UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2003

SAMPLE COSTS TO PRODUCE

GRAIN CORN

Field Corn

SAN JOAQUIN VALLEY

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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE GRAIN CORN San Joaquin Valley 2003

STUDY CONTENTS

INTRODUCTION

Sample costs to produce grain corn (field corn for grain) in the 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) 752-3589 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) 752-4424. Current studies can be downloaded from the department website http://coststudies.ucdavis.edu or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

ASSUMPTIONS

The assumptions refer to Tables 1 through 7 and pertain to sample costs to produce grain corn in the San Joaquin Valley. Practices described represent production practices and materials considered typical of a well-managed grain corn field in the San Joaquin Valley. Costs, materials, and practices in this study will not be applicable to all situations. Establishment and cultural practices vary among growers within the region. **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 of which 300 acres are rented and planted to grain corn and the remaining 900 acres are owned and planted to other crops such as alfalfa, cotton, grains, processing tomatoes, and dry beans. The farm is managed by the owner/lessee.

Production Operating Costs

Land Preparation. The ground is chiseled in the fall or winter to a depth of 18 to 24 inches to fracture the soil, which improves root penetration and water infiltration. In the spring, the fields are disced twice, followed by two passes with the triplane, and the beds are listed and shaped. Depending upon the grower, many of these operations may be completed in the fall.

Planting. The seed is planted in March at 34,000 seeds per acre on 30-inch beds. Corn is usually planted from March to April in rows 30 to 36 inches apart, on the flat or on beds. The corn planted in this study 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 sidedresses 150 pounds of nitrogen (N) per acre as UN-32. Three applications of N as UN32 each at 30 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. Irrigation includes the water cost and labor expense. From May to August, seven irrigations totaling 36 acre-inches (3.0 acre-feet) of water are applied in the furrows. A preirrigation of 8-acre inches is applied in March. Ditches are made and siphon pipes used to put the water into the furrow. 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. **Pest control costs can vary considerably each year depending upon local conditions and pest populations in any given year.** Adjuvants are recommended for many pesticides for effective control and are an added cost. The adjuvants 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. Accent and Buctril are applied post emergence in May to control grasses and broadleaf weeds. The field is also mechanically cultivated two times. It is assumed that the field is furrowed with each cultivation.

Insects. Several insect and mite pests attack corn. Mites are the only insects assumed to reach economic threshold levels requiring treatment. Comite is applied in May.

Harvest. A custom operator harvests and hauls the corn.

Yields. The crop is assumed to yield 5.00 tons of grain at 15.5% moisture. Annual yields range from 3 to 6 tons per acre in this region.

Returns. Corn is valued at $100 per ton or $5 per hundredweight (cwt), an amount based on current markets. Table 4 shows various returns over a range of yields. Grain corn is included in the Federal farm program. Currently the corn price is high enough so that Loan Deficiency Payments (LDP) are not applicable, but other farm programs – Direct Payments, Counter-Cyclical Payments, - not based on current production are available to the farmer. Call your local Farm Service Agency for further information or check their website at http://www.fsa.usda.gov/dafp/psd/default.htm.

Pickup/ATV. The pickup travels 7.18 miles per acre for corn production use or a total of 2,137 miles. Costs are estimated and not based on any specific data.

Labor. Labor rates of $13.14 per hour for machine operators and $9.86 for general labor includes payroll overhead of 46%. The basic hourly wages are $9.00 for machine operators and $6.75 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for field crops (code 0171), 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, 2003 (California Department of Insurance). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 and 4 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 PTO horsepower and fuel type. Prices for on-farm delivery of diesel and gasoline are $1.11 and $1.58 per gallon, respectively. The fuel prices are a January 2003 average based on four California delivery locations. The cost includes a 2.25% sales tax (effective September 2001) on diesel fuel and 7.25% sales tax on gasoline. Gasoline also includes federal and state excise tax, which 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 7.14% 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.

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 of field corn production.

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, which costs $2 to $7 per acre depending upon coverage level.

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. These costs include property taxes, interest, office expense, liability and property insurance, and investment repairs (buildings and irrigation equipment). Employee benefits, payroll taxes and workers' compensation insurance are included in labor costs and not under cash overhead.

Property Taxes. Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

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 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,246 for the entire farm or $1.04 per acre.

Land Rent. Land rent for corn in this study is $125 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. Land for grain corn with district water ranges from approximately $125 to $150 per acre.

Office. Costs are estimated at $30 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.

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 6.25% used to calculate capital recovery cost is the USDA-ERS's ten year average of California's agricultural sector long-run rate of return to production assets from current income.

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

Irrigation System. The irrigation system is included in the rental price.

Land. Cropland with district water suitable for corn production typically ranges in value among counties from $2,000 to $5,500 per acre, except for Stanislaus County, which ranges from $3,000 to $8,500. The land in this study is owned by the grower and cost $3,500 per acre.

Equipment. Although, farm equipment is purchased new or used, 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. 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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For information concerning the above or other University of California publications, contact UC DANR Communications Services at 1-800-994-8849, online at http://danrcs.ucdavis.edu/ or your local county UC Cooperative Extension office.

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Table 1. COSTS PER ACRE to PRODUCE GRAIN CORN

SAN JOAQUIN VALLEY 2003

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre: Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Chisel 2X	0.80	13	21	0	0	34	
Disc Stubble 2X	0.28	4	8	0	0	13	
Landplane 2X	0.30	5	5	0	0	10	
List Beds	0.15	2	2	0	0	5	
Shape Beds	0.15	2	2	0	0	5	
Make Ditch	0.08	1	1	0	0	3	
Pre-irrigate	0.20	2	0	20	0	22	
Close Ditch	0.08	1	1	0	0	2	
Plant/Fertilize (10-34-0)	0.21	3	7	69	0	79	
Weed:Postemergent (Accent/Buctril)	0.13	2	1	56	0	59	
Cultivate 2X	0.50	8	5	0	0	13	
Fertilize: Custom (UN32)	0.00	0	0	47	10	57	
Pest:Mites (Comite)	0.13	2	2	43	0	47	
Irrigate	1.75	17	0	90	0	107	
Fertilize Water Run (UN32)	0.00	0	0	28	0	28	
Pickup Truck Use	0.24	4	1	0	0	5	
TOTAL CULTURAL COSTS	5.00	67	58	352	10	488	
Harvest:							
Harvest:Combine	0.00	0	0	0	60	60	
Haul	0.00	0	0	0	29	29	
TOTAL HARVEST COSTS	0.00	0	0	0	89	89	
Interest on operating capital						16	
TOTAL OPERATING COSTS/ACRE		67	58	352	99	594	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						30	
Land Rent						125	
Property Taxes						2	
Property Insurance						1	
Investment Repairs						1	
TOTAL CASH OVERHEAD COSTS						161	
TOTAL CASH COSTS/ACRE						754	

NON-CASH OVERHEAD:	Per producing acre	-- Annual Cost -- Capital Recovery	
Fuel Tanks	3	0	0
Shop Building	50	4	4
Shop Tools	11	1	1
Siphon Tubes	7	1	1
Equipment	272	33	33
TOTAL NON-CASH OVERHEAD COSTS	343	40	40
TOTAL COSTS/ACRE			794

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Table 2. COSTS AND RETURNS PER ACRE to PRODUCE GRAIN CORN

SAN JOAQUIN VALLEY 2003

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Field Corn for Grain	5.00	ton	100.00	500	
OPERATING COSTS					
Irrigation:					
Water-Preirrigation	8.00	acin	2.50	20	
Water –Season	36.00	acin	2.50	90	
Seed:					
Corn Seed	34.00	thou	1.20	41	
Fertilizer:					
10-34-0	200.00	lb	0.14	28	
UN-32	240.00	lb N	0.31	75	
Herbicide:					
Accent	0.66	oz	38.19	25	
Buctril 4EC	1.50	pint	20.28	30	
Custom:					
Ground Application	1.00	acre	10.00	10	
Harvest for Grain	5.00	ton	12.00	60	
Haul Local	5.00	ton	5.80	29	
Insecticide:					
Comite	3.00	pint	14.37	43	
Labor (machine)	3.66	hrs	13.14	48	
Labor (non-machine)	1.95	hrs	9.86	19	
Fuel - Gas	0.60	gal	1.58	1	
Fuel - Diesel	29.13	gal	1.11	32	
Lube				5	
Machinery repair				20	
Interest on operating				16	
TOTAL OPERATING COSTS/ACRE				594	
NET RETURNS ABOVE OPERATING COSTS				-94	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				30	
Land Rent				125	
Property Taxes				2	
Property Insurance				1	
Investment Repairs				1	
TOTAL CASH OVERHEAD COSTS/ACRE				161	
TOTAL CASH COSTS/ACRE				754	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Fuel Tanks				0	
Shop Building				4	
Shop Tools				1	
Siphon Tubes				1	
Equipment				33	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				40	
TOTAL COSTS/ACRE				794	
NET RETURNS ABOVE TOTAL COSTS				-294	

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Table 3. MONTHLY CASH COSTS PER ACRE to PRODUCE GRAIN CORN

SAN JOAQUIN VALLEY 2003

Beginning JAN 03 Ending DEC 03	JAN 03	FEB 03	MAR 03	APR 03	MAY 03	JUN 03	JUL 03	AUG 03	SEP 03	OCT 03	NOV 03	DEC 03	TOTAL
Chisel 2X	34												34
Disc Stubble 2X			13										13
Landplane 2X			10										10
List Beds			5										5
Shape Beds			5										5
Make Ditch			1		1								3
Pre-irrigate			22										22
Close Ditch			1					1					2
Plant/Fertilize (10-34-0)			79										79
Weed:Postemergence (Accent/Buctril)				59									59
Cultivate 2X				6	6								13
Fertilize:Custom (UN32)					57								57
Pest:Mites (Comite)					47								47
Irrigate					12	35	35	25					107
Fertilize Water Run (UN32)						19	9						28
Pickup Truck Use	0	0	0	0	0	0	0	0	0	0	0	0	5
TOTAL CULTURAL COSTS	34	0	136	66	125	54	45	27	0	0	0	0	488
Harvest:													
Harvest:Combine									60				60
Haul									29				29
TOTAL HARVEST COSTS									89				89
Interest on operating capital	0	0	1	1	2	2	3	3	3	0	0	0	16
TOTAL OPERATING COSTS/ACRE	35	1	137	67	127	57	47	29	93	0	0	0	594
OVERHEAD:													
Liability Insurance			1										1
Office Expense	3	3	3	3	3	3	3	3	3				30
Land Rent									125				125
Property Taxes		1					1						2
Property Insurance		1											1
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL CASH OVERHEAD COSTS	3	6	4	3	3	3	4	3	128	0	0	0	161
TOTAL CASH COSTS/ACRE	38	7	141	71	130	60	52	33	221	1	1	1	754

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Table 4 RANGING ANALYSIS
SAN JOAQUIN VALLEY 2003

COSTS PER ACRE AT VARYING YIELD TO PRODUCE GRAIN CORN

	YIELD (ton/acre)						
	3.50	4.00	4.50	5.00	5.50	6.00	6.50
OPERATING COSTS:							
Cultural Cost	488	488	488	488	488	488	488
Harvest Cost	71	77	83	89	95	101	107
Interest on operating capital	16	16	16	16	17	17	17
TOTAL OPERATING COSTS/acre	575	581	587	593	600	606	612
Total Operating Cost/ton	164	145	130	119	109	101	94
CASH OVERHEAD COSTS	161	161	161	161	161	161	161
TOTAL CASH COSTS/acre	736	742	748	754	761	767	773
Total Cash Costs/ton	210	186	166	151	138	128	119
NON-CASH OVERHEAD COSTS	42	42	42	42	42	42	42
TOTAL COSTS/acre	778	784	790	796	803	809	815
Total Costs/ton	222	196	176	159	146	135	125

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD (ton/acre)						
$/ton	3.50	4.00	4.50	5.00	5.50	6.00	6.50
70.00	-330	-301	-272	-243	-215	-186	-157
80.00	-295	-261	-227	-193	-160	-126	-92
90.00	-260	-221	-182	-143	-105	-66	-27
100.00	-225	-181	-137	-93	-50	-6	38
110.00	-190	-141	-92	-43	5	54	103
120.00	-155	-101	-47	7	60	114	168
130.00	-120	-61	-2	57	115	174	233
140.00	-85	-21	43	107	170	234	298

NET RETURN PER ACRE ABOVE CASH COST

PRICE	YIELD (ton/acre)						
$/ton	3.50	4.00	4.50	5.00	5.50	6.00	6.50
70.00	-491	-462	-433	-404	-376	-347	-318
80.00	-456	-422	-388	-354	-321	-287	-253
90.00	-421	-382	-343	-304	-266	-227	-188
100.00	-386	-342	-298	-254	-211	-167	-123
110.00	-351	-302	-253	-204	-156	-107	-58
120.00	-316	-262	-208	-154	-101	-47	7
130.00	-281	-222	-163	-104	-46	13	72
140.00	-246	-182	-118	-54	9	73	137

NET RETURNS PER ACRE ABOVE TOTAL COST

PRICE	YIELD (ton/acre)						
$/ton	3.50	4.00	4.50	5.00	5.50	6.00	6.50
70.00	-533	-504	-475	-446	-418	-389	-360
80.00	-498	-464	-430	-396	-363	-329	-295
90.00	-463	-424	-385	-346	-308	-269	-230
100.00	-428	-384	-340	-296	-253	-209	-165
110.00	-393	-344	-295	-246	-198	-149	-100
120.00	-358	-304	-250	-196	-143	-89	-35
130.00	-323	-264	-205	-146	-88	-29	30
140.00	-288	-224	-160	-96	-33	31	95

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Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, and BUSINESS OVERHEAD COSTS

SAN JOAQUIN VALLEY 2003

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
03	125HP 2WD Tractor	88,000	10	25,994	10,149	385	570	11,105
03	230HP Trac Tractor	155,262	10	45,862	17,907	680	1,006	19,592
03	90HP 2WD Tractor	47,934	10	14,159	5,528	210	310	6,049
03	Bed Shaper-8 Row 20'	1,500	12	208	169	6	9	184
03	Cult-Rolling-8 Row 20'	6,800	10	1,203	845	27	40	912
03	Disc - Stubble 18'	42,000	10	7,427	5,217	167	247	5,632
03	Ditcher - V	4,070	12	564	459	16	23	498
03	Lister-8 Row 20'	5,500	12	762	621	21	31	673
03	Pickup 1/2 Ton	24,000	5	10,756	3,838	117	174	4,129
03	Planter-Precision 20'	28,000	10	4,952	3,478	111	165	3,754
03	Rear Blade - 10'	2,581	18	172	237	9	14	261
03	Saddle Tank 300 Gal	3,218	10	569	400	13	19	431
03	Spray Boom - 20'	913	10	161	113	4	5	122
03	Subsoiler - 10'	14,800	5	4,821	2,686	66	98	2,851
03	Triplane 16'	18,500	15	1,776	1,861	69	101	2,031
	TOTAL	443,078		119,386	53,510	1,901	2,812	58,223
	60% of New Cost *	265,847		71,632	32,106	1,141	1,687	34,934

*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
Fuel Tanks	3,500	20		311	12	18	70	411
Shop Building	60,000	20		5,338	203	300	1,200	7,041
Shop Tools	13,072	20	1,307	1,128	49	72	131	1,380
Siphon Tubes - 200	8,024	10		1,103	27	40	160	1,330
TOTAL INVESTMENT	84,596		1,307	7,881	290	430	1,561	10,161

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	300.00	acre	125.00	37,500
Liability Insurance	1,200.00	acre	1.04	1,248
Office Expense	1,200.00	acre	30.00	36,000

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Table 6. HOURLY EQUIPMENT COSTS

SAN JOAQUIN VALLEY 2003

			COSTS PER HOUR						
		Actual		Cash Overhead		Operating			
Yr	Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
03	125HP 2WD Tractor	1,250.10	4.87	0.18	0.27	4	9.26	13.26	18.59
03	230HP Trac Tractor	1,600.50	6.71	0.25	0.38	4.03	17.04	21.07	28.41
03	90HP 2WD Tractor	1,199.90	2.76	0.10	0.16	2.18	5.64	7.82	10.84
03	Bed Shaper-8 Row 20'	166.10	0.61	0.02	0.03	0.31	0	0.31	0.97
03	Cult-Rolling-8 Row 20'	200.00	2.53	0.08	0.12	1.42	0	1.42	4.15
03	Disc - Stubble 18'	200.00	15.65	0.50	0.74	6.79	0.00	6.79	23.69
03	Ditcher - V	24.00	11.48	0.39	0.58	1.1	0.00	1.10	13.55
03	Lister-8 Row 20'	166.10	2.24	0.08	0.11	1.11	0.00	1.11	3.54
03	Pickup 1/2 Ton	284.70	8.09	0.25	0.37	1.55	4.54	6.09	14.79
03	Planter-Precision 20'	149.60	13.95	0.45	0.66	7.51	0.00	7.51	22.57
03	Rear Blade - 10'	166.00	0.86	0.03	0.05	0.38	0.00	0.38	1.32
03	Saddle Tank 300 Gal	150.80	1.59	0.05	0.08	0.86	0.00	0.86	2.57
03	Spray Boom - 20'	150.20	0.45	0.01	0.02	0.25	0.00	0.25	0.74
03	Subsoiler - 10'	400.00	4.03	0.10	0.15	3.43	0.00	3.43	7.71
03	Triplane 16'	150.20	7.43	0.27	0.40	2.53	0.00	2.53	10.64

UC COOPERATIVE EXTENSION

Table 7. OPERATIONS WITH EQUIPMENT

SAN JOAQUIN VALLEY 2003

	Operation	Equipmen				
Operation	Month	Tractor	Implement	Material	Rate/acre*	Unit
Chisel 2X	January	230HP Trac	Subsoiler 10'			
Disc 2X	March	230HP Trac	Disc Stubble 18'			
Landplane 2X		125HP 2WD	Triplane 16'			
List Beds		125HP 2WD	Lister			
Shape Beds		125HP 2WD	Bed Shaper 20'			
Make Ditch	March	125HP 2WD	Ditcher - V			
	May	125HP 2WD	Ditcher - V			
Close Ditch	March	125HP 2WD	Blade 10'			
	August	125HP 2WD	Blade 10'			
Preirrigate	March			Water	8	acin
Irrigate	May			Water	4	acin
	June			Water	6	acin
	June			Water	6	acin
	July			Water	6	acin
	July			Water	6	acin
	August			Water	4	acin
	August			Water	4	acin
Plant/Fertilize	March			Corn Seed	34	thou
				10-34-0	200	lb
Weed: Postemergent	April	Ground-Custom		Accent	0.66	oz
				Buctril	1.50	pt
Fertilize	May	Custom		UN32	150.00	lb N
	June	Water Run		UN32	30.00	lb N
		Water Run		UN32	30.00	lb N
	July	Water Run		UN32	30.00	lb N
Cultivate	April	90HP 2WD	Rolling Cultivator			
	May	90HP 2WD	Rolling Cultivator			
Pest: Mites	May	125HP 2WD	Tank & Boom 20'	Comite	3.00	pt
Harvest	September	Custom				
Haul	September	Custom				
Pickup Use	Annual	Pickup 1/2 Ton				