UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2015

SAMPLE COSTS TO PRODUCE

FIELD CORN

IN THE
SAN JOAQUIN VALLEY - South

Prepared by:

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INTRODUCTION

Sample costs to produce field corn (field corn for grain) 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. "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. Some archived studies are also available on the website.

ASSUMPTIONS

The following assumptions refer to Tables 1 to 7 and pertain to sample costs to produce grain corn 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. 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 1,200 non-contiguous acres of field and row crops; 300 acres are rented of which 290 are planted to grain corn and the remaining 10 acres are crop ends and roads, 900 acres are owned and 885 acres are planted to other crops such as alfalfa, cotton, wheat, processing tomatoes and dry beans. The remaining 15 acres consist of field roads, buildings, equipment yards, irrigation system and homestead. The farm is managed by the owner/lessee.

CULTURAL PRACTICES AND MATERIAL INPUTS

Land Preparation. The ground is chiseled in the fall or winter to a depth of 18 inches to fracture the soil, which improves root penetration and water infiltration. In the spring, the fields are disced twice. For this study it is assumed that the grower laser levels every four years so land leveling is charged at 25% laser leveled and 75% leveled with a tri-plane. The 30" beds are listed and shaped in one pass. Depending upon the grower and the previous crop many of these operations may be completed in the fall and partial costs assigned to the previous crop.

Planting. The Roundup Ready seed is planted flat in March at 33,000 seeds per acre on 30-inch spacing. Corn is usually planted from March to April in rows 30 or 38 inches apart, on the flat or on beds. The corn is planted by the grower and is considered full season. Earlier maturing corn varieties may have different fertilizer and water requirements.

Fertilization. A starter fertilizer 10-34-0 at 200 pounds per acre is applied beneath the seed at planting. In May, a custom operator side-dresses 150 pounds of nitrogen (N) per acre as UAN-32. Three applications of N as UAN-32 each at 40 pounds per acre are applied with two irrigations in June and one in July. Labor cost for applying the fertilizer is included in the corresponding irrigation.

Irrigation. The price of irrigation water is volatile and varies significantly by location within each county. This cost can be of significance on whether to plant corn or another crop that is more profitable. Irrigation includes the water cost and labor expense. For this study the grower uses both well and surface water at an average cost of $7.50 per acre inch, ($90 per acre foot). A pre-irrigation of 8-acre inches is applied in March. The amount of water applied pre-plant will vary depending on soil type and moisture remaining from winter rains. From May to August, seven irrigations totaling 36 acre-inches (3.0 acre-feet) of water are applied in the furrows. Three of the irrigations, two in June and one 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.

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 (PCA). 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 and fertilizer company.

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

Insects. Several insect and spider mite pests attack corn. Spider mites are the only insects assumed to reach economic threshold levels requiring treatment. Spiromesifen, (Oberon 2EC) is applied with a tractor and spray boom over the top of the plants in May.

Harvest. The corn crop is allowed to dry down in the field. A custom operator harvests and roadsides the grain. The corn is dumped from the combine directly into the bankout wagon which transports the grain to semi-truck bulk grain trailers for transport to the buyer. Transportation from the field to the warehouse is paid by the buyer. Corn is normally harvested under 15% grain moisture. Above this moisture level the grain may require drying before it can be stored, which is an added cost.

Post-harvest. For this study a custom operator (usually a dairy operation nearby), chops and bales the corn stubble. The bales are picked up and stacked on the edge of the field. The bales are traded in exchange for removal of the stubble. The bales can be sold as fodder or for other industrial uses.

Yields. The crop is assumed to yield 6.0 tons of grain at approximately 15% moisture. Annual yields range from 6 to 7 tons per acre in this region over the last 3 years, (2011-2013 Fresno, Kings and Tulare County crop reports).

Returns. Corn is valued at $240 per ton or $12 per hundredweight (cwt), an amount based on average returns for this region over the last 3 years, (2011-2013 Fresno, Kings and Tulare County crop reports). Table 4 shows various returns over a range of yields and prices. The Agricultural Act of 2014 (2014 Farm Bill) authorizes nonrecourse marketing assistance loans (MALs) and loan deficiency payments (LDPs) for the 2014 through 2018 crop years for corn. Call your local Farm Service Agency for further information or check their website at; http://www.fsa.usda.gov/.

Pickup Trucks. The pickups are not assigned to any specific operation. They are for farm use only.

Labor. Basic wages are $12.50 and $10.00 per hour for machine operators and non-machine workers (irrigators and manual laborers), respectively. Adding 36% for the employer's share of federal and state payroll taxes, insurance and other benefits raises the total labor costs to $17.00 per hour for machine operators and $13.60 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. The current minimum wage is $9.00 per hour.

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.

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.

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 $1,517 for the entire farm.

Land Rent. Leasing practices and rental rates for agricultural property are continually being adjusted due to changing production and market economics, land values, and relative bargaining positions of the landlord and tenant. Land rent for corn in this study is $300 per acre and includes the use of the irrigation system and developed wells. The renter pays the district water and pumping costs. Land rents vary depending upon crop, location, and water source.

Field Supervisors Salary. Supervisors' salaries include insurance, payroll taxes and benefits. One third of one supervisor's time is allocated to 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:

[(Purchase Price – Salvage Value) x Capital Recovery Factor] + (Salvage Value x 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.

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 January 2015.

Crop Insurance. Crop insurance for grain 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. For farmers to be eligible for premium support on their federal crop insurance, a completed and signed AD-1026 form must be on file with the Farm Service Agency, FSA. Contact the local crop insurance agent for your costs. You may also visit the USDA website:
http://forms.sc.egov.usda.gov/efcommon/eFileServices/eForms/AD1026.PDF.

Shop Building. The shop building is an 8,000 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.

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 furrow irrigation system. Water is delivered from a pump or district ditch and distributed by way of surface mainlines and valves. The land owner is responsible for the main pump and delivery of water to the grower's irrigation system. Irrigation equipment owned by the grower consists of booster pumps, (if needed), main lines, siphon tubes, V-ditcher, ditch closer-8' angle blade and various hand tools. Irrigation operations, equipment to perform these operations and water costs are listed in tables 1, 2 and 3. Irrigation equipment owned by the grower such as main lines and siphon tubes are listed in table 1 under capital recovery and again in table 5.

Land. Land values for row crop land in the region range from $2,500 per acre to $20,000 per acre. Prices are affected by location, soil type, and water availability. In this study the grain corn is grown on rented land (see Land Rent).

Equipment Operating Costs. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. The non-cash overhead was discussed above. The cash overhead consists of property taxes and insurance on the equipment at the rates given above. 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 $3.88 and $3.39 per gallon, respectively. These prices reflect market price during October of 2014.

GPS Guidance Systems. GPS/GIS tractor-mounted guidance and precision agriculture systems are included in this study. The costs for the systems annual activation fee is under cash overhead and the GPS unit hardware costs are under non-cash overhead. Usage of these systems can reflect a significant cost savings.

Risk. Risks associated with field 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 in the Sacramento Valley. 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 GRAIN CORN
SAN JOAQUIN VALLEY-2015

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Pre-plant:								
Chisel-24'	0.16	3	9	3	0	0	16	
Finish Disc 2X	0.23	5	13	6	0	0	23	
Laser Plane-Custom 25% Ac	0.00	0	0	0	0	40	40	
Tri-plane 75% Ac	0.11	2	6	2	0	0	11	
List-Shape Beds	0.15	3	8	3	0	0	14	
Open Ditch	0.08	2	5	2	0	0	8	
Pre-irrigate	0.00	7	0	0	60	0	67	
Close Ditch	0.08	2	2	1	0	0	4	
TOTAL PRE-PLANT COSTS	0.82	23	43	16	60	40	182	
Cultural :								
Plant/Fertilize (10-34-0)	0.33	7	12	5	175	0	198	
Cultivate-Furrow Out	0.17	3	3	1	0	0	8	
Weeds-Post Emergence	0.13	3	4	2	25	0	34	
Fertilize-UN32	0.00	0	0	0	227	15	242	
Pests-Mites Oberon 2SC	0.13	3	4	2	29	0	37	
Open Ditch	0.08	2	5	2	0	0	8	
Irrigate 7X	0.00	95	0	0	270	0	365	
Close Ditch	0.08	2	2	1	0	0	4	
Service Truck	0.17	3	2	2	0	0	8	
Pickup Truck Use	0.27	11	4	1	0	0	16	
TOTAL CULTURAL COSTS	1.35	128	36	15	725	15	920	
Harvest:								
Harvest-Bankout Grain	0.00	0	0	0	0	75	75	
TOTAL HARVEST COSTS	0.00	0	0	0	0	75	75	
Interest on Operating Capital at 5.75%							27	
TOTAL OPERATING COSTS/ACRE	2	152	78	31	785	130	1,204	
CASH OVERHEAD:								
Liability Insurance							1	
Miscellaneous Costs (Training)							20	
Land Rent-Corn							300	
Office Expenses							40	
Supervisor Salary							36	
GPS Auto-Trac Activation Fee							3	
Property Taxes							2	
Property Insurance							0	
Investment Repairs							6	
TOTAL CASH OVERHEAD COSTS/ACRE							409	
TOTAL CASH COSTS/ACRE							1,613	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Fuel Storage Tanks (2)		18		1			1	
Shop Building 8,000 Sqft		200		13			13	
Shop Tools		17		1			1	
GPS Guidance System		7		1			1	
Implement Carrier		14		1			1	
Truck-Bobtail-5th Wheel		38		3			3	
Closed Mixing System		4		1			1	
Siphon Pipe-1.5" (400)		2		0			0	
Irrigation Main Line 10" 1/4 Mile		22		2			2	
Equipment		448		43			43	
TOTAL NON-CASH OVERHEAD COSTS		770		67			67	
TOTAL COSTS/ACRE							1,679	

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

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Grain Corn	6.0	Ton	240.00	1,440	
TOTAL GROSS RETURNS	6.0	Ton		1,440	
OPERATING COSTS					
Fertilizer:				**337**	
10-34-0	200.00	Lb	0.55	110	
UN32	270.00	Lb N	0.84	227	
Insecticide:				**29**	
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:				**130**	
Laser Plane	0.25	Acre	160.00	40	
Ground Application	1.00	Acre	15.00	15	
Harvest-bankout Grain	1.00	Acre	75.00	75	
Irrigation:				**330**	
Water-Corn SJV	44.00	AcIn	7.50	330	
Labor				**152**	
Equipment Operator Labor	2.93	Hrs	17.00	50	
Irrigation Labor	7.50	Hrs	13.60	102	
Machinery				**110**	
Fuel-Gas	1.03	Gal	3.79	4	
Fuel-Diesel	19.22	Gal	3.88	75	
Lube				12	
Machinery Repair				20	
Interest on Operating Capital @ 5.75%				27	
TOTAL OPERATING COSTS/ACRE				1,204	
TOTAL OPERATING COSTS/TON				201	
NET RETURNS ABOVE OPERATING COSTS				236	
CASH OVERHEAD COSTS					
Liability Insurance (San Joaquin				1	
Miscellaneous Costs (Training)				20	
Land Rent-Corn				300	
Office Expenses				40	
Supervisor Salary				36	
GPS Auto-Trac Activation Fee				3	
Property Taxes				2	
Property Insurance				0	
Investment Repairs				6	
TOTAL CASH OVERHEAD COSTS/ACRE				409	
TOTAL CASH OVERHEAD COSTS/TON				68	
TOTAL CASH COSTS/ACRE				1,613	
TOTAL CASH COSTS/TON				269	
NET RETURNS ABOVE CASH COSTS				-173	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Fuel Storage Tanks (2)				1	
Shop Building 8,000 Sqft				13	
Shop Tools				1	
GPS Guidance System				1	
Implement Carrier				1	
Truck-Bobtail-5th Wheel				3	
Closed Mixing System				1	
Siphon Pipe-1.5" (400)				0	
Irrigation Main Line 10" 1/4 Mile				2	
Equipment				43	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				67	
TOTAL NON-CASH OVERHEAD COSTS/TON				11	
TOTAL COST/ACRE				1,680	
TOTAL COST/TON				280	
NET RETURNS ABOVE TOTAL COST				-240	

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TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE GRAIN CORN
SAN JOAQUIN VALLEY -2015

	JAN 15	FEB 15	MAR 15	APR 15	MAY 15	JUN 15	JUL 15	AUG 15	SEP 15	OCT 15	NOV 15	DEC 15	Total
Pre-plant:													
Chisel-24'	16												16
Finish Disc 2X			23										23
Laser Plane-Custom 25% Ac			40										40
Tri-plane 75% Ac			11										11
List-Shape Beds			14										14
Open Ditch			8										8
Pre-irrigate			67										67
Close Ditch			4										4
TOTAL PRE-PLANT COSTS	16		167										182
Cultural :													
Plant/Fertilize (10-34-0)			198										198
Cultivate-Furrow Out				8									8
Weeds-Post Emergence					34								34
Fertilize-UN32					141	67	34						242
Pests-Mites Oberon 2SC					37								37
Open Ditch					8								8
Irrigate 7X					44	117	117	87					365
Close Ditch								4					4
Service Truck									8				8
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1	1	16
TOTAL CULTURAL COSTS	1	1	199	9	265	186	152	92	9	1	1	1	920
Harvest:													
Harvest-Bankout Grain									75				75
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	0	75	0	0	0	75
Interest on Operating Capital @ 5.75%	0	0	2	2	3	4	5	5	6	0	0	0	27
TOTAL OPERATING COSTS/ACRE	17	1	368	11	268	190	157	98	90	1	1	1	1,204
CASH OVERHEAD													
Liability Insurance									1				1
Miscellaneous Costs (Training)									20				20
Land Rent-Corn									300				300
Office Expenses									40				40
Supervisor Salary									36				36
GPS Auto-Trac Activation Fee									3				3
Property Taxes	1						1						2
Property Insurance	0						0						0
Investment Repairs	1	1	1	1	1	1	1	1	1	1	1	1	6
TOTAL CASH OVERHEAD COSTS	2	1	1	1	1	1	2	1	401	1	1	1	409
TOTAL CASH COSTS/ACRE	19	2	368	12	269	190	159	98	490	2	2	2	1,613

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TABLE 4. RANGING ANALYSIS-GRAIN CORN
SAN JOAQUIN VALLEY -2015

COSTS PER ACRE AND PER TON AT VARYING YIELDS TO PRODUCE GRAIN CORN SAN JOAQUIN VALLEY

	YIELD (TON)						
	3.00	4.00	5.00	6.00	7.00	8.00	9.00
OPERATING COSTS/ACRE:							
Pre-plant	182	182	182	182	182	182	182
Cultural	920	920	920	920	920	920	920
Harvest	38	50	62	75	88	100	113
Interest on Operating Capital @ 5.75%	27	27	27	27	27	27	27
TOTAL OPERATING COSTS/ACRE	1,166	1,179	1,191	1,204	1,217	1,229	1,241
TOTAL OPERATING COSTS/TON	388.69	294.72	238.19	200.63	173.80	153.58	137.94
CASH OVERHEAD COSTS/ACRE	409	409	409	409	409	409	409
TOTAL CASH COSTS/ACRE	1,575	1,588	1,600	1,613	1,625	1,638	1,650
TOTAL CASH COSTS/TON	524.99	396.94	319.97	268.77	232.21	204.69	183.37
NON-CASH OVERHEAD COSTS/ACRE	67	67	67	67	67	67	67
TOTAL COSTS/ACRE	1,642	1,654	1,666	1,679	1,692	1,704	1,717
TOTAL COSTS/TON	547.00	414.00	333.00	280.00	242.00	213.00	191.00

Net Return per Acre above Operating Costs for Grain Corn San Joaquin Valley

PRICE ($/ton)	YIELD (Ton/acre)						
Grain Corn	3.00	4.00	5.00	6.00	7.00	8.00	9.00
180.00	-626	-459	-291	-124	43	211	379
200.00	-566	-379	-191	-4	183	371	559
220.00	-506	-299	-91	116	323	531	739
240.00	-446	-219	9	236	463	691	919
260.00	-386	-139	109	356	603	851	1,099
280.00	-326	-59	209	476	743	1,011	1,279
300.00	-266	21	309	596	883	1,171	1,459

Net Return per Acre above Cash Costs for Grain Corn San Joaquin Valley

PRICE ($/ton)	YIELD (Ton/acre)						
Grain Corn	3.00	4.00	5.00	6.00	7.00	8.00	9.00
180.00	-1,035	-868	-700	-533	-365	-198	-30
200.00	-975	-788	-600	-413	-225	-38	150
220.00	-915	-708	-500	-293	-85	122	330
240.00	-855	-628	-400	-173	55	282	510
260.00	-795	-548	-300	-53	195	442	690
280.00	-735	-468	-200	67	335	602	870
300.00	-675	-388	-100	187	475	762	1,050

TABLE 4. RANGING ANALYSIS CONTINUED
SAN JOAQUIN VALLEY -2015

Net Return per Acre above Total Costs for Grain Corn San Joaquin Valley

PRICE ($/ton)	YIELD (Ton/acre)						
Grain Corn	3.00	4.00	5.00	6.00	7.00	8.00	9.00
180.00	-1,102	-934	-766	-599	-432	-264	-97
200.00	-1,042	-854	-666	-479	-292	-104	83
220.00	-982	-774	-566	-359	-152	56	263
240.00	-922	-694	-466	-239	-12	216	443
260.00	-862	-614	-366	-119	128	376	623
280.00	-802	-534	-266	1	268	536	803
300.00	-742	-454	-166	121	408	696	983

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

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
15	Triplane 16'	38,000	15	3,648	3,427	18	208	3,653
15	Ring Roller 18'	21,000	5	6,840	3,573	12	139	3,724
15	140 HP2WD Tractor	158,044	15	30,768	13,517	80	944	14,541
15	95 HP4WD Tractor	93,000	15	18,105	7,954	47	556	8,556
15	Rear Blade - 8'	7,500	15	720	676	3	41	721
15	Planter-Air 8-Row 20'	42,000	10	7,922	4,736	21	250	5,007
15	300 Gallon Saddle Tank (Pair)	1,660	4	611	323	1	11	335
15	Fertilizer-Sidedress Bar 20'	9,450	5	3,283	1,570	5	64	1,639
15	Spray Boom - 20'	3,600	5	1,173	612	2	24	638
15	Cultivator 8-Row	11,050	5	3,599	1,880	6	73	1,959
15	Pickup 3/4 Ton	32,000	5	14,342	4,732	20	232	4,983
15	Disc - Finish 18'	38,000	20	1,981	2,923	17	200	3,140
15	Service Truck	120,000	10	35,446	12,501	66	777	13,344
15	Pickup 1/2 Ton	28,000	5	12,549	4,140	17	203	4,360
15	Ditcher - V	9,285	12	1,286	951	4	53	1,008
15	Bed Lister-Shaper 8-Row 30"	21,000	12	2,909	2,151	10	120	2,280
15	Chisel 24'	20,000	8	4,516	2,586	10	123	2,719
15	248HP4WD Tractor	267,765	15	52,129	22,901	135	1,599	24,636
	TOTAL	921,354	-	201,828	91,156	473	5,616	97,245
	60% of New Cost*	552,812	-	121,097	54,693	284	3,370	58,347

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Fuel Storage Tanks (2)	21,950	20	250	1,716	9	111	130	1,967
Shop Building 8,000 Sqft	240,000	30	0	15,170	101	1,200	4,800	21,271
Shop Tools	20,000	20	2,000	1,509	9	110	400	2,028
GPS Guidance System	8,500	10	850	1,019	4	47	170	1,240
Implement Carrier	16,700	15	1,670	1,503	8	92	334	1,937
Truck-Bobtail-5th Wheel	45,000	15	4,500	4,050	21	248	900	5,218
Closed Mixing System	5,074	10	507	608	2	28	101	740
Siphon Pipe-1.5" (400)	2,400	15	240	216	1	13	48	278
Irrigation Main Line 10" 1/4 Mile	26,892	15	2,689	2,420	12	148	538	3,119
TOTAL INVESTMENT	386,516	-	12,706	28,212	168	1,996	7,421	37,798

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	1200	Acre	1.264	1,517
Miscellaneous Costs (Training)	290	Acre	20.00	5,800
Land Rent-Corn	290	Acre	300	87,000
Office Expenses	290	Acre	40.00	11,600
Supervisor Salary	290	Acre	36	10,440
GPS Auto-Trac Activation Fee	1.00	Farm	3500	3,500

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

	Grain Corn San Joaquin Valley			Cash Overhead		Operating			
Yr	Description	Hours Used	Total Hours Used	Capital Recovery	Insur-ance	Taxes	Lube& Repairs	Fuel	Total Oper.	Total Costs/Hr.
15	Triplane 16'	33	150	13.71	0.07	0.83	5.27	0.00	5.27	19.88
15	Ring Roller 18'	66	400	5.36	0.02	0.21	2.45	0.00	2.45	8.03
15	140 HP2WD Tractor	187	800	10.14	0.06	0.71	11.78	31.53	43.31	54.21
15	95 HP4WD Tractor	106	1066	4.48	0.03	0.31	5.09	18.10	23.19	28.00
15	Rear Blade - 8'	48	200	2.03	0.01	0.12	1.13	0.00	1.13	3.30
15	Planter-Air 8-Row 20'	97	500	5.68	0.03	0.30	0.92	0.00	0.92	6.93
15	300 Gallon Saddle Tank (Pair)	170	500	0.39	0.00	0.01	0.03	0.00	0.03	0.43
15	Fertilizer-Sidedress Bar 20'	97	400	2.36	0.01	0.10	0.15	0.00	0.15	2.61
15	Spray Boom - 20'	74	300	1.22	0.00	0.05	0.99	0.00	0.99	2.26
15	Cultivator 8-Row	48	400	2.82	0.01	0.11	2.32	0.00	2.32	5.26
15	Pickup 3/4 Ton	77	400	7.10	0.03	0.35	3.52	7.58	11.10	18.58
15	Disc - Finish 18'	66	100	17.54	0.10	1.20	5.87	0.00	5.87	24.71
15	Service Truck	48	200	37.50	0.20	2.33	13.35	11.64	24.99	65.02
15	Pickup 1/2 Ton	77	400	6.21	0.03	0.30	3.15	7.11	10.26	16.80
15	Ditcher - V	48	166	3.44	0.02	0.19	2.58	0.00	2.58	6.23
15	Bed Lister-Shaper 8-Row 30"	43	166	7.77	0.04	0.43	4.39	0.00	4.39	12.64
15	Chisel 24'	47	250	6.21	0.02	0.29	4.61	0.00	4.61	11.13
15	248HP4WD Tractor	261	1066	12.89	0.08	0.90	14.42	50.67	65.09	78.96

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

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Chisel-24'	Jan	248HP4WD Tractor	Chisel 24'	Equipment Operator Labor	0.19	hour
Finish Disc 2X	Mar	248HP4WD Tractor	Disc - Finish 18'	Equipment Operator Labor	0.27	hour
			Ring Roller 18'			
Laser Plane-Custom	Mar			Laser Plane	0.25	Acre
Tri-plane 75% Ac	Mar	248HP4WD Tractor	Triplane 16'	Equipment Operator Labor	0.14	hour
List-Shape Beds	Mar	248HP4WD Tractor	Bed Lister-Shaper 8-Row 30"	Equipment Operator Labor	0.18	hour
Open Ditch	Mar	248HP4WD Tractor	Ditcher - V	Equipment Operator Labor	0.10	hour
	May	248HP4WD Tractor	Ditcher - V	Equipment Operator Labor	0.10	hour
Pre-irrigate	Mar			Irrigation Labor	0.50	hour
				Water-Corn SJV	8.00	AcIn
Close Ditch	Mar	95 HP4WD Tractor	Rear Blade - 8'	Equipment Operator Labor	0.10	hour
	Aug	95 HP4WD Tractor	Rear Blade - 8'	Equipment Operator Labor	0.10	hour
Plant/Fertilize	Mar	140 HP2WD Tractor	Planter-Air 8-Row 20'	Equipment Operator Labor	0.40	hour
				Corn Seed Roundup-ready	33.00	Thou
			300 Gallon Saddle Tank (Pair)	10-34-0	200.00	Lb
			Fertilizer-Sidedress Bar 20'			
Cultivate-Furrow Out	Apr	95 HP4WD Tractor	Cultivator 8-Row	Equipment Operator Labor	0.20	hour
Weeds-Post Emergence	May	140 HP2WD Tractor	300 Gallon Saddle Tank (Pair)	Equipment Operator Labor	0.15	hour
				Roundup WeatherMax	2.00	Pint
			Spray Boom - 20'	Clarity	1.00	Pint
Fertilize-UN32	May			UN32	150.00	Lb N
				Ground Application	1.00	Acre
	June			UN32	40.00	Lb N
	June			UN32	40.00	Lb N
	July			UN32	40.00	Lb N
Pests-Mites Oberon 2	May	140 HP2WD Tractor	300 Gallon Saddle Tank (Pair)	Equipment Operator Labor	0.15	hour
				Oberon 2SC	6.00	FlOz
			Spray Boom - 20'			
Open Ditch	Mar	248HP4WD Tractor	Ditcher - V	Equipment Operator Labor	0.10	hour
	May	248HP4WD Tractor	Ditcher - V	Equipment Operator Labor	0.10	hour
Irrigate 7X	May			Irrigation Labor	1.00	hour
				Water-Corn SJV	4.00	AcIn
	June			Irrigation Labor	1.00	hour
				Water-Corn SJV	6.00	AcIn
	June			Irrigation Labor	1.00	hour
				Water-Corn SJV	6.00	AcIn
	July			Irrigation Labor	1.00	hour
				Water-Corn SJV	6.00	AcIn
	July			Irrigation Labor	1.00	hour
				Water-Corn SJV	6.00	AcIn
	Aug			Irrigation Labor	1.00	hour
				Water-Corn SJV	4.00	AcIn
	Aug			Irrigation Labor	1.00	hour
				Water-Corn SJV	4.00	AcIn
Close Ditch	Mar	95 HP4WD Tractor	Rear Blade - 8'	Equipment Operator Labor	0.10	hour
	Aug	95 HP4WD Tractor	Rear Blade - 8'	Equipment Operator Labor	0.10	hour
Service Truck	Sept		Service Truck	Equipment Operator Labor	0.20	hour
Pickup Truck Use	Sept		Pickup 1/2 Ton	Equipment Operator Labor	0.64	hour
			Pickup 3/4 Ton			
Harvest-Bankout Grain	Sept			Harvest-bankout Grain	1.00	Acre