

## Feed Barley

Paul E. Patterson, Stanley R. Gortsema 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 growing irrigated spring feed barley in southeastern Idaho. Production practices are based on surveys conducted in Bingham, Bonneville, Jefferson, Madison and Power 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 1,000 acres in grain and 500 acres in potatoes. The typical crop rotation is one year of potatoes followed by two years of grain. Dry peas, alfalfa, corn or an oil seed crop may substitute for grain. 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.

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

After potato harvest, the ground is disked and ripped. The barley ground is roller harrowed in April and planted. Barley is harvested in August by a custom operator and hauled to storage. All fertilizer is custom applied in April before tillage. A tank-mix herbicide to control broadleaf weeds and wild oats is applied in June by custom ground applicator. No cost for insect control is included because treatment is infrequent and unpredictable. Feed barley re-

ceives 15 inches of water during the growing season using approximately 30 irrigations (pivot rotations), 3 inches in May, 6 inches in June, and 6 inches in July.

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

Table 3 lists the tractors, trucks, and other equipment used for feed barley, along with their operating and ownership costs. All machinery except trucks is valued at 75 percent of replacement cost new prices shown in Table 3. 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 price of a used truck and the cost of 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 machine labor charge is made for all field operations except those performed on a custom basis. Custom operations are listed separately. The non-machine labor accounts for extra planting labor. Labor to operate machinery is valued at \$13.15 per hour, while irrigation and other non-machine are valued at \$8.75 and \$7.70, 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 non-machine labor, 25 percent for irrigation labor, and 30 percent for machinery labor. A management fee, 5 percent of gross returns, is included as an operating cost. 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. An 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 Produce Barley  
SEI Spring Feed**

**EBB4-FB-05**

	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>Gross Returns</b>					
Barley	61.00	cwt	4.55	277.55	_____
Total Gross Returns For Barley				277.55	=====
<b>Operating Costs</b>					
Custom:					
Custom Fertilize	1.00	acre	4.95	4.95	_____
Custom Ground Spray	1.00	acre	5.15	5.15	_____
Custom Air Spray-3g	1.00	acre	5.75	5.75	_____
Custom Combine	1.00	acre	26.00	26.00	_____
Custom Haul	61.00	cwt	0.25	15.25	_____
Fertilizer:					
Dry Nitrogen	110.00	lb	0.39	42.90	_____
Dry P2O5	40.00	lb	0.24	9.60	_____
Seed:					
Feed Barley Seed	100.00	lb	0.13	13.00	_____
Other:					
Crop Insurance	1.00	acre	10.75	10.75	_____
Irrigation:					
Water Assessment	1.00	acre	12.40	12.40	_____
Irrigation Repairs - cp	15.00	acin	0.55	8.25	_____
Irrigation Power - cp	15.00	acin	1.39	20.85	_____
Labor (irrigation)	0.75	hr	8.75	6.56	_____
Pesticide:					
Puma	0.33	qt	47.85	15.79	_____
Bronate	0.50	qt	9.60	4.80	_____
Labor (machine)	1.31	hrs	13.15	17.22	_____
Labor (non-machine)	0.29	hrs	7.70	2.23	_____
Fuel - Gas	0.19	gal	2.29	0.44	_____
Fuel - Diesel	7.43	gal	2.08	15.45	_____
Lube				2.38	_____
Machinery Repair				4.84	_____
Interest on Operating Capital @ 7.50%				6.56	_____
Total Operating Costs per Acre				251.14	=====
Net Returns Above Operating Costs				26.41	_____
<b>Cash Ownership Costs</b>					
General Overhead				6.00	_____
Land Rent				90.00	_____
Management Fee				14.00	_____
Property Taxes (machinery)				0.00	_____
Property Insurance				0.59	_____
Total Cash Ownership Costs per Acre				110.59	=====
<b>Non-Cash Ownership Costs (depreciation and interest)</b>					
Equipment				24.62	_____
Total Non-Cash Ownership Costs per Acre				24.62	=====
Total Costs per Acre				386.34	=====
Returns to Risk				-108.79	_____

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

**EBB4-FB-05**

	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05	Apr 05	May 05	Jun 05	Jul 05	Aug 05	Sep 05	Total
<b>Preharvest:</b>													
Disk	5.12												5.12
Rip	9.59												9.59
Fertilize							57.45						57.45
Harrow							3.38						3.38
Seed Hauling							2.05						2.05
Plant							19.70						19.70
Crop Insurance							10.75						10.75
Assessments							12.40						12.40
Repairs							8.25						8.25
Ground Spray								20.94					20.94
Irrigate								5.48	10.96	10.96			27.41
Aerial Application									10.55				10.55
General Pickup Use	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	15.74
<b>Total Preharvest Costs</b>	<b>16.02</b>	<b>1.31</b>	<b>1.31</b>	<b>1.31</b>	<b>1.31</b>	<b>1.31</b>	<b>115.29</b>	<b>27.73</b>	<b>22.83</b>	<b>12.28</b>	<b>1.31</b>	<b>1.31</b>	<b>203.32</b>
<b>Harvest:</b>													
Combine											26.00		26.00
Crop Hauling											15.25		15.25
<b>Total Harvest Costs</b>											<b>41.25</b>		<b>41.25</b>
Interest on Operating Capital	0.10	0.11	0.12	0.12	0.13	0.14	0.86	1.03	1.18	1.25	1.52	-0.01	6.56
<b>Operating Costs per Acre</b>	<b>16.12</b>	<b>1.42</b>	<b>1.43</b>	<b>1.44</b>	<b>1.44</b>	<b>1.45</b>	<b>116.15</b>	<b>28.77</b>	<b>24.00</b>	<b>13.53</b>	<b>44.08</b>	<b>1.30</b>	<b>251.14</b>
<b>Cash Ownership</b>													
General Overhead	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	6.00
Land Rent						90.00							90.00
Management Fee	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17	14.00
Property Insurance							0.59						0.59
<b>Cash Ownership Costs</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>91.67</b>	<b>2.25</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>110.59</b>
<b>Total Cash Costs per Acre</b>	<b>17.78</b>	<b>3.09</b>	<b>3.09</b>	<b>3.10</b>	<b>3.11</b>	<b>93.12</b>	<b>118.40</b>	<b>30.44</b>	<b>25.67</b>	<b>15.20</b>	<b>45.75</b>	<b>2.97</b>	<b>361.72</b>

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

Description	Purchase Price	Years to Trade	Salvage Value	Hours Used	<-Non-Cash-> Ownership		<-----Cash-----> Ownership		<-----Operating----->			Total Costs/Hr.
					Cap. Rec.	Insur.	Taxes	Repairs	Fuel & Lube	Total Oper.		
4-wheeler	6500	10	1920	225	2.74	0.07	0.00	0.07	3.45	3.52	6.33	
Grain Drill - 24'	22000	10	3891	85	26.08	0.57	0.00	3.84	0.00	3.84	30.49	
Pickup - used 3/4t	11000	8	2500	200	6.22	0.13	0.00	0.91	5.98	6.89	13.23	
Pickup 1 - 3/4 ton	37000	8	5000	300	14.78	0.26	0.00	3.59	9.57	13.16	28.21	
Pickup 2 - 3/4 ton	37000	8	5000	300	14.78	0.26	0.00	3.59	9.57	13.16	28.21	
Ripper - 15'	9900	12	1371	245	3.74	0.09	0.00	3.17	0.00	3.17	7.00	
Roller-harrow -24'	42000	15	4032	65	53.84	1.32	0.00	4.77	0.00	4.77	59.94	
Tandem Disk - 18'	22000	12	3047	111	18.37	0.42	0.00	3.29	0.00	3.29	22.08	
Tractor - 200hp	134000	15	26087	445	24.31	0.67	0.00	3.89	27.76	31.65	56.63	
Tractor - 250hp	134000	15	26087	500	21.67	0.60	0.00	1.85	34.71	36.56	58.83	
Truck 1 - 5 ton	55000	15	10708	400	11.12	0.31	0.00	7.35	1.59	8.94	20.37	

Net Returns Per Acre Above Operating Costs For Barley  
Yield (cwt/acre)

	42.70	48.80	54.90	61.00	67.10	73.20	79.30
3.19	-110	-92	-74	-57	-39	-21	-3
3.64	-91	-70	-50	-29	-8	12	33
4.10	-71	-48	-25	-1	22	46	69
4.55	-52	-26	0	26	53	79	105
5.01	-33	-4	25	54	83	113	142
5.46	-13	18	50	82	114	145	177
5.92	6	41	75	110	145	179	214

Net Returns Per Acre Above Cash Costs For Barley  
Yield (cwt/acre)

	42.70	48.80	54.90	61.00	67.10	73.20	79.30
3.19	-221	-203	-185	-167	-149	-131	-113
3.64	-202	-181	-160	-140	-119	-98	-78
4.10	-182	-159	-135	-112	-88	-65	-41
4.55	-163	-137	-110	-84	-58	-32	-6
5.01	-143	-114	-85	-56	-27	2	31
5.46	-124	-92	-60	-29	3	35	67
5.92	-104	-70	-35	-1	34	69	103

Net Returns Per Acre Above Total Costs For Barley  
Yield (cwt/acre)

	42.70	48.80	54.90	61.00	67.10	73.20	79.30
3.19	-246	-228	-210	-192	-174	-156	-138
3.64	-226	-206	-185	-164	-144	-123	-102
4.10	-207	-183	-160	-136	-113	-89	-66
4.55	-187	-161	-135	-109	-83	-56	-30
5.01	-168	-139	-110	-81	-52	-23	6
5.46	-149	-117	-85	-53	-22	10	42
5.92	-129	-94	-60	-25	9	44	79

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** - Paul E. Patterson is an Extension agricultural economist in the University of Idaho District 4 Extension Office, Idaho Falls. Stanley R. Gortsema is an Extension agricultural agent in Power County at American Falls. Robert L. Smathers is an Extension associate in the UI Department of Agricultural Economics and Rural Sociology, Moscow.



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, Charlotte Eberlein, Director of Cooperative Extension System, University of Idaho, Moscow, Idaho 83843. The University of Idaho provides equal opportunity in education and employment on the basis of race, color, religion, national origin, gender, age, disability, or status as a Vietnam-era veteran, as required by state and federal laws.