



## Alfalfa Hay Establishment Following Winter Wheat

C. Wilson Gray, Ron Thaemert, William F. Hazen, and Robert L. Smathers



### Background and Assumptions

Economic costs are used in the University of Idaho costs and returns estimates. All resources are valued based on market price or opportunity cost. Input prices are based on the U of I's annual survey of agricultural supply companies. Except for contract crops, the selling price is a 10-year average. The costs and returns estimate shown here is typical for establishing irrigated alfalfa hay in southcentral Idaho. Production practices most closely represent those in Gooding, Jerome and Twin Falls counties. Although production practices may be similar for individual farms, each 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 quality of management are all crucial factors that influence costs.

#### The Model Farm

This costs and returns estimate models a 1,500-acre farm with 375 acres in alfalfa hay, 375 acres in potatoes, sugarbeets, or dry beans, and 750 acres in grain or dry pea seed. The alfalfa stand is kept in production 4 years after fall establishment. Approximately 90 acres of new alfalfa crop are established each year. The farm uses a center pivot irrigation system and surface water delivered to the farm from an irrigation district. The district charges a flat fee per acre for water.

#### Tillage, Fertilization, Pest Control, and Irrigation

After the harvest of grain or dry pea seed in the fall, the ground is plowed, disked, harrowed, then planted to alfalfa hay. Fertilizer and manure are applied the same month and incorporated during the plow and disk operations. Alfalfa hay receives 6.5 inches of water during the fall of establishment from approximately 13 irrigations (pivot rotations): 1.5 inches in August, 3 inches in September and 2 inches in October. Each irrigation (pivot

rotation) generally applies .5 inch of water.

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

Table 3 lists the tractors, trucks, and other equipment used for alfalfa, along with their operating and ownership costs. All machinery except trucks is valued at 75 percent of new prices. This adjustment reduces the machinery repair operating cost, and the depreciation and interest ownership costs on equipment by 25 percent. Each truck's price includes the cost of a used truck and a new self-unloading bed.

The land charge is cash rent and covers the ownership costs (depreciation, interest, and insurance) on the irrigation system. A labor charge is made for all labor pertaining to field operations and includes a base rate plus overhead expenses. Custom charges account for those field operations that are contracted out. A management charge, 5 percent of gross returns, is included as an ownership cost.

Labor to operate machinery is valued at \$13.15 per hour, while irrigation and non-machine labor are valued at \$8.75 and \$7.70, respectively. The non-machine rate accounts for extra planting labor. 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 non-machine labor, 25 percent for irrigation labor, and 30 percent for machinery labor.

Interest on operating capital is charged from the time an input is applied until the month of harvest and calculated at a nominal rate of 7.5 percent. Interest on intermediate term capital is calculated using a rate of 7.75 percent. A general overhead charge of 2.5 percent of operating expenses is included to cover unallocated costs such as office expenses, legal and accounting fees, and utilities.

**Table 1. Costs And Returns Per Acre to Establish Alfalfa Hay  
SCI Establishment after Winter Wheat**

**EBB3-AE2-05**

	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>Gross Returns</b>					
Alfalfa Hay	0.00	ton	83.00	0.00	_____
Total Gross Returns For Alfalfa Hay				0.00	_____
<b>Operating Costs</b>					
Irrigation:					
Irrigation Power	6.50	acin	1.39	9.04	_____
Labor (irrigation)	0.33	hr	8.75	2.89	_____
Irrigation Repairs	6.50	acin	0.55	3.58	_____
Custom:					
Custom Fertilize	1.00	acre	5.70	5.70	_____
Fertilizer:					
Dry P2O5	50.00	lb	0.23	11.50	_____
Haul/Apply Manure	11.00	ton	1.15	12.65	_____
Seed:					
Alfalfa Seed	18.00	lb	2.75	49.50	_____
Labor (machine)	1.48	hrs	13.15	19.44	_____
Labor (non-machine)	0.29	hrs	7.70	2.23	_____
Fuel - Gas	1.50	gal	2.26	3.39	_____
Fuel - Diesel	7.75	gal	2.07	16.04	_____
Lube				2.91	_____
Machinery Repair				6.74	_____
Interest on Operating Capital @ 7.50%				3.21	_____
Total Operating Costs per Acre				148.80	_____
<b>Net Returns Above Operating Costs</b>				-148.80	_____
<b>Cash Ownership Costs</b>					
General Overhead				4.00	_____
Property Taxes (machinery)				0.00	_____
Property Insurance				0.71	_____
Total Cash Ownership Costs per Acre				4.71	_____
<b>Non-Cash Ownership Costs (depreciation and interest)</b>					
Equipment				27.09	_____
Total Non-Cash Ownership Costs per Acre				27.09	_____
<b>Total Costs per Acre</b>				180.60	_____
<b>Returns to Risk</b>				-180.60	_____

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

**EBB3-AE2-05**

	Aug 04	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05	Apr 05	May 05	Jun 05	Jul 05	Total
Preharvest:													
Irrigate	2.78	5.48	3.65										11.92
Fertilize		17.20											17.20
Manure Application		12.65											12.65
Plow		14.28											14.28
Harrow		9.81											9.81
Seed Hauling		2.91											2.91
Plant		59.81											59.81
Repairs		3.58											3.58
General Pickup Use	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	13.43
<b>Total Preharvest Costs</b>	<b>3.90</b>	<b>126.85</b>	<b>4.77</b>	<b>1.12</b>	<b>1.12</b>	<b>1.12</b>	<b>1.12</b>	<b>1.12</b>	<b>1.12</b>	<b>1.12</b>	<b>1.12</b>	<b>1.12</b>	<b>145.59</b>
Interest on Operating Capital	0.02	0.82	0.85	0.85	0.86	-0.01	-0.01	-0.02	-0.03	-0.03	-0.04	-0.05	3.21
Operating Costs per Acre	3.93	127.66	5.62	1.97	1.98	1.11	1.11	1.10	1.09	1.08	1.08	1.07	148.80
Cash Ownership													
General Overhead	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	4.00
Property Insurance									0.71				0.71
<b>Cash Ownership Costs</b>	<b>0.33</b>	<b>0.33</b>	<b>0.33</b>	<b>0.33</b>	<b>0.33</b>	<b>0.33</b>	<b>0.33</b>	<b>0.33</b>	<b>1.05</b>	<b>0.33</b>	<b>0.33</b>	<b>0.33</b>	<b>4.71</b>
<b>Total Cash Costs per Acre</b>	<b>4.26</b>	<b>128.00</b>	<b>5.95</b>	<b>2.31</b>	<b>2.31</b>	<b>1.45</b>	<b>1.44</b>	<b>1.43</b>	<b>2.14</b>	<b>1.42</b>	<b>1.41</b>	<b>1.40</b>	<b>153.52</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.		
Grain Drill - 16'	17000	12	2355	125	12.63	0.29	0.00	5.39	0.00	5.39	18.30	
Moldboard Plow 5b	9700	15	931	150	5.39	0.13	0.00	3.40	0.00	3.40	8.92	
Pickup - Used 3/4t	11000	8	3839	200	5.74	0.14	0.00	0.91	5.95	6.86	12.74	
Pickup 1 - 3/4 ton	37000	8	12913	300	12.89	0.31	0.00	3.59	10.40	13.99	27.19	
Pickup 2 - 3/4 ton	37000	8	12913	300	12.89	0.31	0.00	3.59	10.40	13.99	27.19	
Roller-harrow -16'	20000	15	1920	165	10.14	0.25	0.00	4.36	0.00	4.36	14.75	
Spike Harrow - 20'	1000	15	96	85	0.99	0.02	0.00	0.12	0.00	0.12	1.13	
Tractor - 160hp	113000	15	21999	475	19.21	0.53	0.00	3.46	22.10	25.56	45.30	
Tractor - 200hp	134000	15	26087	350	30.96	0.86	0.00	3.02	27.63	30.65	62.47	
Tractor - 95hp	68000	15	13238	400	13.75	0.38	0.00	1.76	11.11	12.87	27.00	
Truck 1 - 5 ton	55000	15	10708	400	11.13	0.31	0.00	7.35	11.90	19.25	30.68	

The practices and chemicals specified here are based on survey information representative of typical operations. They are not recommendations. Because of constantly changing labels, laws, and regulations, the University of Idaho can assume no liability for the consequences of use of chemicals specified here. In all cases, read and follow the directions and precautionary statements on the specific pesticide product label. To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

**The Authors** - C. Wilson Gray is Extension agricultural economist in the University of Idaho District 3 Extension Office, Twin Falls. Ron Thaemert is Extension educator in Blaine County at Hailey. William F. Hazen is Extension educator in Gooding County at Gooding. Robert L. Smathers is a farm and ranch economics specialist in the UI Department of Agricultural Economics and Rural Sociology, Moscow.



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