



## Eastern Idaho:

### Soft White Winter Wheat

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## Background and Assumptions

The University of Idaho's costs and returns estimates are based on economic costs, not accounting costs. All resources are valued at a market rate or "opportunity cost". Input prices are taken from the U of I's 2009 annual survey of agricultural input supply companies. The selling price is a historical average, not a forecast price for 2009. The cost estimate shown here is typical for growing irrigated soft white winter wheat. Production practices are based on producer surveys from eastern Idaho's Bingham, Bonneville, Madison, and Power counties. Although production practices may be similar for individual farms, each farm has a unique set of resources with different levels of productivity, different production problems, and therefore different costs. Farm size, crop rotation, age and type of equipment, and the quality and intensity of management are all crucial factors that influence costs.

#### The Model Farm

The model farm for this costs and returns estimate is a 1,800-acre farm with 1,200 acres in grain and 600 acres in potatoes. The typical crop rotation is one year of potatoes followed by two years of grain. Corn or an oil seed crop may substitute for grain, and alfalfa hay may be grown in longer rotations. The farm uses a center pivot irrigation system and surface water delivered to the farm from an irrigation district. The irrigation district charges a flat fee per acre for water. Irrigation power costs are only for pressurization (no lift) and are based on 2009 Idaho Power Schedule 24 Agricultural Irrigation Service rates.

#### Production Practices

After the stubble from the preceding grain crop is chopped, the ground is irrigated, disked, plowed and packed, and planted in the fall. Wheat is harvested in August by a custom operator and hauled to storage. Fertilizer is applied in a split fall-spring application. Fertilizer is custom applied pre-plant in September, but the majority is custom applied post-plant in April. A two-way tank mix herbicide to control wild oats and broadleaf weeds is custom ground applied in May. While an

insecticide or fungicide may be needed, none are included because treatment is infrequent and unpredictable. Soft white winter wheat receives 15 inches of water during the summer growing season, 5 inches in May, 6 inches in June, and 4 inches in July. Three inches of water applied the previous fall is also credited to the winter wheat, for a total of 18 inches.

#### Resources: Machinery, Land, Labor, and Capital

Table 3 lists the tractors, trucks, and other equipment used to produce irrigated soft white winter wheat, along with their operating and ownership costs. Except for trucks, machinery is valued at 75 percent of replacement cost new, Table 3. The truck's price includes the cost of a used truck and 75 percent of the cost of a new self-unloading bed. In the years between equipment price surveys, done approximately every five years, machinery prices are adjusted using USDA's Farm Machinery Prices Paid Index. The land charge is based on a one-year cash lease for grain and covers the ownership costs (depreciation, interest, and insurance) of the irrigation system.

A machinery labor charge is calculated for all field operations except those performed on a custom basis. Custom operations are listed separately. The other or non-machine labor accounts for extra field labor used for planting and harvesting. Labor to operate machinery is valued at \$15.60 per hour, while irrigation and other labor are valued at \$11.05 and \$9.20, respectively. Labor rates include a base-wage, plus a percentage for Social Security, Medicare, unemployment insurance, and other labor overhead expenses. Labor overhead amounts to 15 percent for other labor, and 30 percent for irrigation labor and machinery labor. A management fee of approximately 5 percent of gross returns is included as an ownership cost. Interest on operating capital is charged from the time an input is applied until the month of harvest and is calculated at a nominal rate of 6.75 percent. Interest on intermediate term capital is calculated using a rate of 7.0 percent. A general overhead charge, calculated at approximately 2.5 percent of operating expenses, is included to cover unallocated whole-farm costs such as office expenses, legal and accounting fees, and utilities.

Table 1. 2009 Irrigated Soft White Winter Wheat for Eastern Idaho.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
<b>Gross Returns</b>				
Wheat	125	bu	\$4.50	\$562.50
<b>Operating Inputs</b>				
<b>Seed:</b>				
Wheat Seed: SWW	100	lb	\$0.16	\$16.00
				\$0.00
<b>Fertilizer:</b>				
Dry Nitrogen	140	lb	\$0.50	\$93.00
P2O5	50	lb	\$0.46	\$70.00
				\$23.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
<b>Pesticides:</b>				
Bronate Advanced	0.4	qt	\$12.80	\$17.62
Puma EC	10	oz	\$1.25	\$5.12
				\$12.50
				\$0.00
				\$0.00
				\$0.00
				\$0.00
<b>Custom &amp; Consultants:</b>				
Custom Fertilize - Air Machine	2	ac	\$6.25	\$67.00
Custom Combine	1	ac	\$32.00	\$12.50
Custom Haul	125	bu	\$0.18	\$32.00
				\$22.50
				\$0.00
				\$0.00
<b>Irrigation:</b>				
Water Assessment	1	ac	\$14.55	\$55.95
Irrigation Power - CP*	18	acin	\$1.72	\$14.55
Irrigation Repairs - CP*	18	acin	\$0.58	\$30.96
				\$10.44
<b>Machinery:</b>				
Fuel - Gas	1.5	gal	\$2.20	\$23.56
Fuel - Diesel	5.9	gal	\$1.95	\$3.30
Lube	1	ac	\$2.20	\$11.51
Machinery Repairs	1	ac	\$6.55	\$2.20
				\$6.55
<b>Labor:</b>				
Labor (machine)	1.27	hrs	\$15.60	\$29.61
Labor (irrigation - cp)	0.72	hrs	\$11.05	\$19.81
Labor (other)	0.2	hrs	\$9.20	\$7.96
				\$1.84
<b>Storage:</b>				
				\$0.00
				\$0.00
				\$0.00
<b>Other:</b>				
Crop Insurance	1	ac	\$13.00	\$13.00
				\$0.00
Operating Interest @ 6.75%				\$10.30
<b>Total Operating Costs</b>				\$326.03
<b>Operating Costs per Unit</b>				\$2.61
<b>Net Returns Above Operating Expenses</b>				\$236.47

Table 1. 2009 Irrigated Soft White Winter Wheat for Eastern Idaho.

Item	Quantity Per Acre	Unit	Price or Cost	Value or Cost/Acre
<b>Ownership Costs:</b>				
Tractors & Equipment Insurance				\$0.85
Tractors & Equipment Depreciation & Interest				\$36.00
Irrigation Equipment Depreciation & Interest				
Land **				\$175.00
Overhead				\$10.00
Management Fee				\$25.00
<b>Total Ownership Costs</b>				\$246.85
<b>Ownership Costs per Unit</b>				\$1.97
<b>Total Costs per Acre</b>				\$572.88
<b>Total Cost per Unit</b>				\$4.58
Returns to Risk				-\$10.38

Notes:

\* Center Pivot. \*\*Includes irrigation system ownership costs.

**Breakeven Analysis:**

	- 10%	Base Yield	+ 10%
<u>Price</u>	112.5	125	137.5
Operating Cost Breakeven	\$2.90	\$2.61	\$2.37
Ownership Cost Breakeven	\$2.19	\$1.97	\$1.80
Total Cost Breakeven	\$5.09	\$4.58	\$4.17
		<u>Price</u>	
<u>Yield</u>	\$4.05	\$4.50	\$4.95
Operating Cost Breakeven	80.5	72.5	65.9
Ownership Cost Breakeven	61.0	54.9	49.9
Total Cost Breakeven	141.5	127.3	115.7

**Table 2. Monthly Summary of Cash Expenses per Acre**

**EBB4-SWW-09**

	Sep 08	Oct 08	Nov 08	Dec 08	Jan 09	Feb 09	Mar 09	Apr 09	May 09	Jun 09	Jul 09	Aug 09	Sep 09	Total
<b>Preharvest:</b>														
Disk													5.81	5.81
Irrigate		2.16							10.81	12.97	8.65		4.32	38.92
Fertilize	44.25							61.25						105.50
Plow	6.10													6.10
Harrow	5.57													5.57
Seed Hauling	2.44													2.44
Plant	23.58													23.58
Crop Insurance Assessments								13.00						13.00
Repairs								14.55						14.55
Ground Spray								10.44						10.44
General Pickup Use	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	20.25	1.27	1.27	1.27	1.27	20.25
<b>Total Preharvest Costs</b>	<b>83.21</b>	<b>3.43</b>	<b>1.27</b>	<b>1.27</b>	<b>1.27</b>	<b>1.27</b>	<b>1.27</b>	<b>100.51</b>	<b>32.33</b>	<b>14.24</b>	<b>9.92</b>	<b>1.27</b>	<b>10.14</b>	<b>261.41</b>
<b>Harvest:</b>														
Combine												32.00		32.00
Crop Hauling												22.50		22.50
<b>Total Harvest Costs</b>												<b>54.50</b>		<b>54.50</b>
Interest on Operating Capital	0.47	0.49	0.49	0.50	0.51	0.52	0.52	1.09	1.27	1.35	1.41	1.72	-0.06	10.28
<b>Operating Costs per Acre</b>	<b>83.68</b>	<b>3.92</b>	<b>1.77</b>	<b>1.77</b>	<b>1.78</b>	<b>1.79</b>	<b>1.79</b>	<b>101.60</b>	<b>33.60</b>	<b>15.59</b>	<b>11.33</b>	<b>57.49</b>	<b>10.08</b>	<b>326.19</b>
<b>Cash Ownership</b>														
General Overhead	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83		10.00
Land Rent							175.00							175.00
Management Fee	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08		25.00
Property Insurance								0.87						0.87
<b>Cash Ownership Costs</b>	<b>2.92</b>	<b>2.92</b>	<b>2.92</b>	<b>2.92</b>	<b>2.92</b>	<b>2.92</b>	<b>177.92</b>	<b>3.78</b>	<b>2.92</b>	<b>2.92</b>	<b>2.92</b>	<b>2.92</b>		<b>210.87</b>
<b>Total Cash Costs per Acre</b>	<b>86.60</b>	<b>6.84</b>	<b>4.68</b>	<b>4.69</b>	<b>4.70</b>	<b>4.70</b>	<b>179.71</b>	<b>105.39</b>	<b>36.51</b>	<b>18.51</b>	<b>14.24</b>	<b>60.41</b>	<b>10.08</b>	<b>537.06</b>

**Table 3. Machinery and Equipment Costs per Hour**

Description	Purchase Price	Years to Trade	Salvage Value	Hours Used	<-Non-Cash->		<-----Cash----->		<-----Operating----->			Total Costs/Hr.
					Ownership Cap. Rec.	Insur.	Ownership Taxes	Repairs	Fuel & Lube	Total Oper.		
4-wheeler	6500	10	1920	152	4.95	0.12	0.00	0.05	3.31	3.36	8.44	
Chisel Plow 1 -20'	15600	15	1498	130	12.27	0.30	0.00	4.64	0.00	4.64	17.21	
Grain Drill - 24'	22000	10	3891	118	23.04	0.50	0.00	6.71	0.00	6.71	30.25	
Pickup - used 3/4t	11000	8	2500	196	7.71	0.15	0.00	1.09	5.27	6.36	14.22	
Pickup 1 - 3/4 ton	37000	8	5000	300	17.91	0.32	0.00	4.31	8.43	12.74	30.96	
Pickup 2 - 3/4 ton	37000	8	5000	300	17.91	0.32	0.00	4.31	8.43	12.74	30.96	
Roller-harrow -24'	42000	15	4032	103	41.50	1.00	0.00	7.97	0.00	7.97	50.47	
Sprayer - 50'	7500	15	720	102	7.48	0.18	0.00	2.89	0.00	2.89	10.55	
Tandem Disk - 24'	30000	15	2880	120	25.49	0.62	0.00	6.25	0.00	6.25	32.35	
Tractor - 160hp	113000	15	21999	249	44.80	1.22	0.00	2.17	20.82	22.99	69.01	
Tractor - 200hp	134000	15	26087	404	32.74	0.89	0.00	4.11	26.03	30.14	63.78	
Tractor - 250hp	155000	15	30176	399	38.39	1.05	0.00	2.04	32.54	34.58	74.01	
Truck 1 - 5 ton	55000	15	10708	400	13.58	0.37	0.00	8.79	1.87	10.66	24.62	

Net Returns Per Acre Above Operating Costs For Wheat  
Yield (bu/acre)

	87.50	100.00	112.50	125.00	137.50	150.00	162.50
3.15	-51	-11	28	68	107	146	186
3.60	-11	34	79	124	169	214	259
4.05	28	79	129	180	231	281	332
4.50	68	124	180	236	293	349	405
4.95	107	169	231	293	354	416	478
5.40	146	214	281	349	416	484	551
5.85	186	259	332	405	478	551	624

Net Returns Per Acre Above Cash Costs For Wheat  
Yield (bu/acre)

	87.50	100.00	112.50	125.00	137.50	150.00	162.50
3.15	-261	-222	-183	-143	-104	-65	-25
3.60	-222	-177	-132	-87	-42	3	48
4.05	-183	-132	-81	-31	20	70	121
4.50	-143	-87	-31	25	82	138	194
4.95	-104	-42	20	82	144	205	267
5.40	-65	3	70	138	205	273	340
5.85	-25	48	121	194	267	340	414

Net Returns Per Acre Above Total Costs For Wheat  
Yield (bu/acre)

	87.50	100.00	112.50	125.00	137.50	150.00	162.50
3.15	-297	-258	-218	-179	-140	-100	-61
3.60	-258	-213	-168	-123	-78	-33	12
4.05	-218	-168	-117	-66	-16	35	85
4.50	-179	-123	-66	-10	46	102	159
4.95	-140	-78	-16	46	108	170	232
5.40	-100	-33	35	102	170	237	305
5.85	-61	12	85	159	232	305	378

The practices and chemicals specified in this publication are based on survey information representative of typical operations. They are not recommendations. ALWAYS read and follow the instructions printed on the pesticide label. Due to constantly changing pesticide laws and labels, some pesticides may have been cancelled or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless both the pest and the plant, animal or other applicable site are specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets and livestock. To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

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