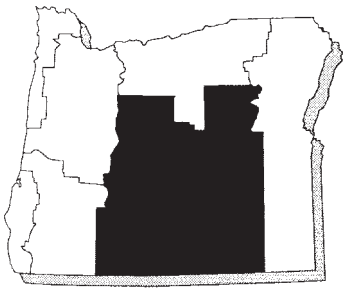
Enterprise Budget

Potatoes, South Central Region



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This enterprise budget estimates the typical costs and returns of producing potatoes in the Klamath Falls area of South Central Oregon. While efforts were made to reflect common practices, it is not representative of any particular farm and should be used only as a guide to estimating actual costs. The major assumptions used in constructing this budget are discussed below. Assistance provided by area producers and agricultural suppliers is greatly appreciated.

Cropping Pattern

This budget is based on a 500-acre farm with 250 acres in production of potatoes following grain. The budget includes production costs for 1 acre. Other rotation crops include sugarbeets and alfalfa.

Land and Irrigation

A land lease charge of $250 per acre is included to represent the cost of leasing or owning land. This charge is based on the cost of leasing good quality land and includes irrigation pumps and mainlines. The rest of the solid set irrigation system is rented for the season at $150 per acre.

Labor

Hired labor costs $7 per hour including worker's compensation, social security taxes, and other payroll expenses. Owner/operator labor is valued at $12 per hour for this study. Owner/operator labor is provided for all operations except irrigation. Hired labor sets up and monitors the irrigation system. All labor is assumed to be a cash cost.

Capital

Opportunity costs of capital are charged at a rate of 9 percent for current and intermediate capital provided by the owner/operator.

Machinery and Equipment

The machinery complement is sufficient to farm 500 production acres. A detailed breakdown of machinery values used in this budget is shown in Table 2. November 1994 replacement costs are used. Estimated machinery costs are shown in Table 3 assuming the machinery is half depreciated.

The machinery costs per hour are estimated based on the total farm use of the machinery. Costs per acre then are estimated based on the hours of annual use in potato production shown in Table 2.

Operations

Preparation for planting requires a series of tillage operations. In the fall, the previous crop residue and weeds are chopped, rototilled, disked twice, and ripped. In the spring, plow and chisel plow operations are performed prior to fumigation. Fumigation is assumed to be required based on soil test results. Following two additional tillage operations, 500 pounds of ammonium sulfate is broadcast.

In late spring, a three-person crew marks out beds and plants 20 cwt of seed with a 4-row planter. Fertilizer can be applied preplant broadcast, banded at planting, top dressed post emergence, and foliar. Fertilizer rates are based on soil and petiole tests. Average total rates used for this budget include: 200 lb N, 120 lb P and K. Weed control consists of herbicide applied pre- and postemergence and/or mechanical cultivation.

A three-person crew sets up solid set sprinkler irrigation on the field. In addition to a water charge of $25, average electricity and/or diesel cost $20 per acre, and repair and maintenance is estimated to be $4 per acre. A total of 14 irrigation sets apply 36 inches of water. An additional 300 pounds of 15-15-15 is top dressed when the plants are 4 to 6 inches tall. Water-run N is injected into the irrigation lines during four irrigation sets. No other liquid fertilizer is budgeted for this study. Additional major and minor nutrients may be necessary based on petiole tests.

Pesticides are custom air applied for blight control, aphid control, and sprout inhibition. Prior to harvest, a chemical defoliant is used to knock down vines. The field is rolled and the vines are cut before digging. The potato harvest involves a windrower and bulker to dig and pick up potatoes. The potatoes are hauled to the cellar with three 10-wheel trucks. At the cellar, a crew of eight unloads, sorts, and piles the potatoes utilizing five conveyers. A charge of $0.35 per cwt, or $140 per acre, is included to represent the cost of storage in a modern, humidified cellar.

A pickup is included for monitoring the irrigation system, hauling supplies and general farm work. Of the 12,000 miles annually driven, one-half are allocated to potato production.

Results

The total variable cost is $1,536 per acre resulting in a break-even price over variable cost of $3.84 per cwt. Total of all costs is $1,887 per acre, resulting in a net projected return of $113 per acre.

In Table 1, net returns and break-even prices are presented for varying yields. A 100 cwt decrease in yield results in a negative net return. Increasing the yield to 500 cwt results in a break-even over variable cost of $3.14/cwt and $3.84/cwt over total cost.

OREGON STATE UNIVERSITY EXTENSION SERVICE

ECONOMIC COSTS AND RETURNS
SOUTH CENTRAL REGION
Potatoes, 250 acres ($/acre)

GROSS INCOME Description		Quantity	Unit	$/Unit	Total	Your Income
Potatoes		400.00	cwt	5.00	2,000.00	
Total GROSS Income					2,000.00	

VARIABLE COST Description		Labor	Machinery	Materials	Total	Your Cost
PREPLANT						
Chop Grain Residue		2.42	2.43	0.00	4.85	
Rotary Tiller (2x)		14.52	26.51	0.00	41.03	
Disk (2x)		4.84	6.62	0.00	11.46	
Deep Rip		4.84	6.82	0.00	11.66	
Plow and Pack		3.63	4.69	0.00	8.32	
Chisel Plow (2x)		7.26	8.80	0.00	16.06	
Fumigate		3.63	4.69	196.80	205.12	
Soil Fumigant	20 gal x 9.84 = 196.80					
Bed Out		2.91	3.19	0.00	6.10	
Fertilize		0.00	0.00	35.70	35.70	
Ammonium Sulfate	0.13 tn x 240.00 = 31.20					
Custom Application	1 ac x 4.50 = 4.50					
Herbicide		0.00	0.00	21.55	21.55	
Herbicide	0.5 gal x 32.10 = 16.05					
Custom Application	1 ac x 5.50 = 5.50					
Total PREPLANT					361.85	
PLANT						
Planting		3.63	10.52	260.00	274.15	
Seed	20 cwt x 10.00 = 200.00					
15-15-15	0.25 tn x 240.00 = 60.00					
Cut Seed/Treat		0.00	0.00	50.00	50.00	
Cut Seed/Treat	20 cwt x 2.50 = 50.00					
Total PLANT					324.15	
POSTPLANT						
Cultivate (2x)		7.26	6.00	0.00	13.26	
Postemergence		0.00	0.00	23.83	23.83	
Herbicide	0.667 lb x 27.50 = 18.33					
Custom Application	1 ac x 5.50 = 5.50					
Irrigation System Rental		0.00	0.00	150.00	150.00	
Irrigation Setup		7.49	2.95	0.00	10.44	
Irrigation		2.56	0.00	57.64	60.20	
Electricity/Diesel	1 ac x 20.00 = 20.00					
Water	1 ac x 25.00 = 25.00					
Repair/Maintenance	1 ac x 4.00 = 4.00					
Water Run N	7.2 gal x 1.20 = 8.64					
Fertilize		0.00	0.00	40.25	40.25	
15-15-15	0.15 tn x 240.00 = 36.00					
Custom Application	1 ac x 4.25 = 4.25					
Insecticide (2x)		0.00	0.00	50.47	50.47	
Insecticide	0.5 gal x 78.94 = 39.47					
Custom Application	2 ac x 5.50 = 11.00					
Blight Control (3x)		0.00	0.00	48.84	48.84	
Fungicide	0.563 gal x 57.50 = 32.34					
Custom Application	3 ac x 5.50 = 16.50					
Sprout Inhibitor		0.00	0.00	28.11	28.11	
Sprout Inhibitor	1.33 gal x 17.00 = 22.61					
Custom Application	1 ac x 5.50 = 5.50					
Defoliation		0.00	0.00	21.58	21.58	
Materials	0.187 gal x 88.42 = 16.57					
Custom Application	1 ac x 5.00 = 5.00					
Irrigation Take Down		7.49	2.95	0.00	10.44	
Roller		2.42	1.47	0.00	3.89	
Cut Vines		2.42	2.24	0.00	4.66	
Total POSTPLANT					465.97	

ECONOMIC COSTS AND RETURNS
SOUTH CENTRAL REGION
Potatoes, 250 acres ($/acre)

VARIABLE COST Description		Labor	Machinery	Materials	Total	Your Cost
HARVEST						
Windrow		11.62	21.65	0.00	33.27	
Bulker		20.33	27.95	0.00	48.28	
Trucking to Cellar		17.19	0.14	0.00	17.33	
Piling		54.40	3.15	0.00	57.55	
Storage, Modern Storage	400 cwt x 0.35 = 140.00	0.00	0.00	140.00	140.00	
Total HARVEST					296.43	
Crop Insurance (Hail)		0.00	0.00	14.00	14.00	
Operating Capital Interest		0.00	0.00	63.27	63.27	
Pickup		7.92	2.60	0.00	10.52	
Total VARIABLE COST					1,536.19	
GROSS INCOME minus VARIABLE COST					463.81	

FIXED COST Description	Unit	Total	Your Cost
CASH Cost			
Machinery & Equipment Insurance	acre	8.35	
Land	acre	250.00	
Total CASH Cost		258.35	
NONCASH Cost			
Machinery & Equipment Interest & Depreciation	acre	92.39	
Total NONCASH Cost		92.39	
Total FIXED Cost		350.75	
Total of ALL Cost		1,886.93	
NET PROJECTED RETURNS (Gross Income - Total Cost)		113.07	
Break-even Price, Total Variable Cost		$3.84 per cwt	
Break-even Price, Total Cost		$4.71 per cwt	

Table 1. Net Projected Returns and Break-Even Price with Varying Yield (and corresponding costs)

Potato Yield (cwt/acre)	300	400	500
Net Returns/acre	-$351	$113	$578
Break-even Price/cwt			
Over. Var. Cost	5.00	3.84	3.14
Over Total Cost	6.17	4.71	3.84

Table 2. Machinery Cost Assumptions

Item	Size	List Price	Current Market Value	Salvage Value	Useful Life	Remaining Life	Annual Use
Tractor	160 hp	$88,000	$57,200	$26,400	12,000 hr	6,000 hr	687 hr
Tractor	120 hp	70,000	45,500	21,000	12,000 hr	6,000 hr	655 hr
Tractor	80 hp	58,000	34,800	11,600	12,000 hr	6,000 hr	413 hr
4-bottom Plow		10,000	6,000	2,000	2,000 hr	1,000 hr	63 hr
Bulker		42,000	25,200	8,400	25,000 hr	12,500 hr	200 hr
Chisel Plow	12 ft	5,500	3,300	1,100	2,000 hr	1,000 hr	125 hr
Chisel Plow w/ Injection System	12 ft	8,500	5,100	1,700	2,000 hr	1,000 hr	63 hr
Cultivator	4 row	3,500	2,100	700	2,000 hr	1,000 hr	125 hr
Disk	12 ft	14,000	8,400	2,800	2,000 hr	1,000 hr	83 hr
Flail Chopper		12,000	7,200	2,400	2,000 hr	1,000 hr	42 hr
Mark-out Bar	4 row	1,200	720	240	1,500 hr	750 hr	50 hr
Pipe Trailer		1,000	600	200	2,000 hr	1,000 hr	167 hr
Planter	4 row	24,000	14,400	4,800	1,500 hr	750 hr	63 hr
Ripper	5 shank	3,500	2,100	700	2,000 hr	1,000 hr	83 hr
Roller		1,000	600	200	2,000 hr	1,000 hr	104 hr
Rotary Tiller	10 ft	11,000	6,600	2,200	1,500 hr	750 hr	250 hr
Vine Cutter		2,000	1,200	400	2,000 hr	1,000 hr	42 hr
Windrower	4 row	31,000	18,600	6,200	2,500 hr	1,250 hr	200 hr
Conveyer (5)		5,000	3,000	1,000	2,000 hr	1,000 hr	1,250 hr
Piler/Dirt Eliminator		35,000	21,000	7,000	4,000 hr	2,000 hr	313 hr
Trucks (3)	10 wheel	12,000	7,600	3,600	100,000 mi	50,000 mi	635 mi
Pickup	4 x 4	15,000	9,000	3,000	100,000 mi	50,000 mi	6,000 mi

Table 3. Machinery & Equipment Cost Calculations

		Costs per Hour or Mile						Costs per Acre		
		Variable		Fixed			Hours			
Machine	Size	Fuel & Lube	Repair & Maint.	Depr. & Interest	Insurance	Total Cost	or Miles per Acre	Variable	Fixed	Total
Tractor	160 hp	$6.19	$8.93	$3.74	$0.23	$19.09	2.75 hr	$41.60	$10.91	$52.51
Tractor	120 hp	4.65	7.11	2.71	0.18	14.65	2.62 hr	30.81	7.58	38.29
Tractor	80 hp	3.10	5.12	8.79	0.63	17.64	1.65 hr	13.55	15.53	29.08
4-bottom Plow		0.00	3.17	5.98	0.60	9.75	0.25 hr	0.79	1.64	2.43
Bulker		0.00	15.85	12.55	1.26	29.66	0.80 hr	12.68	11.05	23.73
Chisel Plow	12 ft	0.00	2.24	1.64	0.17	4.05	0.50 hr	1.12	0.90	2.02
Chisel Plow w/ Injection Syst	12 ft	0.00	3.38	7.82	0.79	11.99	0.25 hr	0.84	2.15	2.99
Cultivator	4 row	0.00	1.34	1.03	0.08	2.45	0.50 hr	0.67	0.56	1.23
Disk	12 ft	0.00	4.51	7.16	0.56	12.23	0.33 hr	1.50	2.57	4.07
Flail Chopper		0.00	3.94	13.46	0.72	18.12	0.20 hr	0.79	2.84	3.63
Mark-out Bar	4 row	0.00	0.60	1.77	0.14	2.51	0.20 hr	0.12	0.38	0.50
Pipe Trailer		0.00	0.21	0.44	0.04	0.69	0.67 hr	0.14	0.32	0.46
Planter	4 row	0.00	20.25	28.35	2.30	50.90	0.25 hr	5.06	7.66	12.72
Ripper	5 shank	0.00	1.37	1.14	0.08	2.59	0.33 hr	0.46	0.41	0.87
Roller		0.00	0.21	0.74	0.06	1.01	0.42 hr	0.09	0.33	0.42
Rotary Tiller	10 ft	0.00	7.43	2.30	0.18	9.91	1.00 hr	7.43	2.48	9.91
Vine Cutter		0.00	0.42	3.28	0.27	3.97	0.17 hr	0.07	0.59	0.66
Windrower	4 row	0.00	11.70	9.26	0.93	21.89	0.80 hr	9.36	8.15	17.51
Conveyer (5)		0.00	0.60	0.67	0.02	1.29	5.00 hr	3.00	3.49	6.49
Piler/Dirt Eliminator		0.00	0.60	10.75	0.51	11.86	1.25 hr	0.75	14.06	14.81
Trucks (3)	10 wheel	0.07	0.02	0.20	0.24	0.53	2.54 mi	0.23	1.10	1.33
Pickup	4 x 4	0.08	0.03	0.22	0.06	0.39	24.00 mi	2.59	6.65	9.24
Total								$133.65	$101.35	$235.00

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