
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2015

SAMPLE COSTS TO PRODUCE

SILAGE CORN CONSERVATION TILLAGE



IN THE NORTHERN SAN JOAQUIN VALLEY

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CONSERVATION TILLAGE PRACTICES
San Joaquin Valley – North 2015**

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INTRODUCTION

Sample costs to produce double cropped silage corn using conservation tillage practices in the northern 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. “Your Costs” columns in Tables 1 and 2 are provided for entering your farm costs.

The hypothetical farm operations, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, (530) 752-4651 or destewart@ucdavis.edu.

Sample Cost of Production Studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis. Current studies can be downloaded from the department website <http://coststudies.ucdavis.edu>. Archived studies are also available on the website.

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ASSUMPTIONS

The following assumptions refer to Tables 1 to 7 and pertain to sample costs to produce double cropped silage corn in the northern San Joaquin Valley. Practices described represent conservation tillage 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. Conservation tillage 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 conservation tillage 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. Of the 150 acres of rented land, 145 acre are double cropped with a winter forage crop followed by corn silage. The remaining 5 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.

CONSERVATION TILLAGE SYSTEMS

Conservation tillage systems can be an important part of a sustainable agricultural system, in that they can be used to decrease soil erosion losses ordinarily associated with typical conventional agricultural practices. It is important to remember that anything that is done to decrease erosion losses also decreases the need to add as much fertilizer and water to soils, given that top soil generally contains the most organic matter.

Conservation tillage also, ideally, decreases water pollution (via decreasing soil erosion) and saves fossil fuel energy and thus decreases CO₂ emissions, compared to conventional tillage systems. Because soil organic matter tends to increase under conservation tillage, as compared to conventional plowing, the soils are also more effective at storing carbon.

Conservation tillage systems include a variety of techniques, including "no-till" "minimum till" "ridge till" "chisel plow" and "mulch till." The Soil Conservation Service (now called the Natural Resources Service) refers to these systems as "residue management."

Conservation tillage is basically any system of cultivating that reduces soil or water loss when compared to conventional moldboard plowing, which turns over the soil completely. Most definitions specify that at least 30% of the crop residue must remain on the soil surface at the time of planting. It is designed to conserve soil, water, energy (as originally conceived), and protect water quality (again, as originally conceived).

CULTURAL PRACTICES AND MATERIAL INPUTS

Land Preparation. For this study, most of the field operations are performed by a custom operator. In the fall of the previous calendar year, the field is leveled before planting of a winter cereal forage crop such as barley, oats, triticale or wheat. Every four years the field is custom laser leveled and is charged at 25% laser leveled and the remaining 75% of the field is leveled with a tri-plane. Borders are pulled at 50-foot intervals the length of the field which are aligned with the irrigation valves at the head of the field to allow border/flood irrigation. For this study these operating costs, (50%) are split between the winter forage and corn silage crops.

Winter cereal forage crops are harvested from March through April depending on the type of forage and when the crop reaches the growth stage for maximum nutrient values. The borders are left in place or reworked if needed, the rest of the field is not worked. Composted manure is hauled and spread. The field is then pre-

irrigated. In May, once the soil has reached the correct moisture, a strip tillage cultivator is run the length of the field to prepare strips for planting. In this study an 8-row, cultivator prepares 10 inch wide strips spaced 30 inches apart on center.

Planting. Corn is usually planted from March - May in rows 30 or 38 inches apart, on the flat or on beds. For this study, the Roundup Ready seed is planted flat, into moisture, in May at 33,000 seeds per acre on 30-inch spacing with a strip-till planter. Starter fertilizer and herbicides are applied at planting.

Fertilization. Composted manure from the dairy is spread over the entire field at 3 tons per acre, (1.5% N) before planting. Starter fertilizer 10-34-0 at 200 pounds per acre is applied beneath the seed at planting. Three applications of nitrogen as UAN-32 each at 50 pounds per acre are applied with three irrigations, one in June and two in July, for a total of 150 pounds of nitrogen. The PCA/CCA monitors the fertilizer applications. Nitrogen for the crop is 20 lbs. from the starter, 150 lbs. from the UAN-32 and 90 lbs. from compost, totaling 260 lbs. per acre.

Irrigation. The cost of irrigation water is volatile and varies significantly by location within each county. This cost can be critical in deciding whether to plant corn or another crop that is more profitable. For this study the grower uses surface water at an average cost of \$3.58 per acre inch, (\$43 per acre foot). A pre-irrigation of 8-acre inches is applied in April. The amount of water applied pre-plant will vary depending on soil type and remaining moisture from previous crop. From June to September, seven irrigations totaling 36 acre-inches (3.0 acre-feet) of water are applied. Three of the irrigations, one in June and two in July include nitrogen fertilizer injected into the water. The actual water requirement will vary each year based on soil, climatic, and plant physiological factors. Total irrigation labor costs are a separate line item.

Pest Management. The pesticides, rates, and application practices mentioned in this cost study are listed on the UC IPM website at www.ipm.ucdavis.edu. **Pesticides mentioned in this study are not recommendations, but those commonly used in the region.** For information and pesticide use permits, contact the local county Agricultural Commissioner's office. For information on other pesticides available, pest identification, monitoring, and management, visit the UC IPM website or contact your UC farm advisor. **Pest control costs can vary considerably each year depending upon local conditions and pest populations in any given year.** Adjuvants or surfactants may be recommended for use with many pesticides for effective control. Adjuvants and the added costs are not included in this study.

Pest Control Adviser/Certified Crop Advisor (PCA/CCA). Written recommendations are required for many pesticides and are available from licensed pest control advisers. In addition the PCA or an independent consultant will monitor the field for agronomic problems including irrigation and nutrition. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical or fertilizer company.

Weeds. Weed pressure is light to moderate. Glyphosate- Roundup WeatherMax, and diglycolamine-Clarity, are tank mixed and applied post emergence by the grower with a tractor and 20' spray boom with drop nozzles in June for broad spectrum control of grasses, broadleaf weeds and annual morning glory. The field is also mechanically cultivated-furrowed out once in late May.

Insects/Worms. Several insect and spider mite pests attack corn. Spider mites are assumed to reach economic threshold levels requiring treatment. Spiromesifen-Oberon 2EC is applied by the grower with a tractor and a 20' spray boom over the top of the plants in early June. Worms can be a problem at planting with stand establishment following a forage crop. There is ample biomass on top of the ground for habitat. An insecticide, bifenthrin-Capture 2EC is strip sprayed at planting to combat these pests.

Harvest. In September the corn is harvested and hauled to the storage pit by a custom operator. The custom rate for harvesting and hauling is \$10.35 per ton. Additional per ton charges of \$2.40 are incurred for hauls greater than one mile, which is included. If the dairy wants the silage put into an Agbag, \$7.65 per ton is added to the harvesting costs. Normally, non-dairy growers sell the crop standing and the buyer or dairy pays the harvesting costs. If the grower harvests corn using their own equipment, harvest expense (custom harvest costs) are 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 2013 market, a price of \$48 per ton is used to calculate returns. Tables 4 shows a range of grower gross and net returns over a range of prices and yields.

Pickup/ATV. The pickup is used for farm labor transport, retrieving parts. The ATV is used for irrigation and pest monitoring. Each has its own line item and are not assigned to any specific operation, both are for farm use only.

Labor, Equipment and Interest

Labor. Basic wages are \$14.00 and \$12.00 per hour for machine operators and non-machine workers (irrigators and manual laborers), respectively. Adding 38% for the employer's share of federal and state payroll taxes, insurance and other benefits raises the total labor costs to \$19.32 per hour for machine operators and \$16.56 per hour for non-machine laborers. The labor for operations involving machinery is 20% higher than the field operation time to account for equipment set up, road travel, maintenance, and repair.

Equipment Operating Costs. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. The non-cash overhead is discussed below. The cash overhead consists of property taxes and insurance on the equipment at the rates given below. The operating costs consist of repairs, fuel, and lubrication.

Fuel, Lube & Repairs. The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup and travel time. 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 Power-Take-Off horsepower, and fuel type. Prices for on-farm delivery of diesel and unleaded gasoline are \$3.17 and \$3.41 per gallon, respectively. These prices reflect market price during first week of June, 2015.

GPS Guidance Systems. GPS/GIS tractor-mounted guidance and precision agriculture systems are a necessity for strip tillage systems. The custom operator uses GPS guidance systems on his equipment. Usage of these systems can reflect a significant cost savings.

Interest Rates. 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 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 January 2015.

CASH OVERHEAD

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm, not to a particular operation.

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.

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 0.829% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$933 for the entire farm.

Land Rent. The cash rent for the land is \$300 per acre or \$310 per production acre (145 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.

Field Supervisors Salary. Supervisors' salaries include insurance, payroll taxes and benefits. One third of one supervisor's time is allocated to silage corn at \$36 per acre.

Office Expenses. Costs are estimated at \$40 per acre for the ranch and are not based on any specific information, except that there is a cost involved for bookkeeping, payroll, tax preparation, and telephone.

Miscellaneous Costs (Training). Included expenses are employee safety training as well as pesticide use and regulatory continuing education training, employee bonuses, additional materials and applications for unique fields or special conditions. These costs are estimated at \$20 per acre.

Investment Repairs. Annual repairs on investments or capital recovery items that require maintenance are calculated as 2% of the purchase price. Repairs are not calculated for land and establishment costs.

NON-CASH OVERHEAD

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment and is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). The capital recovery costs are 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 the estimated value of an investment at the end of its useful life. For farm machinery the value is a percentage of the new cost of the investment (Boehlje and Eidman). The value is

calculated from equations developed by 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.

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.

Crop Insurance. Crop insurance for silage corn is available and is based on the grower's average yields. The farmer can select the level of coverage from 50 to 75% of average yield and costs will vary depending upon coverage level. No crop insurance is specified in this study.

Fuel Tanks. Two 5,000-gallon fuel tanks using electric pumps are used to hold diesel and gasoline. The tanks are setup in a cement containment pad that meets federal, state, and county regulations.

Irrigation System. The fields are irrigated using a border/flood irrigation system. Surface water is delivered from the Irrigation District and distributed by way of canals to the growers irrigation system of underground mainlines and surface level valves. The land owner is responsible for the main pump, (if needed) and delivery of water to the grower's irrigation system. Irrigation operations, equipment to perform these operations and water costs are listed in tables 1, 2 and 3.

Land. Land values for row crop land in the region range from \$22,500 per acre to \$32,500 per acre. Prices are affected by location, soil type, and water availability. In this study the silage corn is grown on rented land (see Land Rent).

Shop Building. The shop building is 3,000 square foot metal building on a cement slab.

Shop Tools. Includes shop equipment/tools and other tools used on the farm and does not recognize any specific inventory.

Risk. Risks associated with silage corn 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 corn production. Because of the risk involved, growers should consider all of the agronomic and economic risks before committing resources to corn production. Crop insurance may be a viable option that each grower should review to determine if it is appropriate for their situation.

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 SILAGE CORN CONSERVATION TILLAGE
 SAN JOAQUIN VALLEY-2015

Operation	Cash and Labor Costs per Acre							Total Cost	Your Cost
	Operation Time (Hrs/A)	Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/Rent			
Pre-Plant:									
Laser Plane-Custom 25% of Acres (50% of cost)	0.00	0	0	0	0	15	15		
Tri-Plane 75% of Acres (50% of cost)	0.00	0	0	0	0	12	12		
Ridge/Shape Borders (50% of cost)	0.00	0	0	0	0	6	6		
Haul/Spread Compost (1.5% N)	0.00	0	0	0	0	129	129		
Pre-Irrigate	0.00	0	0	0	29	0	29		
Strip-Tillage Cultivation	0.00	0	0	0	0	18	18		
TOTAL PRE-PLANT COSTS	0.00	0	0	0	29	180	209		
Cultural :									
Plant/Fertilize/Herbicide	0.00	0	0	0	178	22	200		
Cultivate/Furrow Out	0.00	0	0	0	0	14	14		
Weeds-Post Emergence	0.13	3	2	1	25	0	31		
Pests-Mites Oberon 2SC	0.13	3	2	1	29	0	34		
Irrigate 7X	0.00	0	0	0	129	0	129		
Fertilize-UAN32	0.00	0	0	0	126	0	126		
Irrigation Labor	0.00	124	0	0	0	0	124		
Pickup Truck-Farm Use	0.27	6	2	1	0	0	9		
ATV-Farm Use	0.20	5	1	0	0	0	6		
TOTAL CULTURAL COSTS	0.72	141	7	2	487	36	673		
Harvest:									
Harvest-Chop/Haul-Silage	0.00	0	0	0	0	331	331		
TOTAL HARVEST COSTS	0.00	0	0	0	0	331	331		
Interest on Operating Capital at 5.75%							20		
TOTAL OPERATING COSTS/ACRE	1	141	7	2	516	547	1,232		
CASH OVERHEAD:									
Liability Insurance							3		
Miscellaneous Costs (Training)							20		
Land Rent-Silage Corn (50% of Cost)							155		
Office Expenses							40		
Supervisor Salary							36		
Property Taxes							2		
Property Insurance							0		
Investment Repairs							6		
TOTAL CASH OVERHEAD COSTS/ACRE							262		
TOTAL CASH COSTS/ACRE							1,494		
NON-CASH OVERHEAD:									
		Per Producing Acre		Annual Cost		Capital Recovery			
Fuel Storage Tanks (2)		73		6		6			
Shop Building 3,000 Sqft		200		13		13			
Shop Tools		50		4		4			
Closed Mixing System		17		2		2			
Equipment		37		4		4			
TOTAL NON-CASH OVERHEAD COSTS		377		28		28			
TOTAL COSTS/ACRE							1,523		

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TABLE 2. COSTS AND RETURNS PER ACRE TO PRODUCE SILAGE CORN CONSERVATION TILLAGE
 SAN JOAQUIN VALLEY-2015

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Silage Corn	32	Ton	48.00	1,536	
TOTAL GROSS RETURNS	32	Ton		1,536	
OPERATING COSTS					
Fertilizer:				236	
10-34-0	200.00	Lb	0.55	110	
UAN32	150.00	Lb N	0.84	126	
Insecticide:				32	
Capture 2EC	2.13	FlOz	1.59	3	
Oberon 2SC	6.00	floz	4.78	29	
Herbicide:				25	
Roundup WeatherMax	2.00	Pint	5.21	10	
Clarity	1.00	Pint	14.88	15	
Seed:				65	
Corn Seed Roundup-ready	33.00	Thou	1.96	65	
Custom:				547	
Laser Plane	0.13	Acre	120.00	15	
Tri-Plane	1.00	Acre	12.00	12	
Ridge/Shape Borders	1.00	Acre	5.95	6	
Haul/Spread Compost	3.00	Ton	43.00	129	
Ridge/Strip-Tillage	1.00	Acre	18.00	18	
Plant Corn/Strip-Till	1.00	Acre	22.00	22	
Cultivate	1.00	Acre	14.00	14	
Chop/Haul-Silage	32.00	Ton	10.35	331	
Irrigation:				158	
Water Corn Silage	44.00	AcIn	3.58	158	
Labor				141	
Equipment Operator Labor	0.86	hrs	19.32	17	
Irrigation Labor	7.50	hrs	16.56	124	
Machinery				9	
Fuel-Gas	0.72	gal	3.41	2	
Fuel-Diesel	1.30	gal	3.17	4	
Lube				1	
Machinery Repair				1	
Interest on Operating Capital @ 5.75%				20	
TOTAL OPERATING COSTS/ACRE				1,232	
TOTAL OPERATING COSTS/TON				39	
NET RETURNS ABOVE OPERATING COSTS				304	
CASH OVERHEAD COSTS					
Liability Insurance				3	
Miscellaneous Costs (Training)				20	
Land Rent-Silage Corn (50%)				155	
Office Expenses				40	
Supervisor Salary				36	
Property Taxes				2	
Property Insurance				0	
Investment Repairs				6	
TOTAL CASH OVERHEAD COSTS/ACRE				262	
TOTAL CASH OVERHEAD COSTS/TON				8	
TOTAL CASH COSTS/ACRE				1,494	
TOTAL CASH COSTS/TON				47	
NET RETURNS ABOVE CASH COSTS				42	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Fuel Storage Tanks (2)				6	
Shop Building 3,000 Sqft				13	
Shop Tools				4	
Closed Mixing System				2	
Equipment				4	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				28	
TOTAL NON-CASH OVERHEAD COSTS/TON				1	
TOTAL COST/ACRE				1,523	
TOTAL COST/TON				48	
NET RETURNS ABOVE TOTAL COST				13	

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TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE SILAGE CORN CONSERVATION TILLAGE
 SAN JOAQUIN VALLEY-2015

	OCT 14	NOV 14	DEC 14	JAN 15	FEB 15	MAR 15	APR 15	MAY 15	JUN 15	JUL 15	AUG 15	SEP 15	Total
Pre-Plant:													
Laser Plane-Custom 25% of Ac (50% of cost)	15												15
Tri-Plane 75% of Ac (50% of cost)	12												12
Ridge/Shape Borders (50% of cost)	6												6
Haul/Spread Compost (1.5% N)							129						129
Pre-Irrigate							29						29
Strip-Tillage Cultivator								18					18
TOTAL PRE-PLANT COSTS	33						158	18					209
Cultural :													
Plant/Fertilize/Herbicide								200					200
Cultivate/Furrow Out								14					14
Weeds-Post Emergence									31				31
Pests-Mites Oberon 2SC									34				34
Irrigate 7X									43	43	29	14	129
Fertilize-UAN32									42	84			126
Irrigation Labor												124	124
Pickup Truck-Farm Use	1	1	1	1	1	1	1	1	1	1	1	1	9
ATV-Farm Use	0	0	0	0	0	0	0	0	0	0	0	0	6
TOTAL CULTURAL COSTS	1	1	1	1	1	1	1	215	152	128	30	140	673
Harvest:													
Harvest-Chop/Haul-Silage												331	331
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	0	0	0	0	331	331
Interest on Operating Capital @ 5.75%	0	0	0	0	0	0	1	2	3	3	4	6	20
TOTAL OPERATING COSTS/ACRE	34	1	1	1	1	1	160	235	154	132	33	477	1,232
CASH OVERHEAD													
Liability Insurance												3	3
Miscellaneous Costs (Training)												20	20
Land Rent-Silage Corn (50% of Cost)												155	155
Office Expenses												40	40
Supervisor Salary												36	36
Property Taxes				1						1			2
Property Insurance				0						0			0
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	6
TOTAL CASH OVERHEAD COSTS	0	0	0	1	0	0	0	0	0	1	0	255	262
TOTAL CASH COSTS/ACRE	35	2	2	3	2	2	160	236	155	133	34	731	1,494

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TABLE 4. RANGING ANALYSIS - SILAGE CORN CONSERVATION TILLAGE
SAN JOAQUIN VALLEY-2015
 COSTS PER ACRE AND PER TON AT VARYING YIELDS TO PRODUCE SILAGE CORN CONSERVATION TILLAGE

	YIELD (Ton)						
	17.00	22.00	27.00	32.00	37.00	42.00	47.00
OPERATING COSTS/ACRE:							
Pre-Plant	209	209	209	209	209	209	209
Cultural	673	673	673	673	673	673	673
Harvest	176	228	279	331	383	435	486
Interest on Operating Capital @ 5.75%	19	19	19	20	20	20	20
TOTAL OPERATING COSTS/ACRE	1,076	1,128	1,180	1,232	1,284	1,336	1,388
TOTAL OPERATING COSTS/TON	63.31	51.29	43.72	38.51	34.71	31.82	29.54
CASH OVERHEAD COSTS/ACRE	262	262	262	262	262	262	262
TOTAL CASH COSTS/ACRE	1,338	1,390	1,442	1,494	1,546	1,598	1,650
TOTAL CASH COSTS/TON	78.72	63.19	53.41	46.69	41.79	38.05	35.11
NON-CASH OVERHEAD COSTS/ACRE	28	28	28	28	28	28	28
TOTAL COSTS/ACRE	1,367	1,419	1,471	1,523	1,575	1,627	1,679
TOTAL COSTS/TON	80.00	64.00	54.00	48.00	43.00	39.00	36.00

Net Return per Acre above Operating Costs for Silage Corn Conservation Tillage

PRICE (\$/ton)	YIELD (Tons/acre)						
Silage Corn	17.00	22.00	27.00	32.00	37.00	42.00	47.00
18.00	-770	-732	-694	-656	-618	-580	-542
28.00	-600	-512	-424	-336	-248	-160	-72
38.00	-430	-292	-154	-16	122	260	398
48.00	-260	-72	116	304	492	680	868
58.00	-90	148	386	624	862	1,100	1,338
68.00	80	368	656	944	1,232	1,520	1,808
78.00	250	588	926	1,264	1,602	1,940	2,278

Net Return per Acre above Cash Costs for Silage Corn Conservation Tillage

PRICE (\$/ton)	YIELD (Tons/acre)						
Silage Corn	17.00	22.00	27.00	32.00	37.00	42.00	47.00
18.00	-1,032	-994	-956	-918	-880	-842	-804
28.00	-862	-774	-686	-598	-510	-422	-334
38.00	-692	-554	-416	-278	-140	-2	136
48.00	-522	-334	-146	42	230	418	606
58.00	-352	-114	124	362	600	838	1,076
68.00	-182	106	394	682	970	1,258	1,546
78.00	-12	326	664	1,002	1,340	1,678	2,016

Net Return per Acre above Total Costs for Silage Corn Conservation Tillage

PRICE (\$/ton)	YIELD (Tons/acre)						
Silage Corn	17.00	22.00	27.00	32.00	37.00	42.00	47.00
18.00	-1,061	-1,023	-985	-947	-909	-871	-833
28.00	-891	-803	-715	-627	-539	-451	-363
38.00	-721	-583	-445	-307	-169	-31	107
48.00	-551	-363	-175	13	201	389	577
58.00	-381	-143	95	333	571	809	1,047
68.00	-211	77	365	653	941	1,229	1,517
78.00	-41	297	635	973	1,311	1,649	1,987

UC COOPERATIVE EXTENSION
TABLE 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SAN JOAQUIN VALLEY-2015

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
15	300 Gallon Saddle Tank (Pair)	1,660	4	652	314	1	12	326
15	Spray Boom - 20'	3,600	5	1,173	612	2	24	638
15	Pickup 1/2 Ton	28,000	5	12,549	4,140	17	203	4,360
15	ATV-4WD	8,500	10	1,503	967	4	50	1,021
15	95 HP4WD Tractor	93,000	15	18,105	7,954	46	556	8,556
TOTAL		134,760	-	33,982	13,987	70	844	14,901
60% of New Cost*		80,856	-	20,389	8,392	42	506	8,940

*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 Storage Tanks (2)	21,950	20	250	1,716	9	111	130	1,967
Shop Building 3,000 sqft	60,000	30	0	3,793	25	300	1,200	5,317
Shop Tools	15,000	20	1,500	1,132	7	83	300	1,521
Closed Mixing System	5,074	10	507	608	2	28	101	740
TOTAL INVESTMENT	102,024	-	2,257	7,249	43	521	1,731	9,545

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	300	Farm	3.11	933
Miscellaneous Costs (Training)	150	Acre	20.00	3,000
Land Rent-Silage Corn (50%)	145	Acre	155.00	22,475
Office Expenses	150	Acre	40.00	6,000
Supervisor Salary	150	Acre	36	5,400

UC COOPERATIVE EXTENSION
TABLE 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY-2015

Yr	Description	Silage Corn Conservation Tillage		Total Hours Used	Capital Recovery	Cash Overhead		Operating		Total Costs/Hr.
		Hours Used	Hours Used			Insur- ance	Taxes	Lube & Repairs	Fuel	
15	300 Gallon Saddle Tank (Pair)	37	500	0.38	0.00	0.01	0.03	0.00	0.03	0.42
15	Spray Boom - 20'	37	300	1.22	0.00	0.05	0.99	0.00	0.99	2.26
15	Pickup 1/2 Ton	39	400	6.21	0.03	0.30	3.05	6.39	9.44	15.98
15	ATV-4WD	32	150	3.87	0.02	0.20	0.63	3.41	4.04	8.12
15	95 HP4WD Tractor	40	1000	4.77	0.03	0.33	4.44	14.79	19.23	24.36

UC COOPERATIVE EXTENSION
TABLE 7. OPERATIONS WITH EQUIPMENT & MATERIALS
 SAN JOAQUIN VALLEY-2015

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Laser Plane-Custom	Oct			Laser Plane	0.13	Acre
Tri-Plane	Oct			Tri-Plane	1.00	Acre
Ridge/Shape Borders	Oct			Ridge/Shape Borders	1.00	Acre
Haul/Spread Compost	Apr			Haul/Spread Compost	3.00	Ton
Pre-Irrigate	Apr			Water Corn Silage	8.00	AcIn
Strip-Tillage Cultivate	May			Ridge/Strip-Tillage	1.00	Acre
Plant/Fertilize/Herbicide	May			Corn Seed Roundup-ready	33.00	Thou
				10-34-0	200.00	Lb
				Capture 2EC	2.13	FIOz
				Plant Corn/Strip-Till	1.00	Acre
Cultivate/Furrow Out	May			Cultivate	1.00	Acre
Weeds-Post Emergence	June	95 HP4WD Tractor	300 Gallon Saddle Tank (Pair)	Equipment Operator Labor	0.15	hour
				Roundup WeatherMax	2.00	Pint
			Spray Boom - 20'	Clarity	1.00	Pint
Pests-Mites Oberon 2SC	June	95 HP4WD Tractor	300 Gallon Saddle Tank (Pair)	Equipment Operator Labor	0.15	hour
				Oberon 2SC	6.00	FIOz
			Spray Boom - 20'			
Irrigate 7X	June			Water Corn Silage	6.00	AcIn
	June			Water Corn Silage	6.00	AcIn
	July			Water Corn Silage	6.00	AcIn
	July			Water Corn Silage	6.00	AcIn
	Aug			Water Corn Silage	4.00	AcIn
	Aug			Water Corn Silage	4.00	AcIn
	Sept			Water Corn Silage	4.00	AcIn
Fertilize-UAN32	June			UAN32	50.00	Lb N
	July			UAN32	50.00	Lb N
	July			UAN32	50.00	Lb N
Irrigation Labor	Sept			Irrigation Labor	7.50	hours
Pickup Truck-Farm Use	Sept		Pickup 1/2 Ton	Equipment Operator Labor	0.32	hour
ATV-Farm Use	Sept		ATV-4WD	Equipment Operator Labor	0.24	hour
Harvest-Chop/Haul-Silage	Sept			Chop/Haul-Silage	32.00	Ton