
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2008

**SAMPLE COSTS TO PRODUCE
CORN SILAGE**



**SAN JOAQUIN VALLEY – South
Tulare County
Reduced Till - Double Cropped Planting**

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INTRODUCTION

Sample costs to produce reduced till corn silage in the southern San Joaquin Valley are shown in this study. The ground is strip tilled prior to planting, therefore the term “reduced till” is used instead of “no till”. 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.

Sample Cost of Production Studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-1517. Current studies and several archived studies can be downloaded from the department website at <http://coststudies.ucdavis.edu> or obtained from selected county UC Cooperative Extension offices.

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ASSUMPTIONS

The following assumptions refer to Tables 1 to 7 and pertain to sample costs to produce reduced till corn silage in the southern San Joaquin Valley (Tulare County). Cultural 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 study is intended as a guide only. **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 reduced till 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.

Land Preparation. The land is assumed to have been in reduced till or conservation tillage for more than one year and is on-going. Land preparations begin in May immediately after harvest of the flat planted winter forage. Alfalfa type levees are made for the winter forage and left in place for the corn. One half of the cost is allocated to each crop. The fields are then irrigated and strip tilled to prepare the seedbed. Strip till refers to running an 8 to 10 inch shank down the seed row to prepare the seed bed, reduce soil compaction, promote root growth and improve water penetration. Some growers will strip till prior to irrigation; because of the dry ground, a larger tractor than that used on preirrigated ground may be required. Some growers have a planter setup in which the strip till and planting are done in one operation. However in this study, the strip tilling and planting are separate operations, thereby making a global positioning system (GPS) essential.

Planting. In mid May, the Roundup Ready corn is planted by the grower on flat ground in 30-inch lines at a rate of 33,000 seeds per acre. Fertilizer (8-24-5) is applied with the planting.

Fertilization. Fertilizer or soil amendments should be applied only after soil tests determine nutrient and pH levels. At planting, 8-24-5 liquid fertilizer at 342 pounds (30 gallons) per acre is applied. UAN-32 at 150 pounds of nitrogen (N) is side dressed in June and then water run in July at a rate of 50 pounds of N per acre. Commercial fertilizers may be reduced or eliminated with the use of dairy pond water.

Irrigation. The grower uses both well and surface water at an average cost of \$4.58 per acre-inch or \$54.96 per acre-foot. A preplant irrigation of eight acre-inches is made in May. After planting, beginning in early June, eight irrigations totaling 32 acre-inches of water are applied every 10 days until early August. The amount of water applied will vary depending on soil type and moisture remaining from winter rains and the previous crop. Effective rainfall is not accounted for in this study.

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. Pesticides and fertilizers are taken from various dealers and shown as full retail.

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. Roundup WeatherMax is applied to the field in late May and again in early July.

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. Spider mites are controlled with a custom application of an insecticide/miticide (Oberon) in July.

Harvest. Normally, non-dairy growers sell the crop standing and the buyer or dairy pays the harvesting cost. In August the corn is harvested, processed, hauled, and packed into a silage pit by a custom operator and is paid by the buyer. The custom rate for harvesting, processing, hauling, and packing is \$9.00 per ton. Regular harvesting, which excludes the kernel processing is approximately \$1.00 less. Growers or buyers bagging the silage should add \$6 per ton to their harvesting cost. Additional per ton per mile charges are incurred for hauls greater than two miles.

Yields. The crop is assumed to yield 30 tons per acre at 70% moisture. Individual yields can range from 15 to 35 tons per acre in this region.

Returns. Based on the 2007 market, a price of \$33 per ton is used to calculate returns. Table 4 shows a range of grower returns over a range of yields when the crop is sold standing and harvest costs are incurred by the buyer.

Labor, Equipment and Interest Costs

Labor. Labor rates of \$13.94 per hour for machine operators and \$10.88 for general labor includes payroll overhead of 36%. The basic hourly wages are \$10.25 for machine operators and \$8.00 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, 2008 (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 Engineers (ASAE). 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 \$3.54 (excludes excise taxes) and \$3.57 per gallon, respectively. The fuel prices are the average costs from November 2007 through April 2008 derived from American Automobile Association (AAA) and Energy Information Administration monthly data. The cost includes a 2.25% sales tax for diesel fuel, and federal and state excise taxes plus an 8% 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 6.75% 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 April 2008.

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 0.740% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$884 for the entire farm or \$3.16 per producing acre.

Office Expense. Office and business expenses are estimated at \$40 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. Annual cash rent for the land is \$175 per acre or \$188 per production acre (140 acres). 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 price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$.

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 Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in 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 5.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate and equipment life.

Interest Rate. The interest rate of 4.25% 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 April 2008.

Land. Land values for row crop land in Tulare County range from \$5,000 per acre to \$12,000 per acre (Trends & Leases). 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.

Global Positioning System (GPS). GPS equipment consists of a receiver, monitor and one time subscription to the network. The equipment is accurate to less than one-inch. The equipment is used for borders, strip tillage, planting and side dressing. The cost is first allocated to the entire farm and then for the double crop, split equally between the two crops.

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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Table 1. COSTS PER ACRE to PRODUCE CORN SILAGE (Reduced Till)
 SAN JOAQUIN VALLEY - 2008

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre				Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:							
Land Prep: Pull Borders (1/2 cost to double crop)	0.05	1	3	0	0	3	
Irrigate: Preirrigate (water & labor)	0.10	1	0	37	0	38	
Land Prep: Strip Till	0.10	2	7	0	0	9	
Plant: Seed & Fertilize (8-24-5)	0.09	2	6	227	0	235	
Weed: Roundup 2X	0.20	3	5	46	0	55	
Irrigate: (water & labor)	0.80	9	0	147	0	155	
Fertilize: Side dress (UAN32)	0.09	2	6	135	0	142	
Insect: Mites (Oberon)	0.00	0	0	35	10	45	
Fertilize: Water Run (UAN32)	0.00	0	0	45	0	45	
Pickup: Business Use	0.38	6	5	0	0	11	
TOTAL CULTURAL COSTS	1.81	25	31	672	10	738	
Harvest:							
Harvest – (Paid by buyer)							0
TOTAL HARVEST COSTS	0.00	0	0	0	0	0	0
<u>Interest on operating capital @ 6.75%</u>							13
TOTAL OPERATING COSTS/ACRE		25	31	672	10	751	
*Cash Overhead:							
Liability Insurance							2
Office Expense							20
Land Rent (per producing acre)							94
Property Taxes							2
Property Insurance							1
Investment Repairs							4
TOTAL CASH OVERHEAD COSTS							123
TOTAL CASH COSTS/ACRE							874
*Non-Cash Overhead (Capital Recovery):							
		Per producing Acre		-- Annual Cost -- Capital Recovery			
Fuel Tanks/Aboveground		12		1			1
Fuel Wagon		5		1			1
Buildings		143		9			9
Shop/Field Tools		27		2			2
GPS Unit		36		8			8
Equipment		96		10			10
TOTAL NON-CASH OVERHEAD COSTS		318		30			30
TOTAL COSTS/ACRE							905

Note: X=times as 2X=2 times or passes. *1/2 costs allocated to double or other crop.

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Table 2. COSTS and RETURNS PER ACRE to PRODUCE CORN SILAGE (Reduced Till)
 SAN JOAQUIN VALLEY - 2008

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Corn Silage	30.00	ton	33.00	990	
OPERATING COSTS					
Irrigation:					
Water	40.00	acin	4.58	183	
Herbicide:					
Roundup WeatherMax	56.00	floz	0.83	46	
Seed:					
Corn Seed (Roundup Ready, treated)	33.00	thou	1.80	59	
Fertilizer:					
8-24-5	342.00	lb	0.49	168	
UAN-32	200.00	lb N	0.90	180	
Insecticide:					
Oberon 2SC	8.00	floz	4.40	35	
Custom:					
Ground Spray (Oberon application)	1.00	acre	10.00	10	
Labor (machine)	1.10	hrs	13.94	15	
Labor (non-machine)	0.90	hrs	10.88	10	
Fuel - Gas	0.95	gal	3.57	3	
Fuel - Diesel	5.41	gal	3.54	19	
Lube				3	
Machinery repair				5	
Interest on operating capital @ 6.75%				13	
TOTAL OPERATING COSTS/ACRE				751	
NET RETURNS ABOVE OPERATING COSTS				239	
Cash Overhead*:					
Liability Insurance				2	
Office Expense				20	
Land Rent (per producing acre)				94	
Property Taxes				2	
Property Insurance				1	
Investment Repairs				4	
TOTAL CASH OVERHEAD COSTS				123	
TOTAL CASH COSTS/ACRE				874	
Non-Cash Overhead (Capital Recovery)*:					
Fuel Tanks/Aboveground				1	
Fuel Wagon				1	
Buildings				9	
Shop/Field Tools				2	
GPS System				8	
Equipment				10	
TOTAL NON-CASH OVERHEAD COSTS				30	
TOTAL COSTS/ACRE				904	
NET RETURNS ABOVE TOTAL COSTS				86	

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

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Table 3. MONTHLY CASH COSTS PER ACRE to PRODUCE CORN SILAGE (Reduced Till)
 SAN JOAQUIN VALLEY - 2008

Beginning JAN 08	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 08	08	08	08	08	08	08	08	08	08	08	08	08	
Cultural:													
Land Prep: Pull Borders (1/2 cost to double crop)					3								3
Irrigate: Preirrigate (water & labor)					38								38
Land Prep: Strip Till					9								9
Plant: Seed & Fertilize (8-24-5)					235								235
Weed: Roundup 2X					27		27						55
Irrigate: (water & labor)						58	58	39					155
Fertilize: Side dress (UAN32)						142							142
Insect: Mites (Oberon)							45						45
Fertilize: Water Run (UAN32)							45						45
Pickup : Business Use					3	3	3	3					11
TOTAL CULTURAL COSTS					315	203	179	42					738
Harvest:													
Harvest – (Paid by buyer)													0
TOTAL HARVEST COSTS													0
Interest on operating capital @ 6.75%					2	3	4	4					13
TOTAL OPERATING COSTS/ACRE					317	206	183	46					751
*Cash Overhead:													
Liability Insurance					2								2
Office Expense					5	5	5	5					20
Land Rent (per producing acre)									94				94
Property Taxes							2						2
Property Insurance					1								1
Investment Repairs				0	1	1	1	1	1	0			4
TOTAL CASH OVERHEAD COSTS				0	9	6	7	6	94	0			123
TOTAL CASH COSTS/ACRE				0	325	212	190	51	94	0			874

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

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Table 4. RANGING ANALYSIS for Corn Silage sold in field (No harvest costs)
 SAN JOAQUIN VALLEY - 2008

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE CORN SILAGE (Reduced Till)

	YIELD (ton/acre)						
	24.00	26.00	28.00	30.00	32.00	34.00	36.00
OPERATING COSTS:							
Cultural Cost	738	738	738	738	738	738	738
Interest on operating capital @ 6.75%	13	13	13	13	13	13	13
TOTAL OPERATING COSTS/acre	751	751	751	751	751	751	751
Total Operating Cost/ton	31	29	27	25	23	22	21
CASH OVERHEAD COSTS							
TOTAL CASH COSTS/acre	874	874	874	874	874	874	874
Total Cash Costs/ton	36	34	31	29	27	26	24
NON-CASH OVERHEAD COSTS/acre							
TOTAL COSTS/ACRE	904	904	904	904	904	904	904
Total Cost/ton	38	35	32	30	28	27	25

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/ton	YIELD (ton/acre)						
	24.00	26.00	28.00	30.00	32.00	34.00	36.00
24.00	-175	-127	-79	-31	17	65	113
27.00	-103	-49	5	59	113	167	221
30.00	-31	29	89	149	209	269	329
33.00	41	107	173	239	305	371	437
36.00	113	185	257	329	401	473	545
39.00	185	263	341	419	497	575	653
42.00	257	341	425	509	593	677	761

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/ton	YIELD (ton/acre)						
	24.00	26.00	28.00	30.00	32.00	34.00	36.00
24.00	-298	-250	-202	-154	-106	-58	-10
27.00	-226	-172	-118	-64	-10	44	98
30.00	-154	-94	-34	26	86	146	206
33.00	-82	-16	50	116	182	248	314
36.00	-10	62	134	206	278	350	422
39.00	62	140	218	296	374	452	530
42.00	134	218	302	386	470	554	638

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/ton	YIELD (ton/acre)						
	24.00	26.00	28.00	30.00	32.00	34.00	36.00
24.00	-328	-280	-232	-184	-136	-88	-40
27.00	-256	-202	-148	-94	-40	14	68
30.00	-184	-124	-64	-4	56	116	176
33.00	-112	-46	20	86	152	218	284
36.00	-40	32	104	176	248	320	392
39.00	32	110	188	266	344	422	500
42.00	104	188	272	356	440	524	608

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**Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, & BUSINESS OVERHEAD COSTS
SAN JOAQUIN VALLEY - 2008**

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
08	200HP 4WD Tractor	172,000	10	50,806	17,288	824	1,114	19,226
08	225HP 4WD Tractor	183,000	10	54,055	18,394	877	1,185	20,456
08	92 HP 2WD Tractor	60,000	20	7,699	4,261	250	338	4,850
08	Fertilizer Side Dress Rig 25'	6,500	10	1,149	717	28	38	783
08	Pickup 1/2 Ton	28,000	5	12,549	4,028	150	203	4,381
08	Planter JD1700 25'	35,500	10	6,278	3,915	155	209	4,278
08	Rear Blade - 8'	3,380	20	176	248	13	18	279
08	Saddle Tank 300Gal #1	3,218	15	309	279	13	18	310
08	Saddle Tank 300Gal #2	3,218	15	309	279	13	18	310
08	Spray Boom - 25'	2,150	10	380	237	9	13	259
08	Strip Tiller 25'	31,000	10	5,482	3,418	135	182	3,736
TOTAL		527,966		139,912	53,065	2,468	3,336	58,870
60 % new cost*		316,780		83,515	31,839	1,481	2,001	35,322

*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	
Fuel Wagon	2,850	10	285	332	12	16	57	417
Fuel Tanks/Aboveground	6,514	20	250	482	25	34	130	671
Global Positioning System (GPS)	20,000	5		4,524	74	100	400	5,098
Buildings 2,400 sqft	80,000	30		4,768	296	400	1,600	7,064
Shop/Field Tools	15,000	20	600	1,109	58	78	300	1,544
TOTAL INVESTMENT	124,364		1,135	11,215	464	627	2,487	14,794

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/		Price/ Unit	Total Cost
	Farm	Unit		
Liability Insurance	280	acre	3.16	885
Office Expense	280	acre	40.00	11,200
Rent: Silage acres (140 acres planted)	150	acre	175.00	26,250

Farm size = 300 acres, Planted acres = 280.

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY - 2008

Yr	Description	COSTS PER HOUR							Total Costs/Hr.
		Actual Hours Used	Cash Overhead			Operating			
			Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
08	200HP 4WD Tractor	1,600	6.48	0.31	0.42	4.61	47.25	51.86	59.07
08	225HP 4WD Tractor	1,600	6.90	0.33	0.44	4.91	53.16	58.07	65.74
08	92 HP 2WD Tractor	600	4.26	0.25	0.34	2.61	18.39	21.00	25.85
08	Fertilizer Side Dress Rig 25'	120	3.58	0.14	0.19	2.53	0.00	2.53	6.44
08	Pickup 1/2 Ton	285	8.48	0.32	0.43	1.83	10.26	12.09	21.32
08	Planter JD1700 25'	150	15.67	0.62	0.84	9.87	0.00	9.87	27.00
08	Rear Blade - 8'	151	0.99	0.05	0.07	0.50	0.00	0.50	1.61
08	Saddle Tank 300Gal #1	93	1.81	0.08	0.11	0.86	0.00	0.86	2.86
08	Saddle Tank 300Gal #2	100	1.68	0.08	0.11	0.86	0.00	0.86	2.73
08	Spray Boom - 25'	150	1.02	0.03	0.05	0.58	0.00	0.58	1.68
08	Strip Tiller 25'	200	10.26	0.40	0.55	6.40	0.00	6.40	17.61

UC COOPERATIVE EXTENSION
Table 7. OPERATIONS WITH EQUIPMENT & MATERIAL INPUTS
 SAN JOAQUIN VALLEY - 2008

Operation	Operation Month	Equipment Tractor	Implement	Non-Mach			Unit
				Labor hrs/acre	Broadcast Material	Rate/acre	
Cultural:							
Land Prep: Pull Borders	May	200HP 4WD	Rear Blade				
Irrigate: Preirrigate	May			0.10	Water	8.00	acin
Land Prep: Strip Till	May	225HP 4WD	Strip Tiller				
Plant: Seed. Fertilize	May	200HP 4WD	Finish Disc				
	May	200HP 4WD	Planter		RR Seed	33.00	thou
			Saddle Tanks (2)		8-24-5	342.00	lb
Weed: Roundup	May	92HP 2WD	Spray Boom		Roundup	28.00	floz
			Saddle Tank				
	July	92HP 2WD	Spray Boom		Roundup	28.00	floz
			Saddle Tank				
Insect: Mites	June	Custom			Oberon	8.00	floz
Irrigate:	June			0.10	Water	4.00	acin
	June			0.10	Water	4.00	acin
	June			0.10	Water	4.00	acin
	July			0.10	Water	4.00	acin
	July			0.10	Water	4.00	acin
	July			0.10	Water	4.00	acin
	August			0.10	Water	4.00	acin
	August			0.10	Water	4.00	acin
Fertilize: Side Dress	June	200HP 4WD	Fertilizer Rig		UAN 32	150.00	lb N
			Saddle Tanks (2)				
Fertilize: Water Run	July				UAN 32	50.00	lb N
Harvest	August	Buyer Harvest					