
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2013

**SAMPLE COSTS TO PRODUCE
WHEAT
FOR GRAIN**



**SAN JOAQUIN VALLEY - SOUTH
Irrigated**

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SAMPLE COSTS TO PRODUCE WHEAT for GRAIN San Joaquin Valley – South 2013

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INTRODUCTION

Sample costs to produce wheat 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) 752-3589 or the local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities are available from the Department of Agricultural and Resource Economics’ website <http://coststudies.ucdavis.edu> or by calling, UC Davis, (530) 752-6887. The studies can also be obtained from the local county UC Cooperative Extension offices.

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ASSUMPTIONS

The assumptions refer to Tables 1 through 8 and pertain to sample costs to produce wheat for grain in the southern San Joaquin Valley. Practices described represent production practices and materials considered typical of well-managed wheat crop. Costs, materials, and practices in this study will not be applicable to all situations. Cultural practices vary among growers within the region. 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 3,000 non-contiguous acres of which 1,500 acres are rented and 1,500 owned by the grower. Wheat is planted on 600 rented acres. Alfalfa, corn, cotton, vegetables and almonds are planted on the remaining acres. If water is available, the wheat may be doublecropped and in that case some annual costs (Cash and Non-Cash Overhead) are allocated to the wheat (50%) and the doublecrop which will most likely be corn (50%). The grower owned acres include 10 acres occupied by buildings and homestead.

Production Cultural Practices and Material Inputs

Land Preparation. In the fall anhydrous ammonia is injected on the field. The fields are disked twice to prepare the seedbed. Borders or levees are pulled at planned intervals creating checks for irrigation.

Planting. Wheat seed is drilled (planted) at a rate of 130 pounds per acre on flat ground. Planting normally occurs in the fall and in this study the grower drills the seed in the last week of November.

Fertilization. In November prior to land preparation, nitrogen (N) as anhydrous ammonia at 120 pounds per acre is applied by the grower using an injection rig provided by the fertilizer company. In February, N as urea is applied top dress by air at a rate of 50 pounds per acre. In March and April, 40 pounds of N as UN32 is applied in the irrigation water. In some areas, phosphorous may be required for grain crops at planting. Growers should apply fertilizer or soil amendments only after soil tests determine nutrient and pH levels.

Irrigation. The irrigation cost includes the water (\$8.33 per acre-inch) and labor expense (0.15 hours per acre per irrigation). The crop is irrigated once in January, once in March, twice in April and once in May at four acre-inches per irrigation. The water is supplied by an irrigation district, although some growers may use or supplement with well water. Water prices vary among irrigation districts. The authors agreed that \$100.00 per acre-foot (\$8.33 per acre-inch) is a fair value for this study, based upon information from their respective growers.

Pest Management. The pesticides, rates, and application practices mentioned in this cost study are listed in the *UC IPM Pest Management Guidelines, Small Grains*. **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 at www.ipm.ucdavis.edu. **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. Adjuvants are not included in this study. Pesticide cost will vary by grower location and the grower's purchasing volume or use. Material costs are shown as full retail from a single chemical dealer.

Pest Control Adviser (PCA). Written recommendations are required for many commercially applied 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 PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. The company charges \$10.00 per acre to monitor the field for nutrition, insects and diseases.

Weeds. Express, MCPA, and Axial are tank-mixed post-emergent herbicides applied to control weeds. They are generally applied in January or when weeds are very small. The herbicides are applied commercially by air.

Harvest. The wheat is custom harvested for grain in June at \$32 per acre. The custom harvester combines, transfers the wheat from the combine to a bankout wagon, which delivers and dumps the grain into bulk trailers for delivery to the mill. In this study the mill pays the hauling cost. After grain harvest, if the straw is sold, it is swathed and baled. All straw costs are incurred by the buyer.

Yields. The crop is assumed to yield 4.00 tons per acre of grain at 9 to 10% moisture. Based on grower input, yields in the San Joaquin Valley range from 2.0 to 5.0 tons per acre. In addition, the crop yields 1.8 to 2.4 tons of straw per acre and for this study is assumed to yield 2.0 tons per acre.

Returns. A price of a \$220 per ton based on growers' current preselling price is used to calculate returns over a range of yields. Various returns are shown in the Ranging Analysis (Table 4) for grain sales over a range of yields. Straw sales over a range of yields are shown in the Ranging Analysis (Table 5) for wheat straw. The grower does not incur any additional costs for the straw above the costs of producing the wheat; therefore, no production costs are included. For a total net return, add the proper number from both tables together.

Assessments. The California Wheat Commission (CWC) collects a fee of \$1.00 per ton under a state marketing order. The CWC funds research and market development.

Pickup. The pickup travels 0.24 hours per acre for work/travel relating to wheat production. Costs are estimated and not based on any specific data.

Labor, Equipment and Interest Costs

Labor. Labor rates of \$13.80 per hour for machine operators and \$11.04 for general labor includes payroll overhead of 38%. The basic hourly wages are \$10.00 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, 2013 (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.

Interest on Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 5.75% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge. The rate will vary depending upon various factors, but the rate in this study is considered a typical lending rate by a farm lending agency as of March 2013.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural and Biological Engineers (ASABE). Fuel and lubrication costs are also determined by ASABE equations based on maximum power take off (PTO) horsepower and fuel type. Prices for **on-farm delivery** of red dye diesel and gasoline are \$4.07 (excludes excise taxes) and \$3.84 per gallon, respectively. The fuel prices are the average costs from the Energy Information Administration monthly data. The cost includes a 2% sales tax for diesel fuel, and federal and excise taxes plus a 7.5% 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.

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

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm, not to a particular operation. If the field is double cropped, allocate 50% of the costs to each crop.

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 vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.817% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,592 for the entire farm or \$0.51 per producing acre.

Office. Costs are estimated at \$50 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.

Land Rent. Annual land rents for a field crop ranges from \$175 to \$250 per acre. The wheat is planted on the rented land and costs \$250 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. If the field is double cropped, allocate 50% of the costs to each crop.

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 ASABE based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASABE, 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 4.75% is used to calculate capital recovery. The rate will vary depending upon size of loan and other lending agency conditions, but is a suggested rate by a farm lending agency in January 2013.

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

Irrigation System. The permanent irrigation system consists of wells, pumps and motors, and buried mainline with alfalfa valves. The maintenance costs are included in the land rental price.

Land. Cropland with district water suitable for wheat production typically ranges in value among counties from \$10,000 to \$15,000 per acre. The land in this study that is owned by the grower cost \$12,000 per acre. Being the wheat is on rented land, land ownership costs are not shown.

Global Positioning System. Global Positioning System (GPS) is included based on grower estimates for steering equipment on the tractor, rate monitors on the implements and any other items that are needed to make the equipment effective. The data is not taken from any specific inventory.

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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Table 1. COSTS PER ACRE TO PRODUCE WHEAT FOR GRAIN

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:								
Fertilize: Preplant (Anhydrous Ammonia)	0.07	1	2	1	83	0	87	
Land Prep: Finish Disc 2X	0.22	4	11	5	0	0	20	
Land Prep: Pull Borders	0.04	1	1	0	0	0	2	
Plant: (wheat)	0.12	2	4	2	56	0	63	
Weed: Post-emergent (Express MCPA Axial)	0.00	0	0	0	54	8	62	
Irrigate: (water & labor) 5X	0.75	8	0	0	167	0	175	
Fertilize: Topdress (Urea)	0.00	0	0	0	38	8	46	
Fertilize: Water Run (UN32)	0.00	0	0	0	65	0	65	
PCA	0.00	0	0	0	0	10	10	
Pickup Truck Use	0.24	4	2	1	0	0	7	
TOTAL CULTURAL COSTS	1.44	20	21	9	461	26	536	
Harvest:								
Combine Wheat	0.00	0	0	0	0	32	32	
Assessment (CWC)	0.00	0	0	0	4	0	4	
TOTAL HARVEST COSTS	0.00	0	0	0	4	32	36	
Interest on Operating Capital @ 5.75%							14	
TOTAL OPERATING COSTS/ACRE	1.44	20	21	9	465	58	586	
CASH OVERHEAD:								
Liability Insurance							1	
Office Expense:							50	
Rent (600 acres)							250	
Property Taxes							0	
Property Insurance							0	
Investment Repairs							1	
TOTAL CASH OVERHEAD COSTS/ACRE							302	
TOTAL CASH COSTS/ACRE							889	
NON-CASH OVERHEAD:								
		Per producing Acre		Annual Cost Capital Recovery				
Building 2400 sqft		27		2			2	
Fuel Tanks 2-300G		2		0			0	
GPS Globe Position		0		0			0	
Shop Tools		5		0			0	
Equipment		92		11			11	
TOTAL NON-CASH OVERHEAD COSTS		126		13			13	
TOTAL COSTS/ACRE							902	

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Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE WHEAT FOR GRAIN

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
GROSS RETURNS				
Grain	4.00	ton	220.00	880
Straw	2.00	ton	35.00	70
TOTAL GROSS RETURNS	6.00	ton		950
OPERATING COSTS				
Fertilizer:				185
80-0-0 (Anhydrous Ammonia)	120.00	lb N	0.69	83
46-0-0 (Urea)	50.00	lb N	0.75	38
32-0-0 (UN32)	80.00	lb N	0.81	65
Seed:				56
Wheat	130.00	lb	0.43	56
Herbicide:				54
Express (soluble granules)	1.00	oz	26.49	26
MCPA Amine	1.00	pint	3.68	4
Axial XL	16.00	floz	1.47	24
Custom:				58
Air application (Helicopter)	2.00	acre	8.00	16
Combine Wheat	1.00	acre	32.00	32
Pest Control Advisor	1.00	acre	10.00	10
Irrigation:				167
Water	20.00	acin	8.33	167
Assessment:				4
California Wheat Commission (CWC)	4.00	ton	1.00	4
Labor:				20
Equipment Operator Labor	0.82	hrs	13.80	11
Non-Machine Labor	0.75	hrs	11.04	8
Machinery:				29
Fuel-Gas	0.00	gal	4.07	0
Fuel-Diesel	5.42	gal	3.84	21
Lube				3
Machinery Repair				5
Interest on Operating Capital (5.75%)				14
TOTAL OPERATING COSTS/ACRE				586
NET RETURNS ABOVE OPERATING COSTS				364
CASH OVERHEAD COSTS				
Liability Insurance				1
Office Expense				50
Rent (600 acres)				250
Property Taxes				0
Property Insurance				0
Investment Repairs				1
TOTAL CASH OVERHEAD COSTS/ACRE				302
TOTAL CASH COSTS/ACRE				889
NET RETURNS ABOVE CASH COSTS				61
NON-CASH OVERHEAD COSTS (Capital Recovery)				
Fuel Tanks 2-300G				0
GPS Globe Position				0
Shop Tools				0
Equipment				11
TOTAL NON-CASH OVERHEAD COSTS/ACRE				13
TOTAL COST/ACRE				902
TOTAL COST/ TON				225
NET RETURNS ABOVE TOTAL COST				48

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Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE WHEAT FOR GRAIN

Beginning 11-12	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Ending 06-13	12	12	13	13	13	13	13	13	13	13	13	13	
Cultural:													
Fertilize: Preplant (Anhydrous Ammonia)	87												87
Land Prep: Finish Disc 2X	20												20
Land Prep: Pull Borders	2												2
Plant: (wheat)	63												63
Weed: Postemergent (Express MCPA Axial)			62										62
Irrigate (water & labor) 5X			35		35	70	35						175
Fertilize: Topdress (Urea)				46									46
Fertilize: Water Run (UN32)					32	32							65
PCA	1	1	1	1	1	1	1	1	1				10
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1	1	7
TOTAL CULTURAL COSTS	174	2	99	47	69	104	37	2	1	1	1	1	536
Harvest:													
Combine Wheat								32					32
Assessment (CWC)								4					4
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	36	0	0	0	0	36
Interest on Operating Capital (5.75%)	1	1	1	2	2	2	3	3	0	0	0	0	14
TOTAL OPERATING COSTS/ACRE	175	3	100	49	71	107	39	41	1	1	1	1	586
CASH OVERHEAD													
Liability Insurance			1										1
Office Expense	6	6	6	6	6	6	6	6					50
Rent (600 acres)									250				250
Property Taxes			0						0				0
Property Insurance			0						0				0
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0.08	1
TOTAL CASH OVERHEAD COSTS	6	6	7	6	6	6	6	6	250	0	0	0.08	302
TOTAL CASH COSTS/ACRE	181	9	107	55	77	113	46	47	251	1	1	1	888

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Table 4 RANGING ANALYSIS for WHEAT

COSTS PER ACRE AT VARYING YIELD TO PRODUCE WHEAT

	YIELD (ton/acre)						
	2.50	3.00	3.50	4.00	4.50	5.00	5.50
OPERATING COSTS:							
Cultural Cost	536	536	536	536	536	536	536
Harvest Cost	32	32	32	32	32	32	32
Assessment	3	3	4	4	5	5	6
Interest on Operating Capital @ 5.75%	14	14	14	14	14	14	14
TOTAL OPERATING COSTS/acre	585	585	586	586	587	587	588
Total Operating Cost/ton	234	195	167	147	130	117	107
CASH OVERHEAD COSTS							
TOTAL CASH COSTS/acre	887	888	888	889	889	890	890
Total Cash Costs/ton	355	296	254	222	198	178	162
NON-CASH OVERHEAD COSTS							
TOTAL COSTS/acre	900	901	901	902	902	903	903
Total Costs/ton	360	300	258	225	201	181	164

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/ton	YIELD (ton/acre)						
	2.50	3.00	3.50	4.00	4.50	5.00	5.50
160.00	-185	-105	-26	54	133	213	292
180.00	-135	-45	44	134	223	313	402
200.00	-85	15	114	214	313	413	512
220.00	-35	75	184	294	403	513	622
240.00	15	135	254	374	493	613	732
260.00	65	195	324	454	583	713	842
280.00	115	255	394	534	673	813	952
300.00	165	315	464	614	763	913	1,062

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/ton	YIELD (ton/acre)						
	2.50	3.00	3.50	4.00	4.50	5.00	5.50
160.00	-487	-408	-328	-249	-169	-90	-10
180.00	-437	-348	-258	-169	-79	10	100
200.00	-387	-288	-188	-89	11	110	210
220.00	-337	-228	-118	-9	101	210	320
240.00	-287	-168	-48	71	191	310	430
260.00	-237	-108	22	151	281	410	540
280.00	-187	-48	92	231	371	510	650
300.00	-137	12	162	311	461	610	760

NET RETURNS PER ACRE ABOVE TOTAL COST

PRICE \$/ton	YIELD (ton/acre)						
	2.50	3.00	3.50	4.00	4.50	5.00	5.50
160.00	-500	-421	-341	-262	-182	-103	-23
180.00	-450	-361	-271	-182	-92	-3	87
200.00	-400	-301	-201	-102	-2	97	197
220.00	-350	-241	-131	-22	88	197	307
240.00	-300	-181	-61	58	178	297	417
260.00	-250	-121	9	138	268	397	527
280.00	-200	-61	79	218	358	497	637
300.00	-150	-1	149	298	448	597	747

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Table 5. RANGING ANALYSIS for WHEAT STRAW

NET RETURNS PER ACRE for WHEAT STRAW

PRICE \$/ton	YIELD (ton/acre)					
	1.50	1.75	2.00	2.25	2.50	3.00
29.00	44	51	58	65	73	87
31.00	47	54	62	70	78	93
33.00	50	58	66	74	83	99
35.00	53	61	70	79	88	105
37.00	56	65	74	83	93	111
39.00	59	68	78	88	98	117
41.00	62	72	82	92	103	123

If selling straw add appropriate number to Net Returns in Table 4

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Table 6. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
13	125 HP MFWD Tracto	114,269	10	33,753	11,904	605	740	13,249
13	215 HP Trac Tracto	287,000	10	84,775	29,899	1,519	1,859	33,276
13	Disc - Border	2,150	10	380	244	10	13	267
13	Disc - Finish 21'	43,177	8	9,749	5,583	216	265	6,064
13	Pickup 1/2 Ton	32,000	5	14,342	4,732	189	232	5,153
13	Planter Drill 20'	27,301	10	4,828	3,104	131	161	3,396
TOTAL		505,897		147,827	55,467	2,670	3,269	61,406
60% of new cost*		303,538		88,696	33,280	1,602	1,961	36,843

*Used to reflect a mix of new and used equipment

*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	
Building 2400 sqft	80,000	25	0	5,535	327	400	1,600	7,862
Fuel Tanks 2-300G	6,514	20	0	512	27	33	130	701
GPS Globe Position	42	5	0	10	0	0	800	810
Shop Tools	15,000	20	1,200	1,141	66	81	300	1,588
TOTAL INVESTMENT	101,556		1,200	7,197	420	514	2,830	10,961

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent (600 acres)	600.00	acre	250.00	150,000
Liability Insurance	3,000.00	acre	0.57	1,698
Office Expense	3,000.00	acre	50.00	150,000

UC COOPERATIVE EXTENSION
 SAN JOAQUIN VALLEY - 2013
Table 7. HOURLY EQUIPMENT COSTS

Yr	Description	Grain Hours Used	Total Hours Used	COSTS PER HOUR							
				Capital Recovery	Cash Overhead		Operating			Total Oper.	Total Costs/Hr
					Insur- ance	Taxes	Repairs	Fuel & Lube			
13	125 HP MFWD Tracto	152	1,200.00	5.95	0.30	0.37	6.46	27.86	34.32	40.94	
13	215 HP Trac Tracto	144	1,600.00	11.21	0.57	0.70	14.82	47.91	62.74	75.22	
13	Anhydrous Rig 30'	43	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
13	Disc - Border	24	200.00	0.73	0.03	0.04	0.35	0.00	0.35	1.16	
13	Disc - Finish 21'	131	250.00	13.40	0.52	0.64	7.22	0.00	7.22	21.77	
13	Pickup 1/2 Ton	144	285.00	9.96	0.40	0.49	3.52	9.60	13.12	23.97	
13	Planter Drill 20'	71	150.00	12.42	0.52	0.64	7.52	0.00	7.52	21.11	

UC COOPERATIVE EXTENSION
 SAN JOAQUIN VALLEY - 2013
Table 8. OPERATIONS WITH EQUIPMENT & MATERIALS

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Apply Anhydrous Ammonia	Nov	125 HP MFWD	Anhydrous Rig 30'	Equipment Operator Labor	0.09	hour
				80-0-0 (Anhydrous Ammonia)	120.00	lb N
				NH3Rig loaned free		
Finish Disc 2X	Nov	215 HP Trac	Disc - Finish 21'	Equipment Operator Labor	0.26	hour
Pull Borders	Nov	125 HP MFWD	Disc - Border	Equipment Operator Labor	0.05	hour
Plant (wheat)	Nov	125 HP MFWD	Planter Drill 20'	Equipment Operator Labor	0.14	hour
				Wheat	130.00	lb
Weed-Post-emergent	Jan			Express (soluble granules)	1.00	oz
				MCPA Amine	1.00	pint
				Axial XL	16.00	floz
				Air application (Helicopter)	1.00	acre
Irrigate	Jan			Non-Machine Labor	0.15	hour
				Water	4.00	acin
	Mar			Non-Machine Labor	0.15	hour
				Water	4.00	acin
	Apr			Non-Machine Labor	0.15	hour
				Water	4.00	acin
	Apr			Non-Machine Labor	0.15	hour
				Water	4.00	acin
	May			Non-Machine Labor	0.15	hour
				Water	4.00	acin
Fertilize Topdress50lbN Urea	Feb			46-0-0 (Urea)	50.00	lb N
				Air application (Helicopter)	1.00	acre
Fert: Water Run (UN32)	Mar			32-0-0 (UN32)	40.00	lb N
	Apr			32-0-0 (UN32)	40.00	lb N
PCA	Apr			Pest Control Advisor	1.00	acre
Pickup Truck Use	Apr		Pickup 1/2 Ton	Equipment Operator Labor	0.29	hour
Combine Wheat	June			Combine Wheat	1.00	acre
				Haul-paid by processor		
Assessment (CWC)	June			California Wheat Commission	4.00	ton