

## Sugarbeets

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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 irrigated sugarbeets in southeastern Idaho. Production practices are based on producer surveys conducted in Bingham 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 375 acres in sugarbeets, 375 acres in potatoes, and 750 acres of grain grown on a four-year rotation. 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 the stubble from the preceding grain crop is chopped, the sugarbeet ground is irrigated, disked twice and ripped in the fall. In the spring, the ground is roller harrowed twice before planting. Beets are planted in April to a seven-inch stand spacing using a 12-row planter and 22 inch row spacing. A seeding rate of .50 units per acre includes a 10 percent reseeding rate. Beets are cultivated three times and hand weeded once during the growing season. The beets are mechanically topped in mid-October and then harvested using a 6-row lifter/loader and hauled to a local beet dump in the farmer's five 10-wheeler trucks. All fertilizer is custom applied preplant in a split fall-spring application. Weed control uses a combination of tillage, cultivation and herbicides. Four applications of pre-emergence herbicides are made, starting just after planting. The second, third and fourth applications are made during May at approximately one-week intervals using a band sprayer.

An insecticide is applied during the first cultivation in May. Sugarbeets receive 28 inches of water during the growing season from approximately 65 irrigations (pivot revolutions), .5 inches in April, 2.0 inches in May, 4.5 inches in June, 7 inches in July, 9 inches in August, and 5 inches in September. An additional 2.5 inches of water applied to the grain stubble is also credited to the sugarbeets, for a total of 30.5 inches.

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

Table 3 lists the tractors, trucks, and other equipment used for sugarbeets, 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 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 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 and harvest labor. 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. 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 ownership 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. An opportunity cost charge is also included as an ownership cost to account for the \$400 per acre co-op stock investment required to grow sugarbeets.

**Table 1. Costs And Returns Per Acre to Produce Sugarbeets  
SEI Sugarbeets**

**EBB4-Su-05**

	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>Gross Returns</b>					
Sugarbeets	27.00	ton	40.00	1080.00	_____
Total Gross Returns For Sugarbeets				1080.00	_____
<b>Operating Costs</b>					
<b>Irrigation:</b>					
Irrigation Power - cp	30.50	acin	1.39	42.40	_____
Labor (irrigation)	1.83	hr	8.75	16.01	_____
Water Assessment	1.00	acre	21.00	21.00	_____
Irrigation Repairs - cp	30.50	acin	0.55	16.77	_____
<b>Custom:</b>					
Custom Fertilize	2.00	acre	4.95	9.90	_____
Hand Hoeing Beets	1.00	acre	50.00	50.00	_____
Consultant	1.00	acre	14.50	14.50	_____
<b>Fertilizer:</b>					
Dry Nitrogen	150.00	lb	0.39	58.50	_____
Dry P2O5	100.00	lb	0.24	24.00	_____
Micronutrients	1.00	acre	6.00	6.00	_____
<b>Other:</b>					
Crop Insurance	1.00	acre	36.00	36.00	_____
Hauling Charge	27.00	ton	1.45	39.15	_____
<b>Seed:</b>					
Beet Seed Pellet	0.50	unit	90.50	45.25	_____
<b>Pesticide:</b>					
Nortron 4SC	0.50	qt	28.80	14.40	_____
Pyramin DF	0.50	lb	15.55	7.78	_____
Betamix	30.00	oz	0.75	22.50	_____
Stinger	3.00	oz	4.00	12.00	_____
Counter 15G	8.00	lb	2.10	16.80	_____
Labor (machine)	6.19	hrs	13.15	81.44	_____
Labor (non-machine)	0.58	hrs	7.70	4.47	_____
Fuel - Gas	0.94	gal	2.29	2.15	_____
Fuel - Diesel	32.60	gal	2.08	67.81	_____
Lube				10.49	_____
Machinery Repair				36.10	_____
Interest on Operating Capital @ 7.50%				25.73	_____
Total Operating Costs per Acre				681.15	_____
<b>Net Returns Above Operating Costs</b>				398.85	_____
<b>Cash Ownership Costs</b>					
General Overhead				17.00	_____
Land Rent				225.00	_____
Management Fee				54.00	_____
Co-op Stock				42.00	_____
Property Taxes (machinery)				0.00	_____
Property Insurance				2.99	_____
Total Cash Ownership Costs per Acre				340.99	_____
<b>Non-Cash Ownership Costs (depreciation and interest)</b>					
Equipment				118.75	_____
Total Non-Cash Ownership Costs per Acre				118.75	_____
<b>Total Costs per Acre</b>				1140.90	_____
<b>Returns to Risk</b>				-60.90	_____

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

**EBB4-Su-05**

	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
<b>Preharvest:</b>															
Chop Straw	8.00														8.00
Disk	12.65														12.65
Irrigate	4.79							0.96	3.83	8.62	13.41	17.23	9.57		58.41
Rip/subsoil	9.71														9.71
Fertilize	48.45						49.95								98.40
Harrow							7.89								7.89
Crop Insurance								36.00							36.00
Assessments								21.00							21.00
Repairs								16.77							16.77
Plant								59.18							59.18
Ground Spray								24.62	41.83						66.44
Cultivate									26.32	9.07					35.39
Hand Weed										50.00					50.00
Consultant										14.50					14.50
Cultivate/basin											6.95				6.95
General Pickup Use	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50			29.99
<b>Total Preharvest Costs</b>	<b>86.10</b>	<b>2.50</b>	<b>2.50</b>	<b>2.50</b>	<b>2.50</b>	<b>2.50</b>	<b>60.34</b>	<b>161.03</b>	<b>74.47</b>	<b>84.69</b>	<b>22.85</b>	<b>19.73</b>	<b>9.57</b>		<b>531.29</b>
<b>Harvest:</b>															
Top Beets														10.50	10.50
Dig														27.91	27.91
Hauling Assessment														39.15	39.15
Crop Hauling														46.58	46.58
<b>Total Harvest Costs</b>														<b>124.14</b>	<b>124.14</b>
Interest on Operating Capital	0.54	0.55	0.57	0.58	0.60	0.62	0.99	2.00	2.47	2.99	3.14	3.26	3.32	4.10	25.73
Operating Costs per Acre	86.63	3.05	3.07	3.08	3.10	3.12	61.34	163.03	76.94	87.68	25.99	22.99	12.90	128.23	681.15
<b>Cash Ownership</b>															
General Overhead	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42			17.00
Land Rent							225.00								225.00
Management Fee	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50			54.00
Co-op Stock														42.00	42.00
Property Insurance								2.99							2.99
<b>Cash Ownership Costs</b>	<b>5.92</b>	<b>5.92</b>	<b>5.92</b>	<b>5.92</b>	<b>5.92</b>	<b>5.92</b>	<b>230.92</b>	<b>8.91</b>	<b>5.92</b>	<b>5.92</b>	<b>5.92</b>	<b>5.92</b>		<b>42.00</b>	<b>340.99</b>
<b>Total Cash Costs per Acre</b>	<b>92.55</b>	<b>8.97</b>	<b>8.98</b>	<b>9.00</b>	<b>9.02</b>	<b>9.03</b>	<b>292.25</b>	<b>171.94</b>	<b>82.86</b>	<b>93.60</b>	<b>31.91</b>	<b>28.91</b>	<b>12.90</b>	<b>170.23</b>	<b>1022.15</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	435	1.42	0.04	0.00	0.13	3.45	3.58	5.03	
Band Sprayer	4000	15	384	175	1.92	0.05	0.00	1.52	0.00	1.52	3.49	
Basin Tillage Tool	25000	15	2400	100	20.98	0.52	0.00	4.13	0.00	4.13	25.62	
Beet Lifter - 6R	81000	15	7777	135	50.20	1.23	0.00	13.87	0.00	13.87	65.30	
Beet Topper - 6R	26500	15	2544	75	29.73	0.73	0.00	5.29	0.00	5.29	35.75	
Cultivator -12R SU	15000	15	1440	145	8.65	0.21	0.00	3.87	0.00	3.87	12.73	
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	28.20	
Pickup 2 - 3/4 ton	37000	8	5000	300	14.78	0.26	0.00	3.59	9.57	13.16	28.20	
Planter - 12R SU	37500	12	5194	90	38.78	0.89	0.00	8.27	0.00	8.27	47.94	
Ripper - 15'	9900	12	1371	245	3.75	0.09	0.00	3.17	0.00	3.17	7.01	
Roller-harrow -24'	42000	15	4032	135	26.05	0.64	0.00	7.96	0.00	7.96	34.65	
Sprayer - 50'	7500	15	720	95	6.63	0.16	0.00	2.38	0.00	2.38	9.17	
Straw Chopper	17000	12	2355	130	12.12	0.28	0.00	3.24	0.00	3.24	15.64	
Tandem Disk - 18'	22000	12	3047	175	11.63	0.27	0.00	4.42	0.00	4.42	16.32	
Tractor - 160hp	113000	15	21999	520	17.57	0.49	0.00	3.79	22.21	26.00	44.05	
Tractor - 200hp	134000	15	26087	450	24.07	0.67	0.00	3.89	27.76	31.65	56.38	
Tractor - 250hp	134000	15	26087	685	15.80	0.44	0.00	2.53	34.71	37.25	53.48	
Truck 1 - 5 ton	55000	15	10708	400	11.11	0.31	0.00	7.35	5.98	13.33	24.75	
Truck 2 - 5 ton	55000	15	10708	400	11.11	0.31	0.00	7.35	5.98	13.33	24.75	
Truck 3 - 5 ton	55000	15	10708	400	11.11	0.31	0.00	7.35	5.98	13.33	24.75	
Truck 4 - 5 ton	55000	15	10708	400	11.11	0.31	0.00	7.35	5.98	13.33	24.75	
Truck 5 - 5 ton	55000	15	10708	400	11.11	0.31	0.00	7.35	5.98	13.33	24.75	

Net Returns Per Acre Above Operating Costs For Sugarbeets  
Yield (ton/acre)

	18.90	21.60	24.30	27.00	29.70	32.40	35.10
28.00	-127	-60	8	75	142	209	277
32.00	-52	27	105	183	261	339	417
36.00	24	113	202	291	380	469	558
40.00	100	199	299	399	499	598	698
44.00	175	286	396	507	617	728	838
48.00	251	372	494	615	736	857	979
52.00	326	459	591	723	855	987	1119

Net Returns Per Acre Above Cash Costs For Sugarbeets  
Yield (ton/acre)

	18.90	21.60	24.30	27.00	29.70	32.40	35.10
28.00	-468	-401	-333	-266	-199	-132	-64
32.00	-392	-314	-236	-158	-80	-2	76
36.00	-317	-228	-139	-50	39	128	216
40.00	-241	-141	-42	58	158	257	357
44.00	-166	-55	55	166	276	387	497
48.00	-90	31	153	274	395	516	638
52.00	-14	118	250	382	514	646	778

Net Returns Per Acre Above Total Costs For Sugarbeets  
Yield (ton/acre)

	18.90	21.60	24.30	27.00	29.70	32.40	35.10
28.00	-580	-515	-450	-385	-319	-254	-188
32.00	-505	-429	-353	-277	-201	-124	-48
36.00	-429	-343	-256	-169	-82	5	92
40.00	-354	-256	-159	-61	37	135	233
44.00	-278	-170	-61	47	156	264	373
48.00	-202	-83	36	155	275	394	514
52.00	-127	3	133	263	393	524	654

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