
1999

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

~ **WHEAT SILAGE** _



SAN JOAQUIN VALLEY

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INTRODUCTION

The detailed costs to produce wheat silage in the 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 are in wheat silage production.

This study consists of Assumptions for producing wheat 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 also provided to enter your actual costs on Table 1. Costs Per Acre To Produce Wheat Silage and Table 2. Costs And Returns Per Acre To Produce Wheat Silage.

This study consists of General Assumptions for Producing Wheat Silage and seven tables.

Table 1.	Costs Per Acre To Produce Wheat Silage
Table 2.	Costs And Returns Per Acre To Produce Wheat Silage
Table 3.	Monthly Cash Costs Per Acre To Produce Wheat Silage
Table 4.	Annual Equipment, Investment And Business Overhead
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, silage, 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

The following is a description of some general assumptions pertaining to sample costs to produce wheat silage in San Joaquin Valley. Practices described are not recommendations by the University of California, but rather represent production procedures considered typical of a well managed farm for the San Joaquin Valley. Costs and practices detailed in this study may not be applicable to all situations. Cultural practices for the production of wheat silage vary by grower and region; variations can be significant. The practices and inputs used in this cost study serve only as a sample or guide. These costs are represented on an annual, per acre basis. *The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.*

Land and Share Rent. This report is based on a 1,200 acre field and row crop farm of which 300 acres are producing wheat silage and 900 acres are planted to alfalfa hay, cotton, processing tomatoes, corn, 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 wheat silage 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 is already in place when the land is rented. The cost of the irrigation system is included in the land rent which is cash overhead cost in Table 1-4.

Labor. Basic hourly wages for workers are \$8.21 and \$5.75 per hour for machine operators and non-machine (irrigators) workers respectively. 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 for non-machine labor. The labor for operations involving machinery are 20% higher than the operation time to account for the additional time involved in equipment set up, moving, maintenance and repair. Any returns above total costs are considered returns to investment.

Cultural Practices and Material Inputs

Land Preparation. Primary tillage and planting groundwork operations which includes chiseling, disking, pulling borders, and preplant fertilization are performed in November and December. All operations requiring equipment are performed with either a 200 hp crawler, 130, or 90 hp wheel tractors. Operations that are done on only a percentage of the acreage are noted; all other operations are done on 100% of the acreage.

In November, all of the acreage is chiseled once to open the soil structure to a depth of 18 inches. The ground is disced twice to prepare the seedbed and irrigation borders are pulled. Fertilizer is applied preplant at a rate of 100 pounds of nitrogen per acre.

Stand Establishment. In December, wheat is drilled into the fields at 130 pounds of seed per acre. If testing indicate a need, phosphorus is applied at planting usually in the range of 40 to 60 pounds of P_2O_5 .

Irrigation. The stand is flood irrigated once in April with seven acre-inches of water. The amount of water applied will vary depending on soil moisture from winter rains. The cost of irrigations shown in Tables 1, 2, and 3 are for the cost of the water and labor to apply it.

Fertilization. One hundred pounds per acre of UN-32 is sprayed on to the flat fields and incorporated in with a disc prior to planting. In February the wheat receives 40 pounds of nitrogen per acre in the form of urea.

Weed Management. A single treatment of a herbicide (MCPA) is made in February by aircraft.

The pesticides and rates, and cultural practices mentioned in this cost study are only a few of those that are listed in the UC IPM Pest Management Guidelines, Wheat and Integrated Pest Management For Small Grains. 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.

Equipment Costs. Equipment costs are composed of three parts; capital recovery, cash overhead, and operating costs. Both capital recovery and cash overhead factors are discussed in later sections. The operating costs consist of repairs, fuel, and lubrication.

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO hp, and type of fuel used. The fuel and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 5 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time. Prices for on-farm delivery of diesel and gasoline are \$0.62 and \$1.02 per gallon, respectively.

Harvest. In this study, wheat silage is harvested in May by the dairy the silage is sold to. The grower is not charged for harvest because the cost is figured into the price the grower receives. Because of its bulk and weight, wheat silage is usually grown and sold to nearby dairies to reduce hauling costs.

Growers may choose to own harvesting 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 yield used in this study is 18 ton per acre. Yields have vary in the San Joaquin Valley depending on the variety and growing conditions.

Returns. A selling price of a \$16 per ton of forage is used to estimate income from the sale of the crop. Selling prices may range from \$12 to \$20 per ton; the \$16 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. Risks associated with wheat production are not assigned a production cost. While this study makes an effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of wheat production.

Overhead and Capital Recovery 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 found in Tables 1, 2, 3 and 4.

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 2 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 9.69% per year. A nominal interest rate is the going 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 0.713% 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 \$25 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

Capital Recovery Costs. Capital recovery cost is calculated for equipment and other farm investments. Although farm equipment used on farms in this region might 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 1-4.

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 the annual capital recovery costs is as follows. 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.

Acknowledgment. Appreciation is expressed to cooperators who provided support and information for this study.

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- Statewide Integrated Pest Management Project. 1990. *Integrated Pest Management For Small Grains*. University of California. Division of Agriculture and Natural Resources. Oakland, California. Publication 3333.
- For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

Table 1.

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

Labor Rate: \$11.00/hr. machine labor \$7.71/hr. non-machine labor Interest Rate: 9.69% Yield per Acre: 18.0 Ton

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Chisel 2X	0.50	7	7	0	0	14		
Finish Disc 2X	0.25	3	4	0	0	7		
Pull Borders	0.04	1	0	0	0	1		
Fertilize - Preplant 100 Lbs N	0.17	2	2	35	0	40		
Plant	0.20	3	2	17	0	22		
Fertilize - 40 Lbs N/Acre	0.00	0	0	5	0	5		
Weed Control - Post-emergent	0.00	0	0	5	8	13		
Pull Tail Ditch	0.04	1	0	0	0	1		
Irrigate & Fertilize 1X	0.25	2	0	27	0	29		
Irrigate 2X	0.00	0	0	13	0	13		
Close Ditch	0.04	1	0	0	0	1		
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	1.73	22	19	102	8	150		
Postharvest: Disc Stubble 2X	<u>0.25</u>	<u>3</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>8</u>		
TOTAL POSTHARVEST COSTS	0.25	3	5	0	0	8		
Interest on operating capital @ 9.69%						6		
TOTAL OPERATING COSTS/ACRE		25	23	102	8	164		
CASH OVERHEAD:								
Liability Insurance						1		
Office Expense						25		
Rent						50		
Property Taxes						2		
Property Insurance						1		
Investment Repairs						<u>1</u>		
TOTAL CASH OVERHEAD COSTS						79		
TOTAL CASH COSTS/ACRE						243		
CAPITAL RECOVERY COSTS (7.40% Interest Rate): Per producing								
<u>Investment</u>		<u>Acres</u>		<u>Annual Cost</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>179</u>		<u>23</u>		<u>23</u>		
TOTAL CAPITAL RECOVERY COSTS		271		31		31		
TOTAL COSTS/ACRE						274		

Table 2.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS PER ACRE TO PRODUCE WHEAT SILAGE
 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				
Wheat Silage	18.00	Ton	16.00	288
TOTAL GROSS RETURNS FOR WHEAT SILAGE				288
OPERATING COSTS				
Fertilizer:				
UN-32	140.00	Lb N	0.351	49
46-0-0	40.00	Lb N	0.13	5
Seed:				
Wheat Seed	130.00	Lb	0.13	17
Herbicide:				
MCPA	2.00	Pint	2.25	5
Custom:				
Air Application	1.00	Acre	8.00	8
Harvest - No Charge	28.00	Ton	0.00	0
Irrigation:				
Water	12.00	AcIn	2.20	26
Labor (machine)	2.08	hrs	11.00	23
Labor (non-machine)	0.25	hrs	7.71	2
Fuel - Gas	0.60	gal	1.02	1
Fuel - Diesel	16.23	gal	0.62	10
Lube				2
Machinery repair				11
Interest on operating capital @ 9.69%				6
TOTAL OPERATING COSTS/ACRE				164
NET RETURNS ABOVE OPERATING COSTS				124

U.C. COOPERATIVE EXTENSION

Table 2. Continued

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				25	
Rent				50	
Property Taxes				2	
Property Insurance				1	
Investment Repairs				1	

TOTAL CASH OVERHEAD COSTS/ACRE				79	

TOTAL CASH COSTS/ACRE				243	

CAPITAL RECOVERY COSTS (7.40% Interest Rate):					
Fuel Tanks				1	
Fuel Wagon				0	
Shop Building				6	
Shop Tools				1	
Siphon Tubes				0	
Equipment				23	

TOTAL CAPITAL RECOVERY COSTS/ACRE				31	

TOTAL COSTS/ACRE				274	

NET RETURNS ABOVE TOTAL COSTS				14	
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Table 3.

U.C. COOPERATIVE EXTENSION
 MONTHLY CASH COSTS PER ACRE TO PRODUCE WHEAT SILAGE
 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:													
Chisel 2X	14												14
Finish Disc 2X	7												7
Pull Borders		1											1
Fertilize - Preplant 100		40											40
Plant		22											22
Fertilize - 40 Lbs N/Acre				5									5
Weed Control - Post-emergent				13									13
Pull Tail Ditch					1								1
Irrigate & Fertilize 1X					29								29
Irrigate 2X						13							13
Close Ditch							1						1
Pickup Truck Use	0	0	0	0	0	0	0	0	0	0	0	0	4
TOTAL CULTURAL COSTS	22	63	0	18	30	14	1	0	0	0	0	0	150
Postharvest:													
Disc Stubble 2X								8					8
TOTAL POSTHARVEST COSTS								8					8
Interest on oper. capital	0	1	1	1	1	1	1	-0	-0	-0	-0	-0	6
TOTAL OPERATING COSTS/ACRE	22	64	1	19	32	15	3	8	0	0	0	0	164
OVERHEAD:													
Liability Insurance			1										1
Office Expense	2	2	2	2	2	2	2	2	2	2	2	2	25
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	3	4	2	2	52	2	3	2	2	2	79
TOTAL CASH COSTS/ACRE	24	66	4	23	34	17	55	11	3	2	2	2	243

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	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	Ditcher - V	4070	12	564	493	17	23	532
99	Grain Drill - 20'	22733	10	4020	3011	95	134	3240
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
TOTAL		416814		112801	52608	1888	2648	57144
=====								
60% of New Cost *		250088		67681	31565	1133	1589	34286
=====								

* 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	10930	20	1093	1038	43	60	60	1201
Fuel Wagon	1995	10	200	275	8	11	11	305
Shop Building	82500	25	8250	7213	324	454	454	8444
Shop Tools	13354	15	1335	1452	52	73	73	1651
Siphon Tubes	2155	20	216	205	8	12	12	237

TOTAL INVESTMENT	110934		11094	10183	435	610	610	11839
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U.C. COOPERATIVE EXTENSION

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
Rent	300.00	Acre	100.00	30000

U.C. COOPERATIVE EXTENSION

Table 5.

HOURLY EQUIPMENT 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	1198.6	5.64	0.21	0.29	4.04	5.38	9.42	15.57	
98 200 HP Crawler	1598.6	7.59	0.28	0.40	4.15	8.28	12.43	20.69	
98 90 HP 2WD Tractor	1200.0	3.26	0.12	0.17	2.34	3.15	5.49	9.04	
98 Chisel - Heavy 11'	199.2	2.17	0.07	0.10	1.13	0.00	1.13	3.46	
98 Disc - Border	166.0	0.45	0.02	0.02	0.16	0.00	0.16	0.65	
98 Disc - Finish 18'	165.2	7.07	0.24	0.33	2.50	0.00	2.50	10.14	
98 Disc - Stubble 14'	160.0	16.36	0.55	0.77	5.61	0.00	5.61	23.28	
98 Ditcher - V	166.0	1.78	0.06	0.08	1.08	0.00	1.08	3.00	
98 Grain Drill - 20'	150.0	12.05	0.38	0.54	5.97	0.00	5.97	18.93	
98 Pickup - 1/2 Ton	284.7	6.88	0.21	0.29	1.24	2.93	4.17	11.56	
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	150.0	1.71	0.05	0.08	0.85	0.00	0.85	2.69	

Table 6.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SAN JOAQUIN VALLEY - 1999
COSTS PER ACRE AT VARYING YIELDS TO PRODUCE WHEAT SILAGE

	YIELD (TON/ACRE)						
	12	14	16	18	22	24	26

OPERATING COSTS/ACRE:							
Cultural Cost	150	150	150	150	150	150	150
Harvest Cost	0	0	0	0	0	0	0
Postharvest Cost	8	8	8	8	8	8	8
Interest on operating capital	6	6	6	6	6	6	6
TOTAL OPERATING COSTS/ACRE	164	164	164	164	164	164	164
TOTAL OPERATING COSTS/TON	13.67	11.72	10.25	9.12	7.46	6.84	6.31
CASH OVERHEAD COSTS/ACRE	79	79	79	79	79	79	79
TOTAL CASH COSTS/ACRE	243	243	243	243	243	243	243
TOTAL CASH COSTS/TON	20	17.37	15.20	13.51	11.06	10.13	9.35
NON-CASH OVERHEAD COSTS/ACRE	31	31	31	31	31	31	31
TOTAL COSTS/ACRE	274	274	274	274	274	274	274
TOTAL COSTS/TON	23	19.60	17.15	15.24	12.47	11.43	10.55

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR WHEAT SILAGE

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	12	14	16	18	22	24	26
Wheat Silage							
10.00	-44	-24	-4	16	56	76	96
12.00	-20	4	28	52	100	124	148
14.00	4	32	60	88	144	172	200
16.00	28	60	92	124	188	220	252
18.00	52	88	124	160	232	268	304
20.00	76	116	156	196	276	316	356
22.00	100	144	188	232	320	364	408

U.C. COOPERATIVE EXTENSION

Table 6. Continued

NET RETURNS PER ACRE ABOVE CASH COSTS FOR WHEAT SILAGE

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Wheat Silage	12	14	16	18	22	24	26
10.00	-123	-103	-83	-63	-23	-3	17
12.00	-99	-75	-51	-27	21	45	69
14.00	-75	-47	-19	9	65	93	121
16.00	-51	-19	13	45	109	141	173
18.00	-27	9	45	81	153	189	225
20.00	-3	37	77	117	197	237	277
22.00	21	65	109	153	241	285	329

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR WHEAT SILAGE

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
Wheat Silage	12	14	16	18	22	24	26
10.00	-154	-134	-114	-94	-54	-34	-14
12.00	-130	-106	-82	-58	-10	14	38
14.00	-106	-78	-50	-22	34	62	90
16.00	-82	-50	-18	14	78	110	142
18.00	-58	-22	14	50	122	158	194
20.00	-34	6	46	86	166	206	246
22.00	-10	34	78	122	210	254	298

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)
Wheat Silage	288	164	124	243	45	274	14

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)
Wheat Silage	86400	49223	37177	72965	13435	82321	4079

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	----- Breakeven Price To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Wheat Silage	18.0	Ton	9.12	13.51	15.24

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	----- Breakeven Yield To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Wheat Silage	Ton	16.00	10.3	15.2	17.2