



Field Corn

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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 field corn in southcentral Idaho. Production practices most closely represent those in 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 150 acres in field corn, 375 acres in potatoes or sugarbeets, 225 acres in dry beans, and 750 acres in grain or dry pea seed. The farm uses center pivot irrigation and surface water delivered from an irrigation district. The district charges a flat fee per acre for water.

Tillage, Fertilization, Pest Control, and Irrigation

Manure is applied to the corn acreage and plowed under in the fall. The grower and dairy share in the manure handling cost. The ground is harrowed and planted to corn in May, then cultivated once for weed control. Field corn is custom harvested and hauled straight to market in October for a flat fee per hundredweight of production. Dry fertilizer is applied in the spring before planting by a custom applicator. Nitrogen is also applied post-plant through the sprinkler system. The farm operator performs weed control using tillage, cultivation, and herbicides. A pre-emergence herbicide is applied and incorporated in May and a post-emergence herbicide is applied in June. No insecticides are used. Field corn receives about 31 inches of water during the growing season using approxi-

mately 62 irrigations (pivot rotations): 1 inch in May, 5 inches in June, 9 inches in July, 9 inches in August, and 7 inches in September. Each irrigation generally applies .5 inch of water.

Resources: Machinery, Land, Labor, and Capital

Table 3 lists the tractors, trucks, and other equipment used for field corn, 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 Produce Corn
SCI Field Corn**

EBB3-FC-05

	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Gross Returns					
Corn	150.00	bu	2.85	427.50	_____
Total Gross Returns For Corn				427.50	_____
Operating Costs					
Custom:					
Haul and Spread Manure	11.00	ton	1.15	12.65	_____
Custom Fertilize	1.00	acre	5.70	5.70	_____
Custom Combine	1.00	acre	28.00	28.00	_____
Custom Hauling	150.00	bu	0.15	22.50	_____
Other:					
Crop Insurance	1.00	acre	15.00	15.00	_____
Irrigation:					
Water Assessment	1.00	acre	30.20	30.20	_____
Irrigation Repairs	31.00	acin	0.55	17.05	_____
Irrigation Power	31.00	acin	1.39	43.09	_____
Labor (irrigation)	1.55	hr	8.75	13.56	_____
Fertilizer:					
Dry Nitrogen	60.00	lb	0.39	23.40	_____
Dry P2O5	35.00	lb	0.23	8.05	_____
Liquid Nitrogen	24.00	lb	0.45	10.80	_____
Pesticide:					
Atrazine 4L	2.00	qt	3.15	6.30	_____
Furadan 4F	1.00	qt	22.45	22.45	_____
2,4-D Amine	0.50	qt	3.65	1.83	_____
Seed:					
Field Corn Seed	25.00	lb	1.60	40.00	_____
Labor (machine)	2.23	hrs	13.15	29.32	_____
Labor (non-machine)	0.29	hrs	7.70	2.23	_____
Fuel - Gas	1.69	gal	2.26	3.82	_____
Fuel - Diesel	10.17	gal	2.07	21.05	_____
Lube				3.73	_____
Machinery Repair				7.98	_____
Interest on Operating Capital @ 7.50%				13.22	_____
Total Operating Costs per Acre				381.94	_____
Net Returns Above Operating Costs				45.56	_____
Cash Ownership Costs					
General Overhead				10.00	_____
Land Rent				110.00	_____
Management Fee				21.50	_____
Property Taxes (machinery)				0.00	_____
Property Insurance				1.23	_____
Total Cash Ownership Costs per Acre				142.73	_____
Non-Cash Ownership Costs (depreciation and interest)					
Equipment				47.73	_____
Total Non-Cash Ownership Costs per Acre				47.73	_____
Total Costs per Acre				572.41	_____
Returns to Risk				-144.91	_____

Table 2. Monthly Summary of Cash Expenses per Acre

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	Sep 04	Oct 04	Nov 04	Dec 04	Jan 05	Feb 05	Mar 05	Apr 05	May 05	Jun 05	Jul 05	Aug 05	Sep 05	Oct 05	Total
Preharvest:															
Haul and Spread Manure	12.65														12.65
Plow	14.28														14.28
Harrow								6.90	6.90						13.80
Crop Insurance								15.00							15.00
Assessments								30.20							30.20
Repairs								17.05							17.05
Fertilize									37.15						37.15
Ground Spray									8.95	4.48					13.43
Irrigate									1.83	12.74	20.05	20.05	12.79		67.45
Seed Hauling									2.91						2.91
Plant									71.33						71.33
Cultivate									6.92						6.92
General Pickup Use	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34			16.05
Total Preharvest Costs	28.27	1.34	1.34	1.34	1.34	1.34	1.34	70.49	137.33	18.55	21.38	21.38	12.79		318.22
Harvest:															
Combine														28.00	28.00
Crop Hauling														22.50	22.50
Total Harvest Costs														50.50	50.50
Interest on Operating Capital	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.67	1.53	1.64	1.78	1.91	1.99	2.30	13.22
Operating Costs per Acre	28.45	1.52	1.53	1.54	1.55	1.56	1.56	71.15	138.85	20.19	23.16	23.29	14.78	52.80	381.94
Cash Ownership															
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							110.00								110.00
Management Fee	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79			21.50
Property Insurance								1.23							1.23
Cash Ownership Costs	2.63	2.63	2.63	2.63	2.63	2.63	112.62	3.85	2.63	2.63	2.63	2.63			142.73
Total Cash Costs per Acre	31.07	4.15	4.16	4.16	4.17	4.18	114.19	75.01	141.48	22.82	25.78	25.92	14.78	52.80	524.67

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	350	1.77	0.05	0.00	0.11	3.40	3.51	5.32	
Cultivator - 6R CN	6600	15	634	35	15.61	0.38	0.00	0.31	0.00	0.31	16.30	
Moldboard Plow 5b	9700	15	931	150	5.42	0.13	0.00	3.40	0.00	3.40	8.95	
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	12.88	0.31	0.00	3.59	10.40	13.99	27.18	
Pickup 2 - 3/4 ton	37000	8	12913	300	12.88	0.31	0.00	3.59	10.40	13.99	27.18	
Planter - 6R CN	18000	12	2493	35	47.94	1.10	0.00	1.40	0.00	1.40	50.44	
Roller-harrow -16'	20000	15	1920	165	10.14	0.25	0.00	4.36	0.00	4.36	14.74	
Sprayer - 30'	3800	15	365	115	2.77	0.07	0.00	1.28	0.00	1.28	4.12	
Tractor - 160hp	113000	15	21999	475	19.22	0.53	0.00	3.46	22.10	25.56	45.31	
Tractor - 200hp	134000	15	26087	350	30.98	0.86	0.00	3.02	27.63	30.65	62.49	
Tractor - 95hp	68000	15	13238	400	13.74	0.38	0.00	1.76	11.11	12.87	26.99	
Truck 1 - 5 ton	55000	15	10708	401	11.10	0.31	0.00	7.35	11.90	19.25	30.66	

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

	105.00	120.00	135.00	150.00	165.00	180.00	195.00
1.99	-173	-143	-113	-83	-54	-24	6
2.28	-143	-108	-74	-40	-6	28	63
2.56	-113	-75	-36	2	40	79	117
2.85	-83	-40	3	46	88	131	174
3.13	-53	-6	41	88	135	181	228
3.42	-23	28	80	131	182	234	285
3.70	7	62	118	173	229	284	340

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

	105.00	120.00	135.00	150.00	165.00	180.00	195.00
1.99	-316	-286	-256	-226	-196	-166	-137
2.28	-285	-251	-217	-183	-148	-114	-80
2.56	-256	-217	-179	-141	-102	-64	-25
2.85	-225	-183	-140	-97	-54	-12	31
3.13	-196	-149	-102	-55	-8	39	86
3.42	-166	-114	-63	-12	40	91	142
3.70	-136	-81	-25	30	86	141	197

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

	105.00	120.00	135.00	150.00	165.00	180.00	195.00
1.99	-363	-334	-304	-274	-244	-214	-184
2.28	-333	-299	-265	-230	-196	-162	-128
2.56	-304	-265	-227	-188	-150	-112	-73
2.85	-273	-230	-188	-145	-102	-59	-17
3.13	-244	-197	-150	-103	-56	-9	38
3.42	-213	-162	-111	-59	-8	43	94
3.70	-184	-128	-73	-17	38	94	149

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.

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