

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

2009

SAMPLE COSTS TO PRODUCE

WHEAT



**SACRAMENTO VALLEY
IRRIGATED**

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INTRODUCTION

The sample costs to produce irrigated wheat in the Sacramento Valley are presented in this study. The study is intended as a guide only, and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans. Sample costs for labor, materials, equipment, and custom services are based on current figures. Some costs and practices detailed in this study may not be applicable to your situation. A blank column, “*Your Costs*”, is provided to enter your actual costs on Tables 1 and 2.

The hypothetical farm operation, 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, 530-752-2414 or your local UC Cooperative Extension office.

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Sample Cost of Production Studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-2414. Current studies can be obtained from selected county UC Cooperative Extension offices, or downloaded from the department website at <http://coststudies.ucdavis.edu>.

ASSUMPTIONS

The following assumptions pertain to sample costs for irrigated wheat production in the Sacramento Valley. Practices described in this cost study should not be considered recommendations by the University of California, but represent production procedures considered typical for this crop in the Sacramento Valley. Some of the costs and practices may not be applicable to your situation nor used during every production year and/or additional ones not indicated may be needed. Cultural practices for the production of wheat vary by grower and region, and can be significant. The practices and inputs used in the cost study serve as a sample or guide, only. The costs are presented on an annual, per acre basis. *The use of trade names 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.*

Land. This report is based on a 2,900-acre field and row crop farm. Wheat is planted on noncontiguous fields totaling 900 acres, therefore farming practices can vary among fields. The other 2,000 acres planted in rotation with wheat, may be processing tomatoes, alfalfa hay, safflower, sunflower, dry beans and/or corn. Rented land includes developed wells and an irrigation system. All costs associated with the land and the irrigation system is incurred by the landowner. The grower also owns land, a shop, and an equipment yard.

CULTURAL PRACTICES AND MATERIAL INPUTS

Growing Wheat. General wheat production in California is described in detail in many Agriculture and Natural Resource (ANR) publications and noted in the Reference section. New among these are the ANR publications of the Small Grains Manual, publications 8164 – 8177, with all 14 sections available for downloading free online at <http://anrcatalog.ucdavis.edu/CornGrains/8164.aspx>.

Land Preparation. Primary tillage and planting groundwork operations, which include discing, preplant fertilization, listing beds, ridging, harrowing, and rolling, are done from August through October. Operations are done on all of the acreage unless noted. Beginning in August 50% of the acres are stubble disced followed by two discings with a finish disc over 100% of the acres. Wheat is planted on raised beds (50% of this study) or flat with irrigation border checks (50% of this study). Sixty-inch beds are made with a three-row lister. The last operation prior to planting is to firm and smooth the beds with a harrow and roller.

Stand Establishment. Wheat is planted from late October to mid-December. In this study, 125 pounds per acre of seed is planted in November with a grain drill.

Fertilization. Because of field locations, soil types, and previous crops, fertilizer requirements between fields will exist. Preplant nitrogen (N) using aqua ammonia (20-0-0) at 80 pounds of N per acre, is applied in October on all of the fields. In February 40 pounds of N is topdressed on half of the acreage. At planting phosphorous is drilled with the wheat seed on 25% of the acres.

Pesticide Recommendations. Not all treatments mentioned in this report will be needed every year. Materials other than those discussed in this report are available for labeled use on this crop. For specific pesticides choices and rates consult the UC Integrated Pest Management Guidelines for wheat online at <http://www.ipm.ucdavis.edu/PMG/selectnewpest.small-grains.html>. Written recommendations made by licensed pest control advisors are required for many pesticides. For information and pesticide use permits, contact the local county Agricultural Commissioner's office.

Weeds. In February a post-emergence herbicide (MCPA-amine) is applied to 75% of the acreage to control emerged winter weeds. The treatment application is made by air (50%) and ground (50%).

Disease. Stripe rust is the major disease in this area requiring control 25% of time. Management of this disease is accomplished with a fungicide (either Quadris, Stratego, or Headline) and is applied by air in late March or early April. Treatment for stripe rust begins at the first sign of the disease in the crop.

Irrigation. In this study water is calculated to cost \$32.04 per acre-foot and is a combination of 50% well water and 50% canal delivered surface water. The irrigation cost shown in Tables 1, 2, and 3 include water, pumping, and labor charges. In April 6.0 acre-inches of water is applied to the crop.

Harvest. It is assumed the farm owns two combines and a bankout wagon to harvest the 900 acres. The wheat is dumped from the combine directly into the tractor-pulled bankout wagon that deliver the grain to grain trailers for transport to the buyer. Transportation from the field to the buyer is paid by the grower.

The remaining straw is sometimes cut and baled for sale to different markets. If the straw is sold, the cost of harvesting (if charged) needs to be included as well as any revenue generated.

Costs for harvest operations are shown in Tables 1 and 3, and the equipment is listed in Tables 4 and 5. If a grower has the wheat custom harvested, related costs should be subtracted from harvest costs in Tables 1 and 3, and the equipment should be subtracted from investment costs in Table 4. A custom harvest charge should be added to harvest costs in Tables 1 and 3.

Growers may choose to own harvesting equipment, purchased either new or used, or hire a custom harvester. Many factors are important in deciding which harvesting option a grower uses. These considerations and an appropriate method of analysis are discussed in "*Acquiring Alfalfa Hay Harvest Equipment: A Financial Analysis of Alternatives*".

Yields. Reported average wheat yields in Sacramento Valley over the past ten years ranged from 1.56 to 2.58 tons per acre. Weighted average yields are shown in Table A. In this study 3.0 tons per acre is used.

Returns. Growers in Sacramento Valley received prices averaging from \$86 to \$218 per ton during the last ten years. The weighted average return prices to growers from 1999 to 2008 are shown in Table A. In 2008, wheat prices rose substantially to an average of about \$220.00 per ton, but prices moderated in 2009 to approximately \$150.00 per ton. In this study growers are paid \$150.00 per ton.

Table A. Weighted average wheat yield and price[§]

Year	Tons/acre	\$/ton
2008	2.38	217.89
2007	1.97	132.45
2006	1.56	120.52
2005	2.05	100.12
2004	2.58	103.01
2003	1.87	101.96
2002	2.32	109.09
2001	2.27	86.52
2000	2.19	85.56
1999	2.38	90.96

[§] Various county Agricultural Commissioner Annual Crop Reports, 1999 – 2008

Straw: In some instances the straw left from the grain harvest is baled and sold mainly for bedding. In this study the wheat straw is not sold or shown returning additional profit. Wheat can yield from 20 to 70 bales of straw per acre depending on the grain yield, how the grain is removed, growing conditions, and various other factors. Prices paid to growers can vary from \$0.00 to \$1.25 per bale.

Growers who have relatively weed-free wheat bale and remove the straw. Some growers have an arrangement with a contractor who harvests the wheat grain and bales for the straw. The wheat growers

do not pay anything for the custom harvest of the grain in exchange for the straw. There are quite a few custom operators who swath, bale and roadside the straw.

Wheat that is harvested by a stripper header tends to go to the horse/racetrack market and generally receives a better price. Whereas, straw baled from fields that harvest grain with a regular header are usually sold either to feed stores or used for erosion control. Weedy fields are normally not baled for straw.

Assessments. Under a state marketing order a mandatory assessment fee of \$1.00 per ton is collected and administered by the California Wheat Growers (CWG). The CWG conducts research and market development for wheat producers in California.

Labor. Labor rates of \$16.27 per hour for machine operators and \$11.26 for general labor includes payroll overhead of 36%. The basic hourly wages are \$11.96 for machine operators and \$8.28 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 insurance costs will vary among growers, but for this study the cost is based upon the average industry final rate as of March 1, 2009 (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.

Risk. Risks associated with wheat 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 wheat production. Because of the risk involved, growers should consider all of the agronomic and economic risks before committing resources to wheat production in the Sacramento Valley.

CASH OVERHEAD

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, field sanitation, liability and property insurance, supervisor's salary, share rent, and investment repairs.

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.

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 0.822% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,334 for the entire farm or \$0.46 per acre.

Office Expense. Office and business expenses are estimated at \$16.50 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc. Cash overhead costs are found in Tables 1, 2, 3 and 4.

Share Rent. Leasing practices and rental rates for agricultural property are continually being adjusted due to production changes, market economics, land values, and relative bargaining positions of the landlord and tenant. Land used for wheat production in the Sacramento Valley is commonly rented on a tenant-landowner basis with the landowner receiving 25% of the gross income from wheat.

Supervisor Salary. Wages for the supervisor are included as a cash overhead cost. The supervisor's salary, including benefits, is \$47,850 per year for a single supervisor and are allocated amongst the farm's other crops on a gross acreage basis. Wheat accounts for 33% of the farm's gross acreage. Therefore, the supervisors' salary for wheat is \$15,399 per year or \$17.11 per acre. Any returns above total costs are considered returns to investment.

Field Sanitation. Sanitation services provide portable toilets and washing facilities for a cost of \$1,421 annually or \$0.49 per acre. The cost includes delivery and regular servicing of the units.

NON-CASH OVERHEAD

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment used for wheat may be purchased new or used, this study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs (Equipment and Investments) are shown in Tables 1, 2, 3, and 5. They represent the capital recovery cost for investments on an annual per acre basis.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). Put another way, it is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account. The calculation for the annual capital recovery costs is as follows:

$$\left[\left(\frac{\text{Purchase Price} - \text{Salvage Value}}{\text{Price Value}} \right) \times \left(\frac{\text{Capital Recovery}}{\text{Factor}} \right) \right] + \left[\frac{\text{Salvage Value} \times \text{Interest Rate}}{\text{Value Rate}} \right]$$

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wearout life, as given by ASAE by

the annual hours of use in this 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 equal to the purchase price because land does not depreciate. The purchase price and salvage value for certain equipment and investments are shown in Table 5.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. It is the function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 4.75% is used to calculate capital recovery cost is the effective long-term interest rate in January 2009. The interest rate is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector. In other words, the next, best alternative use for these resources is in another agricultural enterprise.

Equipment Costs. 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. 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 5 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, travel and down time.

Repairs, Fuel and Lube. 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 PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$3.70 and \$3.36 per gallon, respectively.

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 www.ucop.edu, or your local county UC Cooperative Extension office.

Table 1.

UC COOPERATIVE EXTENSION
COSTS PER ACRE TO PRODUCE IRRIGATED WHEAT
SACRAMENTO VALLEY – 2009

Labor Rate: \$16.27/hr. machine labor
\$11.26/hr. non-machine labor

Interest Rate: 5.75%
Yield per Acre: 3.0 Ton

Operation	Operation	----- Cash and Labor Costs per Acre -----					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Stubble Disc - 50% Of Acreage	0.12	2	8	0	0	11		
Disc 2X	0.22	4	15	0	0	19		
Fertilize - Preplant N	0.10	2	4	45	4	55		
Border Disc - 50% Of Acreage	0.03	1	1	0	0	2		
List Beds - 50% Of Acreage	0.13	3	6	0	0	8		
Harrow & Roll Beds	0.04	1	1	0	0	2		
Plant Wheat - Apply P2O5 On Only 25% Of Acreage	0.13	3	4	28	0	35		
Weed Control - Ground - Half Of 75% Of Acreage	0.06	1	3	2	0	5		
Weed Control - Air - Half Of 75% Of Acreage	0.00	0	0	2	3	5		
Fertilize - Topdress N - 50% Of Acreage	0.10	2	4	39	0	45		
Disease Control - Stripe Rust - 25% Of Acreage	0.00	0	0	3	2	5		
Open Ditch	0.03	1	1	0	0	2		
Irrigate	1.25	14	0	16	0	30		
Close Ditch	0.03	1	1	0	0	2		
Pickup Truck Use	0.10	4	2	0	0	6		
ATV Use	0.10	2	0	0	0	2		
TOTAL CULTURAL COSTS	2.43	39	52	134	10	235		
Harvest:								
Harvest	0.23	4	18	0	0	22		
Bank Out Grain	0.09	2	4	0	0	6		
Haul Grain To Storage	0.00	0	0	0	80	80		
TOTAL HARVEST COSTS	0.32	6	22	0	80	108		
Interest on Operating Capital @ 5.75%	5.75%					8		
TOTAL OPERATING COSTS/ACRE		45	74	134	89	351		
CASH OVERHEAD:								
Liability Insurance						2		
Office Expense						16		
Share Rent @ 25% Of Wheat Gross Returns						82		
Supervisors Salary						17		
Field Sanitation						2		
Property Taxes						3		
Property Insurance						2		
Investment Repairs						4		
TOTAL CASH OVERHEAD COSTS						129		
TOTAL CASH COSTS/ACRE						479		
NON-CASH OVERHEAD:								
	Per producing	-- Annual Cost --						
Investment	Acres	Capital Recovery						
Fuel Tanks & Pumps	10	1				1		
Fuel Wagon	1	0				0		
Shop Building - 8,000 SqFt	71	5				5		
Shop Tools	5	0				0		
Storage Building	12	1				1		
Siphon Tubes	5	0				0		
Pipe - Main Line	26	3				3		
Tool Carrier	7	1				1		
Portable Pump	9	1				1		
Forklift - 4 Ton	4	1				1		
Equipment	332	34				34		
TOTAL NON-CASH OVERHEAD COSTS	483	47				47		
TOTAL COSTS/ACRE						526		

Table 2.

UC COOPERATIVE EXTENSION
COSTS AND RETURNS PER ACRE TO PRODUCE IRRIGATED WHEAT
SACRAMENTO VALLEY – 2009

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Irrigated Wheat	3.0	Ton	150.00	<u>450</u>	
TOTAL GROSS RETURNS FOR WHEAT				<u>450</u>	
OPERATING COSTS					
Fertilizer:					
20-0-0 (Aqua Ammonia)	80.00	Lb N	1	45	
11-52-0 (Calculated on 25% of Acreage)	18.75	Lb	0	8	
46-0-0 (Calculated on 50% of Acreage)	43.48	Lb N	1	39	
Rent:					
Rig to Inject Aqua	1.00	Acre	4	4	
Seed:					
Wheat Seed	125.00	Lb	0	20	
Herbicide:					
MCPA-Amine	1.50	Pint	2	3	
Custom:					
Air Application	0.63	Acre	9	6	
Hauling	26.50	Ton	3	80	
Fungicide:					
Quadris (Calculated on 25% of Acreage)	1.50	FLOz	2	3	
Irrigation:					
Water	6.00	AcIn	3	16	
Labor (machine)	1.92	Hrs	16	31	
Labor (non-machine)	1.25	Hrs	11	14	
Fuel - Gas	0.64	Gal	3	2	
Fuel - Diesel	13.20	Gal	4	49	
Lube				8	
Machinery repair				15	
Interest on Operating Capital @ 5.75%				<u>8</u>	
TOTAL OPERATING COSTS/ACRE				<u>351</u>	
NET RETURNS ABOVE OPERATING COSTS				<u>99</u>	
CASH OVERHEAD COSTS:					
Liability Insurance				2	
Office Expense				16	
Share Rent @ 25% Of Wheat Gross Return				82	
Supervisors Salary				17	
Field Sanitation				2	
Property Taxes				3	
Property Insurance				2	
Investment Repairs				<u>4</u>	
TOTAL CASH OVERHEAD COSTS/ACRE³				<u>129</u>	
TOTAL CASH COSTS/ACRE				<u>479</u>	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):					
Fuel Tanks & Pumps				1	
Fuel Wagon				0	
Shop Building - 8,000 SqFt				5	
Shop Tools				0	
Storage Building				1	
Siphon Tubes				0	
Pipe - Main Line				3	
Tool Carrier				1	
Portable Pump				1	
Forklift - 4 Ton				1	
Equipment				<u>34</u>	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				<u>47</u>	
TOTAL COSTS/ACRE				<u>526</u>	
NET RETURNS ABOVE TOTAL COSTS				<u>-76</u>	

Table 3.

UC COOPERATIVE EXTENSION
MONTHLY CASH COSTS
SACRAMENTO VALLEY – 2009
IRRIGATED WHEAT

Beginning AUG 08	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
Ending JUL 09	08	08	08	08	08	09	09	09	09	09	09	09	
Cultural:													
Stubble Disc - 50% Of Acreage	5										5		11
Disc 2X	8		12										19
Fertilize - Preplant N			55										55
Border Disc - 50% Of Acreage			2										2
List Beds - 50% Of Acreage			8										8
Harrow & Roll Beds			2										2
Plant Wheat & Apply P2O5 - 25% Of Acreage				35									35
Weed Control - Ground - Half Of 75% Of Acreage							5						5
Weed Control - Air - Half Of 75% Of Acreage							5						5
Fertilize - Topdress N - 50% Of Acreage							45						45
Disease Control - Stripe Rust - 25% Of Acreage									5				5
Open Ditch									2				2
Irrigate									30				30
Close Ditch									2				2
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1	1	6
ATV Use	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>
TOTAL CULTURAL COSTS	14	1	79	36	1	1	56	1	40	1	6	1	235
Harvest:													
Harvest											22		22
Bank Out Grain											6		6
Haul Grain To Storage											<u>80</u>		<u>80</u>
TOTAL HARVEST COSTS											108		108
Interest on Operating Capital @ 5.75%	0	0	0	1	1	1	1	1	1	1	2	0	8
TOTAL OPERATING COSTS/ACRE	14	1	80	36	1	1	57	2	41	2	115	1	351
CASH OVERHEAD:													
Liability Insurance						2							2
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1	16
Share Rent @ 25% Of Wheat Returns						82							82
Supervisors Salary	1	1	1	1	1	1	1	1	1	1	1	1	17
Field Sanitation	0	0	0	0	0	0	0	0	0	0	0	0	2
Property Taxes						1							3
Property Insurance						1							2
Investment Repairs	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>4</u>
TOTAL CASH OVERHEAD COSTS	3	3	3	3	3	90	3	3	3	3	3	6	129
TOTAL CASH COSTS/ACRE	5										5		11

Table 4.

UC COOPERATIVE EXTENSION
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SACRAMENTO VALLEY – 2009
IRRIGATED WHEAT

ANNUAL EQUIPMENT COSTS								
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
09	135 HP 2WD Tractor	105,868	10	31,272	11,029	562	686	12,277
09	200 HP Crawler	209,332	10	61,833	21,808	1,112	1,356	24,275
09	90 HP 2WD Tractor	54,389	10	16,066	5,666	289	352	6,307
09	ATV	5,917	5	2,652	875	35	43	953
09	Bankout Wagon - 30 Ton Pull Type	22,006	10	3,892	2,502	106	129	2,738
09	Combine - No Header	211,005	15	21,608	18,966	954	1,163	21,083
09	Combine - No Header	160,483	15	16,435	14,425	725	885	16,035
09	Disc - Finish 25'	54,225	12	7,511	5,553	253	309	6,115
09	Disc - Stubble 18'	60,410	10	10,683	6,869	291	355	7,516
09	Disc - Stubble 18'	916	12	127	94	4	5	103
09	Disc Ridger	45,946	10	8,125	5,225	222	270	5,717
09	Ditcher - V	10,640	12	1,474	1,090	50	61	1,200
09	Grain Drill - 20'	14,362	10	2,540	1,633	69	85	1,787
09	Grain Platform 20'	31,555	10	5,580	3,588	152	186	3,926
09	Grain Platform 20'	18,882	10	3,562	2,129	92	112	2,333
09	Harrow - Spike 32'	18,882	10	3,562	2,129	92	112	2,333
09	Lister - 6 Row	6,800	10	1,203	773	33	40	846
09	Pickup 1/2 Ton	28,132	5	12,608	4,160	167	204	4,531
09	Pickup 3/4 Ton	33,975	5	15,227	5,024	202	246	5,471
09	Ringroller - 32'	9,752	12	1,351	999	46	56	1,100
09	Saddle Tank - 300 Gallon	2,877	10	509	327	14	17	358
09	Scraper - Drag 10'	2,939	18	196	239	13	16	268
09	Spray Boom - 25'	1,609	10	285	183	8	9	200
TOTAL		1,110,902		228,301	115,286	5,491	6,696	127,473
60% of New Cost*		666,541		136,981	69,172	3,294	4,018	76,484

* 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								
Forklift - 4 Ton	12,939	10	1,294	1,551	58	71	331	2,012
Fuel Tanks & Pumps	28,165	20	2,817	2,125	127	155	775	3,182
Fuel Wagon	2,805	10	281	336	13	15	77	441
Pipe - Main Line	76,275	10	7,628	9,145	344	420	2,097	12,005
Portable Pump	26,738	10	2,674	3,206	121	147	753	4,226
Shop Building - 1,800 SqFt	206,688	25	20,669	13,852	932	1,137	5,864	21,784
Shop Tools	14,379	20	1,438	1,085	65	79	395	1,624
Siphon Tubes	13,375	15	1,338	1,204	60	74	368	1,706
Storage Building	35,189	20	3,519	2,655	159	194	968	3,975
Tool Carrier	20,222	15	2,022	1,820	91	111	556	2,578
TOTAL INVESTMENT	436,775		43,680	36,978	1,970	2,402	12,184	53,534

ANNUAL BUSINESS OVERHEAD COSTS				
Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Field Sanitation	2,900	Acre	0.49	1,421
Liability Insurance	2,900	Acre	0.46	1,334
Office Expense	2,900	Acre	16.50	47,850
Share Rent @ 25% Of Wheat Gross Returns	900	Acre	82.32	74,088
Supervisor Salary	900	Acre	17.11	15,399

Table 5.

UC COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
SACRAMENTO VALLEY – 2009
IRRIGATED WHEAT

Yr	Description	----- COSTS PER HOUR -----								Total Costs/Hr.
		Actual Hours Used	Capital Recovery	Insur- ance	- Cash Overhead -			----- Operating -----		
					Taxes	Repairs	Fuel & Lube	Total Oper.		
09	135 HP 2WD Tractor	1,158.9	5.71	0.29	0.36	4.93	33.34	38.27	44.62	
09	200 HP Crawler	1,599.6	8.18	0.42	0.51	5.57	49.39	54.96	64.06	
09	90 HP 2WD Tractor	1,160.3	2.93	0.15	0.18	2.53	19.22	21.75	25.01	
09	ATV	285.4	1.84	0.07	0.09	0.38	3.86	4.24	6.25	
09	Bankout Wagon - 30 Ton Pull Type	82.8	18.13	0.77	0.94	3.03	0.00	3.03	22.87	
09	Combine - No Header	199.9	56.94	2.86	3.49	14.89	53.09	67.98	131.28	
09	Combine - No Header	199.9	43.31	2.18	2.66	11.33	53.09	64.42	112.56	
09	Disc - Finish 25'	194.4	17.14	0.78	0.95	8.81	0.00	8.81	27.68	
09	Disc - Stubble 18'	200.0	20.61	0.87	1.07	9.97	0.00	9.97	32.51	
09	Disc - Stubble 18'	166.0	0.34	0.02	0.02	0.25	0.00	0.25	0.63	
09	Disc Ridger	200.0	15.67	0.67	0.81	7.58	0.00	7.58	24.73	
09	Ditcher - V	166.0	3.94	0.18	0.22	2.96	0.00	2.96	7.29	
09	Grain Drill - 20'	126.3	7.76	0.33	0.40	3.06	0.00	3.06	11.55	
09	Grain Platform 20'	150.0	14.35	0.61	0.74	8.69	0.00	8.69	24.40	
09	Grain Platform 20'	179.5	7.12	0.31	0.38	3.56	0.00	3.56	11.36	
09	Harrow - Spike 32'	179.5	7.12	0.31	0.38	3.56	0.00	3.56	11.36	
09	Lister - 6 Row	180.0	2.58	0.11	0.13	1.46	0.00	1.46	4.28	
09	Pickup 1/2 Ton	285.4	8.75	0.35	0.43	1.83	9.66	11.49	21.01	
09	Pickup 3/4 Ton	285.4	10.56	0.42	0.52	2.21	11.59	13.80	25.31	
09	Ringroller - 32'	130.0	4.61	0.21	0.26	1.11	0.00	1.11	6.19	
09	Saddle Tank - 300 Gallon	170.8	1.15	0.05	0.06	0.77	0.00	0.77	2.03	
09	Scraper - Drag 10'	166.0	0.87	0.05	0.06	0.44	0.00	0.44	1.41	
09	Spray Boom - 25'	149.5	0.73	0.03	0.04	0.43	0.00	0.43	1.24	

Table 6.

UC COOPERATIVE EXTENSION
RANGING ANALYSIS
SACRAMENTO VALLEY - 2009

	COSTS PER ACRE AT VARYING YIELDS TO PRODUCE IRRIGATED WHEAT						
	YIELD (TON/ACRE)						
	1.5	2.0	2.5	3.0	3.5	4.0	4.5
OPERATING COSTS/ACRE:							
Cultural Cost	235	235	235	235	235	235	235
Harvest Cost	54	72	90	108	125	143	161
Interest on operating capital	8	8	8	8	8	8	8
TOTAL OPERATING COSTS/ACRE	297	315	333	351	369	387	405
TOTAL OPERATING COSTS/TON	198	157	133	117	105	97	90
TOTAL CASH OVERHEAD COSTS/ACRE	128	128	128	129	129	129	129
TOTAL CASH COSTS/ACRE	425	443	461	479	497	516	534
TOTAL CASH COSTS/TON	283	222	184	160	142	129	119
NON-CASH OVERHEAD COSTS/ACRE	42	44	46	47	48	49	49
TOTAL COSTS/ACRE	467	487	507	526	545	564	583
TOTAL COSTS/TON	311	244	203	175	156	141	130

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR IRRIGATED WHEAT								
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)							
Irrigated Wheat	1.5	2.0	2.5	3.0	3.5	4.0	4.5	
			----- \$/ton -----					
90	-162	-135	-108	-81	-54	-27	0	
110	-132	-95	-58	-21	16	53	90	
130	-102	-55	-8	39	86	133	180	
150	-72	-15	42	99	156	213	270	
175	-34	35	105	174	244	313	383	
200	3	85	167	249	331	413	495	
225	-14	99	212	324	437	549	662	

NET RETURNS PER ACRE ABOVE CASH COSTS FOR IRRIGATED WHEAT								
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)							
Irrigated Wheat	1.5	2.0	2.5	3.0	3.5	4.0	4.5	
			----- \$/ton -----					
90	-290	-263	-236	-209	-182	-156	-129	
110	-260	-223	-186	-149	-112	-76	-39	
130	-230	-183	-136	-89	-42	4	51	
150	-200	-143	-86	-29	28	84	141	
175	-162	-93	-24	46	115	184	254	
200	-125	-43	39	121	203	284	366	
225	-142	-29	84	196	309	421	534	

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR IRRIGATED WHEAT								
PRICE (DOLLARS/TON)	YIELD (TON/ACRE)							
Irrigated Wheat	1.5	2.0	2.5	3.0	3.5	4.0	4.5	
			----- \$/ton -----					
90	-332	-307	-282	-256	-230	-204	-178	
110	-302	-267	-232	-196	-160	-124	-88	
130	-272	-227	-182	-136	-90	-44	2	
150	-242	-187	-132	-76	-20	36	92	
175	-205	-137	-69	-1	67	136	205	
200	-167	-87	-7	74	155	236	317	
225	-189	-76	37	149	262	374	487	

Table 7.

UC COOPERATIVE EXTENSION
 COST AND RETURNS/BREAKEVEN ANALYSIS
 SACRAMENTO VALLEY – 2009
 IRRIGATED WHEAT

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Irrigated Wheat	450	351	99	479	-29	526	-76

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Irrigated Wheat	405,000	315,709	89,291	431,403	-26,403	473,439	-68,439

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	----- Breakeven Price To Cover -----		
			Operating Costs	Cash Costs	Total Costs
----- \$ per Yield Unit -----					
Irrigated Wheat	3.0	Ton	116.93	159.78	175.35

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	----- Breakeven Yield To Cover -----		
			Operating Costs	Cash Costs	Total Costs
----- Yield Units / Acre -----					
Irrigated Wheat	Ton	150.00	2.3	3.2	3.5

Table 8.

UC COOPERATIVE EXTENSION
 DETAIL OF OPERATIONS
 SACRAMENTO VALLEY – 2009
 IRRIGATED WHEAT

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Disc Field - 50% of Acreage 2X <i>Pre- & Postharvest</i>	August	200 HP Crawler	Disc - Stubble 18'			
	June	200 HP Crawler	Disc - Stubble 18'			
Disc 2X	August	200 HP Crawler	Disc - Finish 25'			
	October	200 HP Crawler	Disc - Finish 25'			
Fertilize - Preplant N	October	135 HP 2WD Tractor		Aqua Rig	1.00	Acre
				20-0-0	80.00	Lb N
Border Disc - 50% Of Acreage	October	135 HP 2WD Tractor	Disc Ridger			
List Beds - 50% Of Acreage	October	135 HP 2WD Tractor	Lister - 6 Row			
Harrow & Roll Beds	October	90 HP 2WD Tractor	Harrow - Spike 32'			
			Ringroller - 32'			
Plant Wheat & Apply P2O5 On 25% Of Acreage	November	90 HP 2WD Tractor	Grain Drill - 20'	Wheat Seed	125.00	Lbs
				11-52-0	18.75	Lbs
Weed Control – Half Of 75% Of Acreage	February	135 HP 2WD Tractor	Saddle Tank - 300 Gal	MCPA-Amine	0.75	Pint
			Spray Boom - 25'			
Weed Control - Half Of 75% Of Acreage	February	Air Application		MCPA-Amine	0.75	Pint
Fertilize - Topdress N - 50% Of Acreage	February	135 HP 2WD Tractor	Saddle Tank - 300 Gal	46-0-0	43.48	Lb N
			Field Chisel 20'			
Disease Control - Stripe Rust - 50% Of Acreage	April	Air Application		Quadris	3.10	FLOz
Open Ditch	April	135 HP 2WD Tractor	Ditcher - V			
Irrigate	April	Labor		Water	6.00	AcIn
Close Ditch	April	135 HP 2WD Tractor	Scraper - Drag 10'			
Harvest	June	Combine w/No Header	Grain Platform 20'			
		Combine w/No Header	Grain Platform 20'			
Bank Out Grain	June	135 HP 2WD Tractor	Bankout Wagon - 30 Ton			
Haul Grain To Storage	June	Custom		Hauling	3.00	Ton
Pickup Truck Use	Annual	Pickup 1/2 Ton				
		Pickup 3/4 Ton				
ATV	Annual	ATV				