

Southwestern Idaho: Treasure Valley Soft White Winter Wheat

Ben Eborn



Southwestern
Idaho

Background & 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 annual survey of agricultural supply companies. The selling price is an historical average, not a current year's price. The cost estimate shown here is typical for producing alfalfa in northern Idaho. Production practices most closely resemble those in Canyon, Payette and Owyhee 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

This costs and returns estimate models a 1,200-acre farm with 300 acres in winter wheat. In addition to winter wheat, the farm grows 300 acres of potatoes or sugarbeets, 300 acres of corn, 150 acres of dry beans or onions, and 150 acres of alfalfa seed or alfalfa hay. The farm uses a concrete ditch and siphon tube irrigation system with water delivered to the farm from an irrigation district. The district charges a flat fee per acre for water.

Tillage, Fertilization, Pest Control & Irrigation

After harvest of the previous crop, the ground is disced, roller harrowed and planted in the fall. The field is corrugated once after planting. The crop is harvested and hauled to storage by a custom operator in July. Fertilizer is applied by a custom applicator before planting in the fall and again in the spring. A post-emergence two-way tank mix herbicide is applied by the farm operator in the spring for control weed control. No costs are included for insects or fungicides because their use is infrequent

and unpredictable. Winter wheat is irrigated once in October, and six times the following growing season: once in April, twice in May and 3 times in July.

Table 1 lists costs and returns by cost category (fertilizers, pesticides, machinery) for alfalfa production in southwestern Idaho. The cost for each operation can be found in Table 2. Costs by month can be found in Table 3.

Resources: Machinery, Land, Labor, and Capital

Table 4 lists hourly equipment costs for the tractors, trucks, and other farm equipment, along with total annual hours of use for this crop and for all crops in the model farm. Except for trucks, machinery is valued at 75 percent of new replacement cost. In the years between equipment price surveys, which are done approximately every five years, machinery prices are adjusted using USDA's Farm Machinery Prices Paid Index. Machinery cost assumptions are listed in Table 5, and include purchase price, salvage value, annual capital recovery costs, and cash overhead costs.

Land rent for winter wheat production is estimated to be \$250 per acre. The cost of the irrigation system is included in the rent.

The University of Idaho uses the budget generator program *Budget Planner* from the University of California-Davis to produce the various tables shown in this publication. Machinery operating and ownership costs are calculated based on engineering equations in this program. Machinery operating costs include fuel, lubricants and repairs.

The cost of labor used in this study includes a base wage, plus a percentage to account for various payroll taxes (FICA, SUTA & FUTA), and workman's compensation, as well as benefits such as paid

vacation/personal leave days, health insurance and bonuses. Labor is classified by the type of work performed. Labor classifications, labor rates and payroll overhead are shown below.

Labor Values

Labor Class	Base Rate	Payroll Overhead	Effective Rate
General Farm Labor	\$9.25	15%	\$10.65
Truck Drivers	\$12.50	15%	\$14.14
Equipment Operators	\$14.80	25%	\$18.50
Irrigation Labor			
Set Move: HL & WL	\$10.10	30%	\$13.15
Continuous Move: CP & L	\$14.80	25%	\$18.50

Based on the speed, width and overall field efficiency, *Budget Planner* calculates equipment operator labor hours for all field operations except those performed on a custom basis. Custom operations are listed separately. General farm labor accounts for extra field labor used during planting or harvest.

A management fee is charged based on approximately 5% of total production costs.

Capital and Overhead Costs

Interest on operating capital is charged from the time an input is applied until harvest and is calculated at a nominal rate of 5.75 percent. Interest on intermediate term capital, primarily equipment, is calculated using a rate of 5.5 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, cell phones, internet service and utilities. Irrigation power is not included as part of general farm utilities.

Sensitivity Analysis

Impacts of changes in crop price and yield assumptions on net returns, known as sensitivity or ranging analysis, can be found in Table 6.

University of Idaho costs and returns estimates for both crops and livestock can be found at:
<http://www.uidaho.edu/idaho-agbiz>

Authors

Ben Eborn is an Extension agricultural economist with the University of Idaho located in Montpelier.

Disclaimer

The practices and chemicals specified in the publication are not recommendations. Always read and follow the directions printed on the pesticide label. Due to constantly changing pesticide laws and labels, some pesticides may have been cancelled or had certain uses prohibited. The use of trade names for various products simplifies presentation of this material and should not be considered an endorsement, nor is any criticism implied of similar products not mentioned.

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Issued in furtherance of cooperative extension work in agriculture and home economics, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Barbara Petty, Interim-Director University of Idaho Extension, University of Idaho, Moscow, Idaho 83843.

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TABLE 1. COSTS AND RETURNS PER ACRE TO PRODUCE SOFT WHITE WINTER WHEAT

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Soft White Wheat	130.00	bu	5.85	760.50	
TOTAL GROSS RETURNS	130.00	bu		760.50	
OPERATING COSTS					
Seed:				22.00	
Wheat Seed: SWW	100.00	lb	0.22	22.00	
Fertilizer:				103.50	
Dry Nitrogen	140.00	lb	0.55	77.00	
Dry P2O5	50.00	lb	0.53	26.50	
Pesticide:				21.88	
Starane Ultra	0.50	pt	29.00	14.50	
Affinity BroadSpec	0.60	oz	11.05	6.63	
Non-Ionic Surf. +	1.00	acre	0.75	0.75	
Irrigation:				48.35	
Water Assessment	1.00	acre	45.60	45.60	
Irrig. Repairs - Concrete Ditch	1.00	acre	2.75	2.75	
Other:				12.25	
Crop Insurance	1.00	acre	12.25	12.25	
Custom and Consultants:				74.90	
Custom Fertilize	2.00	acre	7.75	15.50	
Custom Combine	1.00	acre	36.00	36.00	
Custom Haul	130.00	bu	0.18	23.40	
Labor				68.04	
Equipment Operator Labor	1.76	hrs	18.50	32.63	
Non-Machine Labor	0.30	hrs	10.65	3.20	
Irrigation Labor	2.45	hrs	13.15	32.22	
Machinery				32.80	
Fuel-Gas	1.28	gal	2.50	3.20	
Fuel-Diesel	6.64	gal	2.30	15.28	
Fuel-Road Diesel	0.10	gal	2.85	0.30	
Lube				2.82	
Machinery Repair				11.21	
Interest on Operating Capital @ -5.75%				9.03	
TOTAL OPERATING COSTS/ACRE				392.75	
TOTAL OPERATING COSTS/BU				3.02	
NET RETURNS ABOVE OPERATING COSTS				367.75	

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TABLE 1. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS					
General Overhead				10.00	
Land Rent				250.00	
Management Fee				35.00	
Property Taxes				0.00	
Property Insurance				1.27	
Investment Repairs				0.00	
TOTAL CASH OVERHEAD COSTS/ACRE				296.27	
TOTAL CASH OVERHEAD COSTS/BU				2.28	
TOTAL CASH COSTS/ACRE				689.02	
TOTAL CASH COSTS/BU				5.30	
NET RETURNS ABOVE CASH COSTS				71.48	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Equipment				40.75	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				40.75	
TOTAL NON-CASH OVERHEAD COSTS/BU				0.31	
TOTAL COST/ACRE				729.77	
TOTAL COST/BU				5.61	
NET RETURNS ABOVE TOTAL COST				30.23	

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TABLE 2. COSTS PER ACRE TO PRODUCE SOFT WHITE WINTER WHEAT

Operation	Operation	Cash and Labor Costs per Acre					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent		
Preharvest:								
Rip/Subsoil	0.17	3.68	4.14	5.01	0.00	0.00	12.83	
Harrow	0.16	3.47	3.90	2.58	0.00	0.00	9.95	
Plane	0.12	2.69	1.89	0.86	0.00	0.00	5.44	
Fertilize	0.00	0.00	0.00	0.00	119.00	0.00	119.00	
Seed Hauling	0.13	2.78	0.30	1.25	0.00	0.00	4.32	
Plant	0.22	8.04	3.40	2.20	22.00	0.00	35.65	
Corrugate	0.14	3.05	1.28	0.52	0.00	0.00	4.85	
Irrigate	0.00	32.22	0.00	0.00	0.00	0.00	32.22	
Crop Insurance	0.00	0.00	0.00	0.00	12.25	0.00	12.25	
Irrigation Water Assessment	0.00	0.00	0.00	0.00	45.60	0.00	45.60	
Irrigation Repairs	0.00	0.00	0.00	0.00	2.75	0.00	2.75	
Ground Spray	0.07	1.57	0.66	0.31	21.88	0.00	24.42	
General Pickup Use	0.48	10.55	3.20	1.30	0.00	0.00	15.05	
TOTAL PREHARVEST COSTS	1.47	68.04	18.78	14.03	223.48	0.00	324.33	
Harvest:								
Combine	0.00	0.00	0.00	0.00	36.00	0.00	36.00	
Crop Hauling	0.00	0.00	0.00	0.00	23.40	0.00	23.40	
TOTAL HARVEST COSTS	0.00	0.00	0.00	0.00	59.40	0.00	59.40	
Interest on Operating Capital at -5.75%							9.03	
TOTAL OPERATING COSTS/ACRE	1.47	68.04	18.78	14.03	282.88	0.00	392.75	

TABLE 2. CONTINUED

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TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE SOFT WHITE WINTER WHEAT

	OCT 15	NOV 15	DEC 15	JAN 16	FEB 16	MAR 16	APR 16	MAY 16	JUN 16	JUL 16	AUG 16	SEP 16	Total
Preharvest:													
Rip/Subsoil	12.83												12.83
Harrow	9.95												9.95
Plane	5.44												5.44
Fertilize	72.75						46.25						119.00
Seed Hauling	4.32												4.32
Plant	35.65												35.65
Corrugate	4.85												4.85
Irrigate	4.60						4.60	9.21	13.81				32.22
Crop Insurance							12.25						12.25
Irrigation Water Assessment							45.60						45.60
Irrigation Repairs							2.75						2.75
Ground Spray							24.42						24.42
General Pickup Use	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	15.05
TOTAL PREHARVEST COSTS	151.65	1.25	1.25	1.25	1.25	1.25	137.12	10.46	15.06	1.25	1.25	1.25	324.33
Harvest:													
Combine											36.00		36.00
Crop Hauling											23.40		23.40
TOTAL HARVEST COSTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.40	0.00	59.40
Interest on Operating Capital @-5.75%	1.11	1.11	1.11	1.10	1.09	1.09	1.08	0.42	0.37	0.30	0.30	0.01	9.10
TOTAL OPERATING COSTS/ACRE	152.76	2.37	2.36	2.35	2.35	2.34	138.21	10.88	15.44	1.56	60.95	1.26	392.83
CASH OVERHEAD													
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						250.00							250.00
Management Fee	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	35.00
Property Taxes													0.00
Property Insurance							1.27						1.27
Investment Repairs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CASH OVERHEAD COSTS	3.75	3.75	3.75	3.75	3.75	253.75	5.02	3.75	3.75	3.75	3.75	3.75	296.27
TOTAL CASH COSTS/ACRE	156.51	6.12	6.11	6.10	6.10	256.09	143.22	14.63	19.19	5.31	64.70	5.01	689.09

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TABLE 4. HOURLY EQUIPMENT COSTS

SOFT WHITE WINTER WHEAT			Total	Cash Overhead			Operating			
Yr	Description	Hours Used	Hours Used	Capital Recovery	Insur- ance	Taxes	Lube& Repairs	Fuel	Total Oper.	Total Costs/Hr.
15	4-wheeler	30	160	3.45	0.10	0.00	0.67	0.83	1.50	5.04
15	Disk-Ripper - 13'	50	150	29.69	0.79	0.00	17.47	0.00	17.47	47.94
15	Grain Drill - 12'	66	100	17.43	0.46	0.00	5.62	0.00	5.62	23.51
15	Landplane - 16'	36	125	9.13	0.26	0.00	2.60	0.00	2.60	11.99
15	Pickup 1 - 3/4 ton	56	750	8.57	0.16	0.00	3.28	8.32	11.60	20.33
15	Pickup 2 - 3/4 ton	56	750	8.57	0.16	0.00	3.28	8.32	11.60	20.33
15	Roller Harrow -12'	47	150	10.97	0.29	0.00	3.81	0.00	3.81	15.07
15	Sprayer - 30'	21	150	2.93	0.07	0.00	1.65	0.00	1.65	4.65
15	Tractor - 125hp	112	200	33.48	1.18	0.00	4.06	14.17	18.23	52.89
15	Tractor - 200hp	106	500	22.61	0.80	0.00	11.57	22.70	34.27	57.67
15	Tractor - 75hp	69	300	14.19	0.47	0.00	2.55	8.47	11.02	25.67
15	Corrugator/Bedder 6R, 30"	41	150	2.26	0.06	0.00	0.96	0.00	0.96	3.27
15	Truck 1-O&P 10-Wheeler	38	370	10.85	0.36	0.00	9.98	2.37	12.35	23.56

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TABLE 5. 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	
15	4-wheeler	5,500.00	10	1,500.00	613.17	17.50	0.00	630.67
15	Disk-Ripper - 13'	46,000.00	12	6,371.30	4,948.51	130.93	0.00	5,079.44
15	Grain Drill - 12'	18,000.00	12	2,493.12	1,936.37	51.23	0.00	1,987.61
15	Landplane - 16'	13,300.00	15	1,276.89	1,268.04	36.44	0.00	1,304.48
15	Pickup 1 - 3/4 ton	41,000.00	5	13,750.00	7,137.56	136.88	0.00	7,274.43
15	Pickup 2 - 3/4 ton	41,000.00	5	13,750.00	7,137.56	136.88	0.00	7,274.43
15	Roller Harrow -12'	17,000.00	12	2,354.61	1,828.80	48.39	0.00	1,877.18
15	Sprayer - 30'	4,100.00	10	725.05	487.62	12.06	0.00	499.69
15	Tractor - 125hp	93,000.00	20	11,932.97	7,439.95	262.33	0.00	7,702.28
15	Tractor - 200hp	157,000.00	20	20,144.91	12,559.91	442.86	0.00	13,002.77
15	Tractor - 75hp	52,000.00	15	10,123.48	4,728.76	155.31	0.00	4,884.07
15	Corrugator/Bedder 6R, 30"	3,500.00	12	484.77	376.52	9.96	0.00	386.48
15	Truck 1-O&P 10-Wheeler	55,000.00	20	5,000.00	4,458.97	150.00	0.00	4,608.97
TOTAL		546,400.00	-	89,907.10	54,921.74	1,590.77	0.00	56,512.51
90% of New Cost*		491,760.00	-	80,916.39	49,429.56	1,431.69	0.00	50,861.26

*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								
TOTAL INVESTMENT	0.00	-	0.00	0.00	0.00	0.00	0.00	0.00

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
General Overhead	300.00	acre	10.00	3,000.00
Land Rent	300.00	acre	250.00	75,000.00
Management Fee	300.00	acre	35.00	10,500.00

TABLE 6. RANGING ANALYSIS - SOFT WHITE WINTER WHEAT

	YIELD(BU)						
	91.00	104.00	117.00	130.00	143.00	156.00	169.00
OPERATING COSTS/ACRE:							
Preharvest	324.33	324.33	324.33	324.33	324.33	324.33	324.33
Harvest	52.38	54.72	57.06	59.40	61.74	64.08	66.42
Interest on Operating Capital @ -5.75%	8.66	8.78	8.90	9.03	9.15	9.27	9.40
TOTAL OPERATING COSTS/ACRE	385.36	387.83	390.29	392.75	395.22	397.68	400.14
TOTAL OPERATING COSTS/BU	4.23	3.73	3.34	3.02	2.76	2.55	2.37
CASH OVERHEAD COSTS/ACRE	296.27	296.27	296.27	296.27	296.27	296.27	296.27
TOTAL CASH COSTS/ACRE	681.63	684.10	686.56	689.02	691.49	693.95	696.41
TOTAL CASH COSTS/BU	7.49	6.58	5.87	5.30	4.84	4.45	4.12
NON-CASH OVERHEAD COSTS/ACRE	40.75	40.75	40.75	40.75	40.75	40.75	40.75
TOTAL COSTS/ACRE	722.38	724.84	727.31	729.77	732.23	734.70	737.16
TOTAL COSTS/BU	7.94	6.97	6.22	5.61	5.12	4.71	4.36

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TABLE 6. RANGING ANALYSIS CONTINUED

Net Return Per Acre Above Total Costs For Soft White Winter Wheat

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