

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO hp, and type of fuel used. The fuel and repair cost per acre for each operation in Table 2 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement

time (Operation Time) for a given operation to account for fueling, moving equipment, and setup time. Prices for on-farm delivery of diesel and gasoline are \$0.62 and \$1.02 per gallon, respectively.

Harvest. In this study, corn is harvested in September. In this study, the grower has the corn custom harvested and hauled. A rate of \$22 per acre plus \$6 per ton for harvest and \$5 per ton for hauling are used.

All harvest operations are hired out to a custom harvester. Since the farm custom harvests its corn, there are no ownership costs for equipment. If a grower harvests corn using their own equipment, harvest expense (custom harvest costs) should be subtracted from harvest costs in Tables 1, 2, and 3. The cash cost for operating grower owned equipment would be added to harvest costs in Tables 1, 2, and 3.

Growers may choose to own harvest equipment purchased either new or used, or hire a custom harvester to perform the harvest. Many factors are important in deciding which harvesting option a grower uses. These considerations and appropriate method of analysis are discussed in Acquiring alfalfa hay harvest equipment: A financial analysis of alternatives .

Yields. The crop is assumed to yield five tons of grain per acre at 15.5% moisture. Annual yield variations can range from three to six tons of corn per acre in this region.

Table A. Average annual field corn yields for selected counties in the San Joaquin Valley

County	1993	1994	1995	1996	1997
	-----tons/acre-----				
San Joaquin	5.04	5.20	4.97	4.48	5.14
Stanislaus	4.20	3.90	4.20	4.70	5.04
Merced	4.98	4.10	4.11	4.82	4.66
Madera	5.50	4.68	4.10	4.40	4.20
Fresno	4.46	4.42	4.45	4.67	4.86
Tulare	5.10	5.00	4.35	5.00	4.80

Source: selected County Crop Reports, 1993-1997.

Returns. An estimated price of a \$90 per ton is used to calculate returns above several levels of cost. Selling prices may range from \$80 to \$140 per ton; the \$90 used in the cost study is, at best, an estimate taking into consideration current situations. Table 6 indicates the effects on grower returns based on varying yields and returns. Breakeven points based on estimated costs are calculated for both yields and return prices in Table 7.

This study also includes income received from the Production Flexibility Contract (PFC) program administered by the USDA Farm Service Agency. The PFC income is calculated by taking 85% of the program payment yield and multiplying it times the payment rate. In this study the California program payment yield of 3.38 tons per acre and the payment rate is \$12.50 per ton. Program support is calculated as 3.38 tons/acre X .85 X \$12.50/ton = \$35.91 per acre. In this study, every wheat acre is assumed to be covered by program payments. In reality, however, maximum payment limitations may leave some acres uncovered effectively reducing the per cwt income. Maximum contract payments are limited to \$50,000 per person. Payments to growers were increased in 1998 by 50% because of a one time supplement by congress to the program.

The PFC payment rate is set by a number of factors at harvest time. Because the actual rate is not determined until the end of each growing season the USDA sets future PFC payment rates in a range. PFC payment rates change annually. Contact the local Farm Service Agency office for further information about the support program.

Risk. The risks associated with producing and marketing field corn are significant. 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 field corn production. A market channel should be determined before corn is planted and brought into production. Though, not used in this study, crop insurance is a risk management tool available to growers.

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. Cash overhead costs are included in Tables 1, 2, 3, and 4.

Property Taxes. Counties charge a base property tax at the rate of 1% on the assessed value of the property including land, equipment, buildings, and improvements. In some counties special assessment districts exist and charge additional taxes on property. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis. Land value is assumed to remain unchanged.

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 9.69% per year. This interest rate is the going market cost of borrowed funds. The cost of postharvest operations are discounted back to the harvest month using a negative interest charge.

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 0.713% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,044 for the entire farm or \$0.87 per acre.

Office Expense: Office and business expenses are estimated at \$25 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

Capital Recovery Costs. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. This study shows the current purchase price for new equipment and then adjusts the price to 60% of new cost to indicate a mix of new and used equipment. Annual ownership costs for equipment and investments are shown in Tables 1, 2, and 4 as the capital recovery cost on an annual per acre basis.

Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is

the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). Put another way, it is equivalent to the annual payment on a loan for the investment with the downpayment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman).

The calculation for annual capital recovery costs is as follows.

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

Salvage Value. Salvage value is an estimate of the remaining market value of an investment at the end of its useful life. It is calculated differently for different investments. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. Salvage value is calculated as

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

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

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

Interest Rate. The interest rate of 7.40% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten year average of California's agricultural sector long-run real rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

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Table 1.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE FIELD CORN
 SAN JOAQUIN VALLEY - 1999

Rate: \$11.00/hr. machine labor		Interest Rate: 9.69%					
\$7.71/hr. non-machine labor		Yield per Acre: 5.0 Ton					
Operation		-----Labor and Cash Costs per Acre--					
Operation	Time (Hrs/A)	Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom Rent	Total Cost	Your Cost
Cultural:							
Apply Manure	0	0	0	0	100	100	
Chisel 2X	0.5	7	7	0	0	14	
Disc Stubble 2X	0.35	5	7	20	0	32	
Cultivate	0.13	2	1	0	0	3	
Pull Borders	0.08	1	1	0	0	2	
Pre-irrigate	0.2	2	0	18	0	19	
Knock Down Borders	0.08	1	1	0	0	2	
Finish Disc 2X	0.25	3	5	0	0	8	
Weed Control - Pre-emergent	0.13	2	1	23	0	26	
Plant	0.19	3	2	34	0	38	
Weed Control - Post-emergent	0.13	2	1	3	0	5	
Cultivate 2X	0.5	7	4	0	0	11	
Fertilize - 150 Lbs N/Acre	0	0	0	53	7	60	
Pest Control - Mites	0.13	2	1	35	0	38	
Irrigate 4X	0.6	5	0	40	0	44	
Irrigate & Fertilize 3X	0.75	6	0	71	0	77	
Pickup Truck Use	<u>0.24</u>	<u>3</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>4</u>	
TOTAL CULTURAL COSTS	4.25	48	31	296	107	482	
Harvest:							
Harvest - Cut, Haul & Pack	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>77</u>	<u>77</u>	
TOTAL HARVEST COSTS	0	0	0	0	77	77	
Interest on operating capital @	9.69%					26	
TOTAL OPERATING COSTS/ACRE		48	31	296	184	585	
TOTAL OPERATING COSTS/TON						117.04	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						20	
Rent						50	
Property Taxes						2	
Property Insurance						1	
Investment Repairs						<u>1</u>	
TOTAL CASH OVERHEAD COSTS						74	
TOTAL CASH COSTS/ACRE						660	
TOTAL CASH COSTS/TON						131.92	

Table 1. Continued

CAPITAL RECOVERY COSTS (7.40% Interest Rate):			
	Per producing	---Annual Cost ---	
Investment	<u>Acre</u>	<u>Capital Recovery</u>	
Fuel Tanks	9	1	1
Fuel Wagon	2	0	0
Shop Building	69	6	6
Shop Tools	11	1	1
Siphon Tubes	2	0	0
Equipment	<u>222</u>	<u>29</u>	<u>29</u>
TOTAL CAPITAL RECOVERY COSTS	315	37	37
TOTAL COSTS/ACRE			697
TOTAL COSTS/TON			139.35

Table 2.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS PER ACRE TO PRODUCE FIELD CORN
 SAN JOAQUIN VALLEY - 1999

Labor Rate: \$11.00/hr. machine labor		Interest Rate: 9.69%			
\$7.71/hr. non-machine labor					
=====					
	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost

GROSS RETURNS					
Field Corn	5.00	Ton	90.00	450	
Support Payment	2.87	Ton	12.50	36	

TOTAL GROSS RETURNS FOR FIELD CORN				486	

OPERATING COSTS					
Custom:					
Manure - Spread	5.00	Ton	20.00	100	
Ground Application	1.00	Acre	7.00	7	
Harvest - Per Acre	1.00	Acre	22.00	22	
Harvest - Per Ton	5.00	Ton	6.00	30	
Haul	5.00	Ton	5.00	25	
Herbicide:					
Eradicane	4.00	Pint	5.12	20	
Dual 8E	2.00	Pint	11.59	23	
Accent	0.66	Oz	4.22	3	
Irrigation:					
Water	44.00	AcIn	2.20	97	
Seed:					
Corn Seed	34.00	Thou	1.00	34	
Fertilizer:					
UN-32	240.00	Lb N	0.351	84	
Insecticide:					
Comite	3.00	Pint	11.50	35	
Labor (machine)	3.24	hrs	11.00	36	
Labor (non-machine)	1.55	hrs	7.71	12	
Fuel - Gas	0.60	gal	1.02	1	
Fuel - Diesel	21.71	gal	0.62	13	
Lube				2	
Machinery repair				15	
Interest on operating capital @ 9.69%				26	

TOTAL OPERATING COSTS/ACRE				585	
TOTAL OPERATING COSTS/TON				117	

Table 2. Continued

CASH OVERHEAD COSTS:	
Liability Insurance	1
Office Expense	20
Rent	50
Property Taxes	2
Property Insurance	1
Investment Repairs	1

TOTAL CASH OVERHEAD COSTS/ACRE	74

TOTAL CASH COSTS/ACRE	660
TOTAL CASH COSTS/TON	132

CAPITAL RECOVERY COSTS (7.40% Interest Rate):	
Fuel Tanks	1
Fuel Wagon	0
Shop Building	6
Shop Tools	1
Siphon Tubes	0
Equipment	29

TOTAL CAPITAL RECOVERY COSTS/ACRE	37

TOTAL COSTS/ACRE	697
TOTAL COSTS/TON	139

NET RETURNS ABOVE TOTAL COSTS	-211
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Table 3.

U.C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE FIELD CORN
SAN JOAQUIN VALLEY - 1999

Beginning NOV 98	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Ending OCT 99	98	98	99	99	99	99	99	99	99	99	99	99	
Cultural:													
Apply Manure	100												100
Chisel 2X		14											14
Disc Stubble 2X					32								32
Cultivate					3								3
Pull Borders					1		1						2
Pre-irrigate					19								19
Knock Down Borders					1						1		2
Finish Disc 2X					8								8
Weed Control - Pre-emergent Plant					26								26
					38								38
Weed Control - Post-emergent Cultivate 2X						5							5
						5	5						11
Fertilize - 150 Lbs N/Acre							60						60
Pest Control - Mites							38						38
Irrigate 4X							9		15	21			44
Irrigate & Fertilize 3X								51	26				77
Pickup Truck Use	0	0	0	0	0	0	0	0	0	0	0	0	4
TOTAL CULTURAL COSTS	100	14	0	0	128	11	113	52	41	21	1	0	482
Harvest: Harvest - Cut, Haul & Pack													
												77	77
TOTAL HARVEST COSTS												77	77
Interest on oper. capital	1	1	1	1	2	2	3	3	4	4	5	-0	26
TOTAL OPERATING COSTS/ACRE	101	15	1	1	130	13	116	55	44	25	83	0	585
TOTAL OPERATING COSTS/TON	20.23	3.08	0.26	0.26	25.98	2.60	23.12	11.01	8.89	4.98	16.56	0.07	117.04
OVERHEAD:													
Liability Insurance			1										1
Office Expense	2	2	2	2	2	2	2	2	2	2	2	2	20
Rent											50		50
Property Taxes				1					1				2
Property Insurance				1									1
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL CASH OVERHEAD COSTS	2	2	2	4	2	2	2	2	3	2	52	2	74
TOTAL CASH COSTS/ACRE	103	17	4	5	132	15	117	57	47	27	135	2	660
TOTAL CASH COSTS/TON	20.57	3.42	0.74	1.06	26.32	2.95	23.46	11.35	9.42	5.32	26.90	0.41	131.92

Table 4.

U.C. COOPERATIVE EXTENSION
 WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SAN JOAQUIN VALLEY - 1999

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
99	130 HP 2WD Tractor	90841	10	26833	11268	420	588	12276
99	200 HP Crawler	163020	10	48154	20221	753	1056	22030
99	90 HP 2WD Tractor	52546	10	15521	6518	243	340	7101
99	Chisel - Heavy 11'	5427	10	960	719	23	32	774
99	Cult - 6 Row	9564	10	1691	1267	40	56	1363
99	Cultivator - Rolling 6 Row	3187	10	564	422	13	19	454
99	Disc - Border	1398	10	247	185	6	8	199
99	Disc - Finish 18'	26459	10	4679	3505	111	156	3772
99	Disc - Stubble 14'	36036	12	4991	4362	146	205	4713
99	Pickup - 1/2 Ton	19305	5	8652	3266	100	140	3506
99	Planter - 6 Row	15235	7	3887	2423	68	96	2587
99	Rear Blade - 8'	2504	12	347	303	10	14	327
99	Saddle Tank - 300 Gal	2407	10	426	319	10	14	343
99	Spray Boom - 20'	482	10	85	64	2	3	69
TOTAL		428411		117037	54842	1945	2727	59514
60% of New Cost *		257047		70222	32905	1167	1636	35708

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

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
						Insur- ance	Taxes	Repairs	
INVESTMENT									
	Fuel Tanks	10930	20	1093	1073	43	60	50	1226
	Fuel Wagon	1995	10	200	281	8	11	50	350
	Shop Building	82500	20	8250	8100	324	454	100	8978
	Shop Tools	13354	15	1335	1492	52	73	100	1718
	Siphon Tubes	2155	20	216	212	8	12	43	275
TOTAL INVESTMENT		110934		11094	11158	435	610	343	12546

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Table 4. Continued

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	1200.00	Acre	0.87	1044
Office Expense	1200.00	Acre	25.00	30000
Land Rent	300.00	Acre	100.00	30000

Table 5.

U.C. COOPERATIVE EXTENSION
HOURLY EQUIPMENT ESTABLISHMENT COSTS
SAN JOAQUIN VALLEY - 1999

Yr Description	Actual Hours Used	----- COSTS PER HOUR -----						Total Oper.	Total Costs/Hr.
		Capital Recovery	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube			
98 130 HP 2WD Tractor	1241.7	5.44	0.20	0.28	4.04	5.38	9.42	15.36	
98 200 HP Crawler	1599.3	7.59	0.28	0.40	4.15	8.28	12.43	20.69	
98 90 HP 2WD Tractor	1307.4	2.99	0.11	0.16	2.34	3.15	5.49	8.75	
98 Chisel - Heavy 11'	199.2	2.17	0.07	0.10	1.13	0.00	1.13	3.46	
98 Cultivator - 6 Row	200.0	3.80	0.12	0.17	1.95	0.00	1.95	6.04	
98 Cultivator - Rolling 6 Row	199.7	1.27	0.04	0.06	0.65	0.00	0.65	2.01	
98 Disc - Border	200.0	0.56	0.02	0.02	0.22	0.00	0.22	0.82	
98 Disc - Finish 18'	199.2	10.56	0.33	0.47	4.22	0.00	4.22	15.58	
98 Disc - Stubble 14'	165.8	15.78	0.53	0.74	5.61	0.00	5.61	22.67	
98 Pickup - 1/2 Ton	284.7	6.88	0.21	0.29	1.24	2.93	4.17	11.56	
98 Planter - 6 Row	199.3	7.29	0.21	0.29	3.87	0.00	3.87	11.66	
98 Rear Blade - 8'	166.0	1.10	0.04	0.05	0.33	0.00	0.33	1.51	
98 Saddle Tank - 300 Gal	218.1	0.88	0.03	0.04	0.64	0.00	0.64	1.58	
98 Spray Boom - 20'	149.3	0.26	0.01	0.01	0.13	0.00	0.13	0.40	

* Actual hours used include hours used for this crop and other crops on the farm.

Table 6.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SAN JOAQUIN VALLEY - 1999

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE FIELD CORN

	YIELD (TON/ACRE)						
	3.50	4.00	4.50	5.00	5.50	6.00	6.50
OPERATING COSTS/ACRE:							
Cultural Cost	482	482	482	482	482	482	482
Harvest Cost	61	66	72	77	83	88	94
Interest on operating capital	26	26	26	26	26	26	26
TOTAL OPERATING COSTS/ACRE	569	574	580	585	591	596	602
TOTAL OPERATING COSTS/TON	162	144	129	117	107	99	93
CASH OVERHEAD COSTS/ACRE	74	74	74	74	74	74	74
TOTAL CASH COSTS/ACRE	643	649	654	660	665	671	676
TOTAL CASH COSTS/TON	184	162	145	132	121	112	104
NON-CASH OVERHEAD COSTS/ACRE	37	37	37	37	37	37	37
TOTAL COSTS/ACRE	680	686	691	697	702	708	713
TOTAL COSTS/TON	194	171	154	139	128	118	110

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR FIELD CORN

	PRICE (DOLLARS/TON)		YIELD (TON/ACRE)						
	3.50	4.00	4.50	5.00	5.50	6.00	6.50		
Field Corn	3.50	4.00	4.50	5.00	5.50	6.00	6.50		
Support Payment	2.87	2.87	2.87	2.87	2.87	2.87	2.87		
60.00 12.50	-323	-298	-274	-249	-225	-200	-176		
70.00 12.50	-288	-258	-229	-199	-170	-140	-111		
80.00 12.50	-253	-218	-184	-149	-115	-80	-46		
90.00 12.50	-218	-178	-139	-99	-60	-20	19		
100.00 12.50	-183	-138	-94	-49	-5	40	84		
110.00 12.50	-148	-98	-49	1	50	100	149		
120.00 12.50	-113	-58	-4	51	105	160	214		

Table 6. Continued

U.C. COOPERATIVE EXTENSION

NET RETURNS PER ACRE ABOVE CASH COSTS FOR FIELD CORN

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)							
Field Corn	3.50	4.00	4.50	5.00	5.50	6.00	6.50	
Support Payment	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87
60.00	12.50	-397	-373	-348	-324	-299	-275	-250
70.00	12.50	-362	-333	-303	-274	-244	-215	-185
80.00	12.50	-327	-293	-258	-224	-189	-155	-120
90.00	12.50	-292	-253	-213	-174	-134	-95	-55
100.00	12.50	-257	-213	-168	-124	-79	-35	10
110.00	12.50	-222	-173	-123	-74	-24	25	75
120.00	12.50	-187	-133	-78	-24	31	85	140

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR FIELD CORN

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)							
Field Corn	3.50	4.00	4.50	5.00	5.50	6.00	6.50	
Support Payment	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87
60.00	12.50	-434	-410	-385	-361	-336	-312	-287
70.00	12.50	-399	-370	-340	-311	-281	-252	-222
80.00	12.50	-364	-330	-295	-261	-226	-192	-157
90.00	12.50	-329	-290	-250	-211	-171	-132	-92
100.00	12.50	-294	-250	-205	-161	-116	-72	-27
110.00	12.50	-259	-210	-160	-111	-61	-12	38
120.00	12.50	-224	-170	-115	-61	-6	48	103

Table 7.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS / BREAKEVEN ANALYSIS
 SAN JOAQUIN VALLEY - 1999
 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)
Field Corn	486	585	-99	660	-174	697	-211

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)
Field Corn	145762	175554	-29791	197886	-52124	209019	-63257

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price To Cover		
			Operating Costs	Cash Costs	Total Costs
Field Corn	5.0	Ton	108.39	122.18	129.06

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield To Cover		
			Operating Costs	Cash Costs	Total Costs
Field Corn	Ton	90.00	6.0	6.8	7.2

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