
1999

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

~ ***CORN SILAGE*** _



SAN JOAQUIN VALLEY

Prepared by:

Marsha Campbell Mathews	U.C. Cooperative Extension Farm Advisor, Stanislaus County
Ron Vargas	U.C. Cooperative Extension Farm Advisor, Madera County
Carol Frate	U.C. Cooperative Extension Farm Advisor, Tulare County
Carol Collar	U.C. Cooperative Extension Farm Advisor, Kings County
Michael Canevari	U.C. Cooperative Extension Farm Advisor, San Joaquin County
Brian Marsh	U.C. Cooperative Extension Farm Advisor, Kern County
Karen Klonsky	U.C. Cooperative Extension Economist, Department of Agricultural and Resource Economics, U.C. Davis
Pete Livingston	U.C. Cooperative Extension Staff Research Associate, Department of Agricultural and Resource Economics, U.C. Davis

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San Joaquin Valley

INTRODUCTION

The detailed costs to produce corn silage in San Joaquin Valley of California are presented in this study. The hypothetical farm used in this report consists of 300 acres of which 150 acres of corn silage production.

This study consists of Assumptions for producing corn silage 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 Corn Silage and Table 2 Costs and Returns Per Acre To Produce Corn Silage.

Tables included:

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

For an explanation of calculations used for the study refer to the attached General Assumptions, call the Department of Agricultural and Resource Economics, Cooperative Extension, University of California, Davis, California, (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 300 acre dairy farm of which 150 acres are producing corn silage double-cropped with a winter forage crop and the remaining 150 acres are occupied by dairy buildings and planted to other crops.

Land in this study is leased on a cash-rent basis with the land owner receiving \$125 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 \$10.72 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. Field preparations begin in the early spring and the crop is harvested in September.

Land Preparation. Land preparations begins by ripping to fracture any soil compaction and improve water infiltration. The fields are disced to incorporate the previous crops residue and break up large clods of dirt. Borders are pulled creating a basin for irrigation and eight acre-inches of water is run to pre-irrigate the fields. Two passes are made with a lighter disc to finish the primary tillage and

create better seed-to-soil contact for good germination. On the final discing, prior to planting, a preplant herbicide is sprayed in front of and incorporated with a disc.

Ripping, discing, pulling and knocking down borders are performed with either a 200 or 130 hp wheel tractor. Planting, application of miticides, and harvest operations are contracted with a commercial company or suppliers.

Planting. Corn is planted at a rate of 32,000 seeds per acre on flat ground. A seed treatment for cutworms is included with the corn seed. A combination fertilizer is put on at planting. The planting is made by a custom planting service. Cost of custom planting is \$14 per acre.

Fertilization. Growers should apply fertilizer or soil amendments only after soil tests determine unacceptable nutrient and pH levels. At planting a combination fertilizer is applied at a rate of 200 pounds per acre of material. Additional nitrogen is applied as anhydrous ammonia mixed in with a June and two July irrigations at a rate of 60 pounds of nitrogen per acre per application. Potassium may need to be applied preplant in deficient areas of the San Joaquin Valley, particularly the eastside of Stanislaus and Merced Counties.

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 type and moisture remaining from winter rains and the previous crop. After planting, eight irrigations totaling 40 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 June and end in September.

Weed Control. A preplant herbicide (Dual®) treatment is made immediately before planting. Post plant weed control consists of a variety of mechanical and chemical practices. Shortly after planting an application of a post-emergent herbicide (Accent®) is applied to maintain weed control until harvest. Normally, seven to eight days after the post-emergent herbicide treatment a mechanical cultivation is performed in June.

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 custom 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 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, hauled, and packed into a silage pit. A rate of \$5.50 per ton for harvest, hauling, and packing is used for corn silage. Because of its bulk and weight, corn silage is usually grown and sold to nearby dairies to reduce hauling costs.

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 29 tons of silage per acre. Individual yields can range from 15 to 35 tons of corn per acre in this region. The average annual county yields are shown in Table A.

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

County	1993	1994	1995	1996	1997
	----- tons/acre -----				
San Joaquin	26.1	29.0	27.7	27.3	28.2
Stanislaus	28.0	27.0	27.0	26.2	27.2
Merced	24.8	25.2	23.6	22.6	27.0
Madera	26.3	28.0	27.0	27.0	26.0
Fresno	27.4	27.1	23.0	24.9	25.6
Tulare	24.0	23.0	23.5	23.0	24.8
Kings	24.5	21.4	23.6	19.2	17.8

Source: selected County Crop Reports, 1993-1997.

Returns. An estimated price of a \$18 per ton of silage is used to calculate returns above several levels of cost. Selling prices may range from \$16 to \$22 per ton; the \$18 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.

Risk. The risks associated with producing and marketing corn silage 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 corn silage production. A market channel should be determined before silage 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 \$1,049 for the entire farm or \$0.87 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.

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, 4, and 5 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 7.

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.

Acknowledgment. Appreciation is expressed to the cooperators who provided additional information for this study.

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Table 1.

U.C. COOPERATIVE EXTENSION
COSTS PER ACRE TO PRODUCE CORN SILAGE

SAN JOAQUIN VALLEY - 1999

Labor Rate: \$11.00/hr. machine labor

Interest Rate: 9.69%

\$7.71/hr. non-machine labor

Yield per Acre: 29.0 Ton

Operation	Cash and Labor Costs per Acre						Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Subsoil 2X	0.40	5	7	0	0		12	
Disc Stubble 2X	0.35	5	7	0	0		11	
Pull Borders	0.08	1	1	0	0		2	
Pre-irrigate	0.00	0	0	18	0		18	
Knock Down Borders	0.08	1	1	0	0		2	
Finish Disc 2X	0.25	3	4	0	0		7	
Weed Control - Preemergent	0.13	2	1	21	0		23	
Plant With Insecticide & Fertilize	0.00	0	0	75	14		89	
Weed Control - Post-emergent	0.13	2	1	3	0		5	
Cultivate	0.15	2	1	0	0		3	
Irrigate & Fertilize 3X	0.00	0	0	90	0		90	
Irrigate 8X	0.00	0	0	55	0		55	
Pickup Truck Use	0.38	5	2	0	0		7	
TOTAL CULTURAL COSTS	1.95	26	24	262	14		325	
Harvest: Cut, Haul & Pack	0.00	0	0	0	159		159	
TOTAL HARVEST COSTS	0.00	0	0	0	159		159	
Interest on operating capital @ 9.69%							12	
TOTAL OPERATING COSTS/ACRE		26	24	262	173		496	
CASH OVERHEAD:								
Liability Insurance							2	
Office Expense							17	
Rent							83	
Property Taxes							2	
Property Insurance							1	
Investment Repairs							1	
TOTAL CASH OVERHEAD COSTS							105	
TOTAL CASH COSTS/ACRE							601	
CAPITAL RECOVERY COSTS: (7.40% Interest Rate) Per producing								
Investment		Acres					Capital Recovery	
Fuel Tanks & Pumps		19					2	
Fuel Wagon		4					1	
Shop Building		61					5	
Shop Tools		19					2	
Siphon Tubes		3					0	
Equipment		181					23	
TOTAL CAPITAL RECOVERY COSTS		288					33	
TOTAL COSTS/ACRE							634	

Table 2.

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

Labor Rate: \$10.88/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					
Corn Silage	29.00	Ton	18.00	522	

TOTAL GROSS RETURNS FOR CORN SILAGE				522	

OPERATING COSTS					
Irrigation:					
Water	48.00	AcIn	2.20	106	
Herbicide:					
Dual 2E	2.00	Pint	10.35	21	
Accent	0.66	Oz	4.22	3	
Seed:					
Corn Seed	32.00	Thou	1.14	36	
Fertilizer:					
6-20-20 X Zn	200.00	Lb	0.193	39	
20-0-0	180.00	Lb N	0.317	57	
Insecticide:					
Lorsban 15G	2.00	Oz	0.17	0	
Custom:					
Custom Plant Corn	1.00	Acre	14.00	14	
Harvest, Haul & Pack	29.00	Ton	5.50	159	
Labor (machine)	2.33	hrs	11.00	26	
Labor (non-machine)	0.00	hrs	0.00	0	
Fuel - Gas	0.95	gal	1.02	1	
Fuel - Diesel	16.15	gal	0.62	10	
Lube				2	
Machinery repair				11	
Interest on operating capital @ 9.69%				12	

TOTAL OPERATING COSTS/ACRE				496	

NET RETURNS ABOVE OPERATING COSTS				26	

U.C. COOPERATIVE EXTENSION

Table 2. Continued

CASH OVERHEAD COSTS:	
Liability Insurance	2
Office Expense	17
Rent	83
Property Taxes	2
Property Insurance	1
Investment Repairs	1

TOTAL CASH OVERHEAD COSTS/ACRE	105

TOTAL CASH COSTS/ACRE	601

CAPITAL RECOVERY COSTS (7.40% Interest Rate):	
Fuel Tanks & Pumps	2
Fuel Wagon	1
Shop Building	5
Shop Tools	2
Siphon Tubes	0
Equipment	23

TOTAL CAPITAL RECOVERY COSTS/ACRE	33

TOTAL COSTS/ACRE	634

NET RETURNS ABOVE TOTAL COSTS	-112
	=====

Table 3.

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

Beginning JAN 99	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 99	99	99	99	99	99	99	99	99	99	99	99	99	
Cultural:													
Subsoil 2X				12									12
Disc Stubble 2X				11									11
Pull Borders				1		1							2
Pre-irrigate				18									18
Knock Down Borders					1				1				2
Finish Disc 2X					7								7
Weed Control - Pre-emergent Plant					23								23
With Insecticide & Fertilizer					89								89
Weed Control - Post-emergent						5							5
Cultivate						3							3
Irrigate & Fertilize 3X						30	60						90
Irrigate 8X							11	33	11				55
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1	1	7
TOTAL CULTURAL COSTS	1	1	1	42	121	40	72	34	13	1	1	1	325
Harvest:													
Harvest - Cut, Haul & Pack									159				159
TOTAL HARVEST COSTS									159				159
Interest on oper. capital	0	0	0	0	1	2	2	3	4	-0	-0	-0	12
TOTAL OPERATING COSTS/ACRE	1	1	1	43	122	42	74	36	176	1	1	1	496
OVERHEAD:													
Liability Insurance	2												2
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1	17
Rent									83				83
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	3	4	1	1	1	1	2	1	85	1	1	1	105
TOTAL CASH COSTS/ACRE	4	4	2	44	124	43	76	37	261	2	2	2	601

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	92 HP 2WD Tractor	52553	10	15523	6519	243	340	7102
99	Cultivator - 6 Row	8580	12	1188	1039	35	49	1122
99	Disc - Border	1035	12	143	125	4	6	135
99	Disc - Finish 18'	16088	12	2228	1947	65	92	2104
99	Disc - Stubble 14'	36036	12	4991	4362	146	205	4713
99	Pickup - 1/2 Ton	19305	5	8652	3266	100	140	3506
99	Rear Blade - 8'	2495	18	166	251	9	13	273
99	Saddle Tank - 300 Gal	3218	10	569	426	14	19	459
99	Spray Boom - 20'	482	10	85	64	2	3	69
99	Subsoiler - 16'	14000	10	2476	1854	59	82	1996
TOTAL		407653		111008	51343	1849	2593	55785
60% of New Cost *		244592		66605	30806	1109	1556	33471

ANNUAL INVESTMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
						Insur- ance	Taxes	Repairs	
INVESTMENT									
	Fuel Tanks & Pumps	8550	20	885	839	34	47	47	967
	Fuel Wagon	1975	10	198	278	8	11	40	337
	Shop Building	27450	25	2745	2491	108	151	150	2900
	Shop Tools	8500	20	850	835	33	47	47	962
	Siphon Tubes	1540	20	154	151	6	8	9	174
TOTAL INVESTMENT		48015		4832	4594	188	264	292	5339

U.C. COOPERATIVE EXTENSION

Table 4. Continued

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	300.00	Acre	2.28	684
Office Expense	300.00	Acre	25.00	7500
Land Rent	300.00	Acre	125.00	37500

U.C. COOPERATIVE EXTENSION

Table 5.

HOURLY EQUIPMENT ESTABLISHMENT COSTS

SAN JOAQUIN VALLEY - 1999

Yr Description	Actual Hours Used	COSTS PER HOUR						Total Oper.	Total Costs/Hr.
		Capital Recovery	Insur- ance	Taxes	Repairs	Operating Fuel & Lube			
98 130 HP 2WD Tractor	1199.4	5.64	0.21	0.29	4.04	5.38	9.42	15.57	
98 200 HP Crawler	1598.7	7.59	0.28	0.40	4.15	8.28	12.43	20.69	
98 92 HP 2WD Tractor	1198.2	3.26	0.12	0.17	2.34	3.22	5.56	9.12	
98 Cultivator - 6 Row	163.1	3.82	0.13	0.18	1.69	0.00	1.69	5.82	
98 Disc - Border	166.0	0.45	0.02	0.02	0.16	0.00	0.16	0.65	
98 Disc - Finish 18'	165.1	7.08	0.24	0.33	2.50	0.00	2.50	10.15	
98 Disc - Stubble 14'	165.9	15.77	0.53	0.74	5.61	0.00	5.61	22.66	
98 Pickup - 1/2 Ton	295.0	6.64	0.20	0.28	1.24	2.93	4.17	11.30	
98 Rear Blade - 8'	166.0	0.91	0.03	0.05	0.36	0.00	0.36	1.35	
98 Saddle Tank - 300 Gal	165.1	1.55	0.05	0.07	0.85	0.00	0.85	2.52	
98 Spray Boom - 20'	165.1	0.23	0.01	0.01	0.13	0.00	0.13	0.38	
98 Subsoiler - 16'	199.6	5.57	0.18	0.25	3.13	0.00	3.13	9.12	

Table 6.

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

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE CORN SILAGE

	YIELD (TON/ACRE)						
	26	27	28	29	30	31	32
OPERATING COSTS/ACRE:							
Cultural Cost	325	325	325	325	325	325	325
Harvest Cost	143	149	154	159	165	170	176
Interest on operating capital	12	12	12	12	12	12	12
TOTAL OPERATING COSTS/ACRE	479	485	490	496	502	507	513
TOTAL OPERATING COSTS/TON	18.44	17.96	17.52	17.10	16.72	16.36	16.02
CASH OVERHEAD COSTS/ACRE	105	105	105	105	105	105	105
TOTAL CASH COSTS/ACRE	584	590	596	601	607	612	618
TOTAL CASH COSTS/TON	22	22	21	21	20	19.75	19.30
CAPITAL RECOVERY COSTS/ACRE	33	33	33	33	33	33	33
TOTAL COSTS/ACRE	617	623	628	634	640	645	651
TOTAL COSTS/TON	24	23	22	22	21	21	20

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR CORN SILAGE

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	26	27	28	29	30	31	32
Corn Silage							
15.00	-89	-80	-70	-61	-52	-42	-33
16.00	-63	-53	-42	-32	-22	-11	-1
17.00	-37	-26	-14	-3	8	20	31
18.00	-11	1	14	26	38	51	63
19.00	15	28	42	55	68	82	95
20.00	41	55	70	84	98	113	127
21.00	67	82	98	113	128	144	159

U.C. COOPERATIVE EXTENSION

Table 6 continued

NET RETURNS PER ACRE ABOVE CASH COSTS FOR CORN SILAGE

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Corn Silage	26	27	28	29	30	31	32
15.00	-194	-185	-176	-166	-157	-147	-138
16.00	-168	-158	-148	-137	-127	-116	-106
17.00	-142	-131	-120	-108	-97	-85	-74
18.00	-116	-104	-92	-79	-67	-54	-42
19.00	-90	-77	-64	-50	-37	-23	-10
20.00	-64	-50	-36	-21	-7	8	22
21.00	-38	-23	-8	8	23	39	54

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR CORN SILAGE

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Corn Silage	26	27	28	29	30	31	32
15.00	-227	-218	-208	-199	-190	-180	-171
16.00	-201	-191	-180	-170	-160	-149	-139
17.00	-175	-164	-152	-141	-130	-118	-107
18.00	-149	-137	-124	-112	-100	-87	-75
19.00	-123	-110	-96	-83	-70	-56	-43
20.00	-97	-83	-68	-54	-40	-25	-11
21.00	-71	-56	-40	-25	-10	6	21

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)
Corn Silage	522	496	26	601	-79	634	-112

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)
Corn Silage	78300	74403	3897	90167	-11867	95106	-16806

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	----- Breakeven Price To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Corn Silage	29.0	Ton	17.10	20.73	21.86

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	----- Breakeven Yield To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Corn Silage	Ton	18.00	27.6	33.4	35.2