
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2012

**SAMPLE COSTS TO PRODUCE
CORN SILAGE**



**SAN JOAQUIN VALLEY - South
Double Cropped Planting**

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INTRODUCTION

Sample costs to produce corn silage in the southern San Joaquin Valley are shown in this study. The 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 the production practices considered typical for this crop and region, but will not apply to every farm situation. Sample costs for labor, materials, equipment and custom services are based on current figures. A “*Your Costs*” column in Tables 1 and 2 is provided to enter your costs.

The hypothetical farm operations, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, (530) 752-3589 or the local UC Cooperative Extension office.

Current and archived Sample Cost of Production Studies for many commodities are available and can be downloaded at <http://coststudies.ucdavis.edu>, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-4424 or obtained from selected county UC Cooperative Extension offices.

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ASSUMPTIONS

The following assumptions refer to Tables 1 to 8 and pertain to sample costs to produce corn silage in the southern San Joaquin Valley. Practices described represent production practices and materials considered typical of a well-managed farm in the region. The costs, materials, and practices shown in this study will not apply to all situations. Establishment and production cultural practices vary by grower and the differences can be significant. **The use of trade names and cultural practices 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 or cultural practices.**

Farm. The hypothetical farm consists of 300 non-contiguous acres of which 150 acres are rented and 150 owned by the grower. Double cropped corn silage is planted on 140 acres of the 150 acres of rented land. The remaining 10 acres are roads and field edges. The grower-owned 150 acres includes 10 acres occupied by buildings and homestead, and 140 acres planted to other crops.

Production Cultural Practices and Material Inputs

Tables 1-3 show the costs associated with ground preparation, planting, growing, and harvesting corn silage.

Single Cropped vs. Double Cropped. Single cropped and double cropped corn silage have similar cultural practices, but planting is usually completed by early April for single cropped and then harvested in August. Single-cropped silage often results in higher yields than double cropped. Due to a longer growing season, there will be differences in pest control. In single crop operations the grower may subsoil the land as part of the land preparation. In double cropping for this study, the overhead costs are split between the crops.

Land Preparation. Land preparations begin in May immediately after harvest of the winter forage. The fields are then disced to incorporate the previous crop residue and break up large dirt clods. Borders are pulled to make irrigation basins for the preirrigation. After irrigation the borders are knocked down and two passes are made with a finish or offset disc to prepare the seedbed.

Planting. In late May, the Roundup Ready corn is planted on flat ground in 30 to 36-inch lines at a rate of 33,000 seeds per acre. At planting Pounce for wireworms and fertilizer (10-34-0) is applied. A custom planter does the planting for \$18 per acre on conventional beds.

Fertilization. Growers should apply fertilizer or soil amendments after soil tests determine nutrient and pH levels. At planting, 10-34-0 liquid fertilizer at 200 pounds of material (20 lbs. of N) per acre is applied. Additional nitrogen as anhydrous ammonia is applied with one June and two July irrigations at a rate of 75 pounds of nitrogen (N) per acre per application. Potassium may be needed in deficient areas of the San Joaquin Valley, particularly the eastside of Stanislaus and Merced Counties. Tests indicate that no potassium (K) is needed. Commercial fertilizers may be reduced or eliminated with the use of dairy pond water or corral scrapings.

Irrigation. The grower uses both well and surface water at an average cost of \$5.00 per acre-inch or \$60.00 per acre-foot. A preplant irrigation of eight acre-inches is made in May. The amount of water applied preplant will vary depending on soil type and moisture remaining from winter rains and previous crop. Effective rainfall is not accounted for in this study. After planting, eight irrigations totaling 40 acre-inches of water are furrow run. Three of the irrigations, one in June and two in July, include nitrogen fertilizer injected into the water. Growing season irrigations start in June and end in September.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Corn*. For more information on other pesticides available, 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. Adjuvants or surfactants may be recommended for use with some pesticides, but are not included in this study. Pesticide costs vary by location and grower volume. Pesticide and fertilizer costs are taken from different dealers. Pesticides are shown as full retail and fertilizer costs are typical grower retail in the region.

Pest Control Adviser (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisers. In addition the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. In this study, the PCA is provided by the ag chemical dealer.

Weeds. Post plant weed control consists of mechanical and chemical practices. Shortly after the first irrigation, Roundup is applied for broadleaf and nutsedge control. Normally, seven to eight days after the post-emergent herbicide application, the field is cultivated and furrowed. Prior to layby (corn 4 ft tall), Clarity is custom applied for broadleaf weed control. Although the corn variety planted in this field is resistant to Roundup, Clarity was chosen for the second application in order to rotate chemicals and reduce the selection pressure for developing Roundup resistant weeds.

Insects. Several insect and spider mite pests attack corn, but spider mites are the only one assumed to reach an economic threshold in this study. Monitoring is important for effective insect control and to minimize insect control costs. Spider mites are controlled with a custom application of an insecticide/miticide (Comite). An insecticide (Pounce) is applied with the seed at planting for wireworm control.

Harvest. In September the corn is harvested, processed, hauled, and packed into a silage pit by a custom operator. The custom rate for harvesting, processing, hauling, and packing is \$9.25 per ton. Growers or buyers bagging the silage should add \$8 per ton to their harvesting cost. Additional per ton per mile charges of \$0.20 are incurred for hauls greater than one mile. Normally, non-dairy growers sell the crop standing and the buyer or dairy pays the harvesting cost.

If the grower harvests corn using his/her own equipment, harvest expense (custom harvest costs) is subtracted from harvest costs in Tables 1, 2, and 3. The cash cost for operating grower owned equipment is then added to the harvest costs and the cost of owning harvest equipment added to Non-Cash Overhead.

Yields. The crop is assumed to yield 32 tons per acre at 70% moisture. Individual yields can range from 24 to 38 tons per acre in this region.

Returns. Based on the 2011 market, a price of \$45 per ton is used to calculate returns. Tables 4 and 5 show a range of grower returns over a range of yields. Table 4 shows net returns including harvest costs and Table 5 shows net returns when the crop is sold standing and harvest costs are incurred by the buyer.

Labor, Equipment and Interest Costs

Labor. Labor rates of \$17.50 per hour for machine operators and \$14.00 for general labor includes payroll overhead of 40%. The basic hourly wages are \$13.00 for machine operators and \$10.00 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation

insurance for field crops (code 0071), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2012 (California Department of Insurance, unreferenced). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Equipment Operating Costs. 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 and Biological Engineers (ASABE). Fuel and lubrication costs are also determined by ASAE equations based on maximum power take off (PTO) horsepower and fuel type. Prices for **on-farm delivery** of diesel and gasoline are \$3.43 (excludes excise taxes) and \$3.82 per gallon, respectively. The fuel prices are the average costs from the 2011 Energy Information Administration monthly data. The cost includes a 2.50% sales tax for diesel fuel, and federal and excise taxes plus a 7.50% sales tax on gasoline. The federal and state excise tax on gasoline used on the farm can be refunded for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in the "Cost Per Acre to Produce" table is determined by multiplying the total hourly operating cost in the "Hourly Equipment Costs" table for each piece of equipment used from the Operation Time (Hrs/A) column 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 5.75% 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. The rate will vary depending upon various factors, but the rate in this study is considered a typical lending rate by a farm lending agency as of January 2012.

Risk. Production risks should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks, which affect the profitability and economic viability.

Cash Overhead Costs

Cash overhead consists of various cash expenses paid out during the year that are assigned to the farm and not to a particular operation. For this budget one-half of the costs are allocated to the double or other crop.

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.

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 0.803% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$961 for the entire farm or \$3.43 per producing acre or \$1.72 per double cropped acre.

Office Expense. Office and business expenses are estimated at \$45 per producing acre. For double crop the expense is split equally between the crops. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, and miscellaneous overhead expenses

Land Rent. The cash rent for the land is \$275 per acre or \$295 per production acre (140 acres) for a single crop. For double-cropped land with winter forage, one-half of the rent is allocated to the corn silage and one-half to the winter forage. The land rented includes developed wells and irrigation system. Land rent appears as a Cash Overhead cost.

Investment Repairs. Annual repairs are calculated as 2% of the purchase price.

Non-Cash Overhead

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. One-half of the overhead costs are allocated to the double or other crop.

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 prices 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 $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$.

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery 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 and Biological Engineers (ASABE) 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 the 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 the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in Table 6.

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 equipment life.

Interest Rate. The interest rate of 4.75% is used to calculate capital recovery. The rate will vary depending upon size of loan and other lending agency conditions, but is a suggested rate by a farm lending agency in January 2012.

Land. Land values for row crop land in the region range from \$6,000 per acre to \$14,000 per acre. Prices are affected by location, soil type, and water availability. In this study the silage is grown on rented land (see Land Rent).

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. District and well water costs were combined to obtain an average cost for water. The permanent irrigation system consists of buried mainline. This part of the system is already in place when the land is purchased/rented.

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 the Whole Farm Annual Equipment, Investment, and Business Overhead Costs table. 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.

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UC COOPERATIVE EXTENSION
Table 1. COSTS PER ACRE TO PRODUCE CORN SILAGE
 SAN JOAQUIN VALLEY – South 2012

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:								
Disc Stubble 2X	0.35	7	15	6	0	0	28	
Pull Borders	0.08	2	2	1	0	0	5	
Pre-irrigate	0.10	1	0	0	40	0	41	
Knock Down Borders	0.08	2	2	1	0	0	5	
Finish Disc 2X	0.25	5	11	5	0	0	21	
Plant w/insecticide+fertilizer	0.00	0	0	0	177	18	195	
Weed: Post Plant (Roundup)	0.13	3	2	1	5	0	11	
Weeds: Prelayby (Clarity)	0.13	3	2	1	9	0	15	
Cultivate	0.15	3	3	1	0	0	7	
Weeds: Layby (Prowl)	0.13	3	2	1	22	0	28	
Insects-Miticide:(Comite)	0.00	0	0	0	35	10	45	
Irrigate & Fertilize 3X	0.30	4	0	0	219	0	223	
Irrigate 5X	0.50	7	0	0	125	0	132	
Pickup Truck Use	0.38	8	4	1	0	0	13	
TOTAL Cultural COSTS	2.57	48	43	18	632	28	769	
Harvest:								
Harvest - Cut, Haul & Pack	0.00	0	0	0	0	296	296	
TOTAL Harvest COSTS	0.00	0	0	0	0	296	296	
Interest on Operating Capital @ 5.75%							15	
TOTAL OPERATING COSTS/ACRE	2.57	48	43	18	632	324	1,080	
*CASH OVERHEAD:								
Liability Insurance							2	
Office Expense							23	
Rent-Silage Land							147	
Property Taxes							1	
Property Insurance							1	
Investment Repairs							4	
TOTAL CASH OVERHEAD COSTS/ACRE							178	
TOTAL CASH COSTS/ACRE							1,258	
*NON-CASH OVERHEAD:								
		Per producing Acre		Annual Capital Recovery				
Fuel Wagon		5		1			1	
Fuel Tanks/Aboveground		12		1			1	
Shop Building		143		9			9	
Shop Tools		27		2			2	
Equipment		310		26			26	
TOTAL NON-CASH OVERHEAD COSTS		496		39			39	
TOTAL COSTS/ACRE							1,297	

*1/2 costs allocated to double or other crop.

UC COOPERATIVE EXTENSION
Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE CORN SILAGE
 SAN JOAQUIN VALLEY – South 2012

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Corn Silage	32.00	ton	45.00	1,440	
TOTAL GROSS RETURNS	32.00	ton		1,440	
OPERATING COSTS					
Fertilizer:					232
10-34-0	200.00	lb	0.44	88	
80-0-0 (NH3)	225.00	lb N	0.64	144	
Insecticide:					59
Pounce 1.5G	13.00	lb	1.90	25	
Comite	3.00	pint	11.50	35	
Herbicide:					36
Roundup Power Max	1.00	qt	5.00	5	
Clarity	8.00	floz	1.18	9	
Prowl H20	3.00	pint	7.26	22	
Seed:					64
Corn Seed Grain RR	33.00	thou	1.95	64	
Custom:					324
Plant Corn	1.00	acre	18.00	18	
Ground Application	1.00	acre	10.00	10	
Harvest w/Proc Haul Pk	32.00	ton	9.25	296	
Irrigation:					240
Water	48.00	acin	5.00	240	
Labor:					48
Equipment Operator Labor	2.00	hrs	17.50	35	
Non-Machine Labor	0.90	hrs	14.00	13	
Machinery:					61
Fuel-Gas	0.95	gal	3.82	4	
Fuel-Diesel	11.61	gal	3.43	40	
Lube				7	
Machinery Repair				11	
Interest on Operating Capital (5.75%)				15	
TOTAL OPERATING COSTS/ACRE				1,080	
NET RETURNS ABOVE OPERATING COSTS				360	
*CASH OVERHEAD COSTS					
Liability Insurance				2	
Office Expense				23	
Rent-Silage Land				147	
Property Taxes				1	
Property Insurance				1	
Investment Repairs				4	
TOTAL CASH OVERHEAD COSTS/ACRE				178	
TOTAL CASH COSTS/ACRE				1,258	
*NON-CASH OVERHEAD COSTS (Capital Recovery)					
Fuel Wagon				1	
Fuel Tanks/Aboveground				1	
Shop Building				9	
Shop Tools				2	
Equipment				26	
TOTAL NON-CASH OVERHEAD COSTS				39	
TOTAL COST/ACRE				1,297	
TOTAL COST/ Ton				41	
NET RETURNS ABOVE TOTAL COST				143	

*1/2 costs allocated to double or other crop.

UC COOPERATIVE EXTENSION
Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE CORN SILAGE
 SAN JOAQUIN VALLEY – South 2012

Beginning 05-12	MAY	JUN	JUL	AUG	SEP	TOTAL
Ending 09-12	12	12	12	12	12	
Cultural:						
Disc Stubble 2X	28					28
Pull Borders	2	2				5
Pre-irrigate	41					41
Knock Down Borders	2				2	5
Finish Disc 2X	21					21
Plant w/insecticide+fertilizer	195					195
Weed: Post Plant (Roundup)		11				11
Weeds: Prelayby (Clarity)		15				15
Cultivate		7				7
Weeds: Layby (Prowl)		28				28
Insects-Miticide:(Comite)		45				45
Irrigate & Fertilize 3X		74	149			223
Irrigate 5X			26	79	26	132
Pickup Truck Use	3	3	3	3	3	13
TOTAL Cultural COSTS	294	184	178	82	31	769
Harvest:						
Harvest - Cut, Haul & Pack					296	296
TOTAL Harvest COSTS	0	0	0	0	296	296
Interest on Operating Capital (5.75%)	1	2	3	4	5	15
TOTAL OPERATING COSTS/ACRE	295	187	181	85	332	1,080
*CASH OVERHEAD						
Liability Insurance	2					2
Office Expense	5	5	5	5	5	23
Rent-Silage Land					147	147
Property Taxes			1			1
Property Insurance			1			1
Investment Repairs	1	1	1	1	1	4
TOTAL CASH OVERHEAD COSTS	7	5	8	5	153	178
TOTAL CASH COSTS/ACRE	302	192	189	91	485	1,258

*1/2 costs allocated to double or other crop.

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Table 4. RANGING ANALYSIS (Harvest Costs included)
 SAN JOAQUIN VALLEY – South 2012

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE CORN SILAGE

	YIELD (ton/acre)						
	26.00	28.00	30.00	32.00	34.00	36.00	38.00
OPERATING COSTS:							
Cultural Cost	769	769	769	769	769	769	769
Harvest Cost	241	259	278	296	315	333	352
Interest on operating capital @ 5.75%	15	15	15	15	16	16	16
TOTAL OPERATING COSTS/acre	1,024	1,043	1,062	1,080	1,099	1,117	1,136
Total Operating Cost/ton	39.40	37.25	35.39	33.76	32.32	31.04	29.89
CASH OVERHEAD COSTS							
TOTAL CASH COSTS/acre	1,202	1,221	1,239	1,258	1,277	1,295	1,314
Total Cash Costs/ton	46.24	43.60	41.31	39.31	37.55	35.98	34.57
NON-CASH OVERHEAD COSTS/acre							
TOTAL COSTS/ACRE	1,241	1,260	1,278	1,297	1,316	1,334	1,353
Total Cost/ton	47.74	45.00	42.62	40.53	38.70	37.06	35.60

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/ton	YIELD (ton/acre)						
	26	28	30	32	34	36	38
36	-88	-35	18	72	125	179	232
39	-10	49	108	168	227	287	346
42	68	133	198	264	329	395	460
45	146	217	288	360	431	503	574
48	224	301	378	456	533	611	688
51	302	385	468	552	635	719	802
54	380	469	558	648	737	827	916

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/ton	YIELD (ton/acre)						
	26	28	30	32	34	36	38
36	-266	-213	-159	-106	-53	1	54
39	-188	-129	-69	-10	49	109	168
42	-110	-45	21	86	151	217	282
45	-32	39	111	182	253	325	396
48	46	123	201	278	355	433	510
51	124	207	291	374	457	541	624
54	202	291	381	470	559	649	738

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/ton	YIELD (ton/acre)						
	26	28	30	32	34	36	38
36	-305	-252	-198	-145	-92	-38	15
39	-227	-168	-108	-49	10	70	129
42	-149	-84	-18	47	112	178	243
45	-71	0	72	143	214	286	357
48	7	84	162	239	316	394	471
51	85	168	252	335	418	502	585
54	163	252	342	431	520	610	699

UC COOPERATIVE EXTENSION
Table 5. RANGING ANALYSIS for Corn Silage sold in field (No harvest costs)
 SAN JOAQUIN VALLEY – South 2012

COSTS PER ACRE AT VARYING YIELD TO PRODUCE CORN SILAGE

	YIELD (ton/acre)						
	26	28	30	32	34	36	38
OPERATING COSTS:							
Cultural Cost	769	769	769	769	769	769	769
Interest on operating capital @ 5.75%	14	14	14	14	14	14	14
TOTAL OPERATING COSTS/acre	783	783	783	783	783	783	783
Total Operating Cost/ton	30.11	27.96	26.09	24.46	23.02	21.74	20.6
CASH OVERHEAD COSTS							
TOTAL CASH COSTS/acre	961	961	961	961	961	961	961
Total Cash Costs/ton	36.95	34.31	32.02	30.02	28.25	26.68	25.28
NON-CASH OVERHEAD COSTS/acre							
TOTAL COSTS/ACRE	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Total Cost/ton	38.45	35.7	33.32	31.24	29.4	27.77	26.31

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/ton	YIELD (ton/acre)						
	26	28	30	32	34	36	38
36	153	225	297	369	441	513	585
39	231	309	387	465	543	621	699
42	309	393	477	561	645	729	813
45	387	477	567	657	747	837	927
48	465	561	657	753	849	945	1,041
51	543	645	747	849	951	1,053	1,155
54	621	729	837	945	1,053	1,161	1,269

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/ton	YIELD (ton/acre)						
	26	28	30	32	34	36	38
36	-25	47	119	191	263	335	407
39	53	131	209	287	365	443	521
42	131	215	299	383	467	551	635
45	209	299	389	479	569	659	749
48	287	383	479	575	671	767	863
51	365	467	569	671	773	875	977
54	443	551	659	767	875	983	1,091

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/ton	YIELD (ton/acre)						
	26	28	30	32	34	36	38
36	-64	8	80	152	224	296	368
39	14	92	170	248	326	404	482
42	92	176	260	344	428	512	596
45	170	260	350	440	530	620	710
48	248	344	440	536	632	728	824
51	326	428	530	632	734	836	938
54	404	512	620	728	836	944	1,052

UC COOPERATIVE EXTENSION
Table 6. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SAN JOAQUIN VALLEY - South 2012

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
12	130 HP 2WD Tractor	89,333	20	11,462	6,661	405	504	7,570
12	200 HP Crawler	250,000	20	32,078	18,642	1,133	1,410	21,185
12	92 HP 2WD Tractor	80,806	20	10,368	6,025	366	456	6,847
12	Cultivator - 6 Row	8,580	12	1,188	879	39	49	967
12	Disc - Border	2,150	20	112	165	9	11	186
12	Disc - Finish 18'	39,870	20	2,078	3,067	168	210	3,445
12	Disc - Stubble 14'	23,617	20	1,231	1,817	100	124	2,041
12	Pickup 1/2 Ton	30,000	5	13,445	4,436	174	217	4,828
12	Rear Blade - 8'	4,200	20	219	323	18	22	363
12	Saddle Tank 300Gal	3,218	15	309	290	14	18	322
12	Spray Boom - 20'	2,250	15	216	203	10	12	225
12	200HP Trac Tractor	251,000	10	74,141	26,148	1,305	1,626	29,080
TOTAL		785,024		146,849	68,657	3,741	4,659	77,058
60% of new cost*		471,014		88,109	41,194	2,245	2,796	46,235

*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 Wagon	2,850	10	285	342	13	16	57	427
Fuel Tanks/Above ground	6,514	20	250	504	27	34	130	695
Shop Buildings 2,400 sqft	80,000	30	0	5,057	321	400	1,600	7,378
Shop Tools	15,000	20	600	1,160	63	78	300	1,600
TOTAL INVESTMENT	104,364		1,135	7,062	424	528	2,087	10,100

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm		Unit	Price/ Unit	Total Cost
	Liability Insurance	280			
Office Expense	280	acre	45.00	12,600	
Rent-Silage Land	150	acre	275.00	41,250	

UC COOPERATIVE EXTENSION
Table 7. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY - South 2012

Yr Description	Corn Hours Used	Total Hours Used	COSTS PER HOUR							Total Costs/Hr.
			Capital Recovery	Cash Overhead			Operating			
				Insur- ance	Taxes	Lube & Repairs	Fuel	Total Oper.		
12 130 HP 2WD Tractor	25	600	6.67	0.40	0.50	7.70	25.88	33.58	41.15	
12 200 HP Crawler	39	684	16.35	0.99	1.24	13.11	39.81	52.92	71.50	
12 92 HP 2WD Tractor	81	619	5.84	0.35	0.44	5.67	15.50	21.17	27.80	
12 Cultivator - 6 Row	21	166	3.18	0.14	0.18	1.80	0.00	1.80	5.30	
12 Disc - Border	11	100	0.99	0.05	0.07	0.33	0.00	0.33	1.44	
12 Disc - Finish 18'	36	100	18.49	1.01	1.26	6.18	0.00	6.18	26.95	
12 Disc - Stubble 14'	48	100	10.85	0.60	0.74	3.63	0.00	3.63	15.82	
12 Pickup 1/2 Ton	53	285	9.33	0.37	0.46	3.39	9.55	12.94	23.09	
12 Rear Blade - 8'	11	150	1.29	0.07	0.09	0.62	0.00	0.62	2.07	
12 Saddle Tank 300Gal	53	117	1.48	0.07	0.09	0.73	0.00	0.73	2.37	
12 Spray Boom - 20'	53	117	1.04	0.05	0.06	0.51	0.00	0.51	1.66	
12 200HP Trac Tractor	53	1,600	9.81	0.49	0.61	12.65	39.81	52.46	63.37	

UC COOPERATIVE EXTENSION
Table 8. OPERATIONS WITH EQUIPMENT and MATERIALS
 SAN JOAQUIN VALLEY - South 2012

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Disc Stubble 2X	May	200HP Trac Tractor	Disc - Stubble 14'	Equipment	0.42	hour
Pull Borders	May	130 HP 2WD Tractor	Disc - Border	Equipment	0.05	hour
	June	130 HP 2WD Tractor	Disc - Border	Equipment	0.05	hour
Pre-irrigate	May			Non-Machine Water	0.10 8.00	hour AcIn
Knock Down Borders	May	130 HP 2WD Tractor	Rear Blade - 8'	Equipment	0.05	hour
	Sept	130 HP 2WD Tractor	Rear Blade - 8'	Equipment	0.05	hour
Finish Disc 2X	May	200 HP Crawler	Disc - Finish 18'	Equipment	0.30	hour
Plant w/insecticide+fertilizer	May			Corn Seed	33.00	Thou
				10-34-0	200.00	Lb
				Pounce 1.5G	13.00	Lb
				Plant Corn	1.00	Acre
Weed: Post Plant (Roundup)	June	92 HP 2WD Tractor	Saddle Tank 300Gal	Equipment	0.15	hour
				Roundup	1.00	Qt
Weeds: Prelayby (Clarity)	June	92 HP 2WD Tractor	Saddle Tank 300Gal	Spray Boom - 20'		
				Equipment	0.15	hour
Cultivate	June	92 HP 2WD Tractor	Cultivator - 6 Row	Clarity	8.00	floz
				Equipment	0.18	hour
Weeds: Layby (Prowl)	June	92 HP 2WD Tractor	Saddle Tank 300Gal	Equipment	0.15	hour
				Prowl H2O	3.00	Pint
Insects-Miticide:(Comite)	June		Spray Boom - 20'			
				Comite	3.00	Pint
Irrigate & Fertilize 3X	June			Ground	1.00	Acre
				Non-Machine	0.10	hour
	July			Water	5.00	AcIn
				80-0-0 (NH3)	75.00	Lb N
	July			Non-Machine	0.10	hour
				Water	5.00	AcIn
Irrigate 5X	July			80-0-0 (NH3)	75.00	Lb N
				Non-Machine	0.10	hour
	Aug			Water	5.00	AcIn
				Non-Machine	0.10	hour
	Aug			Water	5.00	AcIn
				Non-Machine	0.10	hour
	Aug			Water	5.00	AcIn
				Non-Machine	0.10	hour
	Sept			Water	5.00	AcIn
				Non-Machine	0.10	hour
Pickup Truck Use	Sept		Pickup 1/2 Ton	Equipment	0.46	hour
Harvest - Cut, Haul & Pack	Sept			Harvest w/Proc	32.00	Ton