

Blueberries

1991 production costs in northern Idaho

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This budget shows typical costs of producing blueberries in northern Idaho for sale in the fresh market. Assumptions used in constructing this budget are discussed below. This study models typical cultural practices based on interviews with growers and Extension personnel familiar with blueberry production. However, individual operations will differ depending on management style and horticultural practices. Since commercial blueberry production is limited in Idaho, budgets from other areas are also used for information.

The blueberry stand

This study assumes that a typical blueberry stand in northern Idaho is 2 acres. Years 0 and 1 are the establishment years. Land preparation occurs in year 0, followed by planting in year 1. Years 2 and 3 are maintenance years that have no blueberry production. Partial production occurs in years 4, 5, and 6. Years 7

through 20 are full production years. Table 1 provides a summary of expected blueberry yields and costs on a per-acre basis during the life of the stand.

Machinery and equipment

Table 2 provides detailed information for all machinery and equipment used in the operation. The estimated machinery costs were generated using standard coefficients from the American Society of Agricultural Engineers. The values assumed on all machinery and equipment reflect 1991 prices for new equipment.

Resources

It is assumed that land is owned by the blueberry grower and was previously used for dryland grazing with a value of \$200 per acre. Property taxes are \$6.25 per acre.

Table 1. Yield and cost summary for blueberry production over the 20-year expected life of the stand.

Year	Stage of production	Yield (lb/acre)	Cost/acre (\$)	Cost/pound (\$)
0	Preparation	0	1,327.45	
1	Establishment	0	4,612.29	
2	Maintenance ¹	0	2,103.21	
3	Maintenance ¹	0	1,904.80	
4	Partial production ²	500	4,884.86	9.77
5	Partial production ²	2,000	5,711.71	2.86
6	Partial production ²	5,000	7,365.42	1.47
7 to 20	Full production	6,000	7,911.84	1.32

¹The lower cost per acre in year 3 as compared to year 2 is caused by not seeding the fescue cover crop, saving \$123.26; reduced machinery costs of \$64.90; reduced overhead of \$6.36; and reduced interest costs of \$10.91. Mowing two more times increases costs by \$7.02.

²The differences between costs in partial production year 4 and full production years 7 to 20 are caused by reduced harvest costs of \$2,750; reduced overhead costs of \$142.37; and reduced interest costs of \$134.61. The differences between costs in partial production year 5 and full production years 7 to 20 are caused by reduced harvest costs of \$2,000; reduced overhead costs of \$103.00; and reduced interest costs of \$97.13. The differences between costs in partial production year 6 and full production years 7 to 20 are caused by reduced harvest costs of \$500; reduced overhead costs of \$24.25; and reduced interest costs of \$22.17.



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Table 3 includes information on the permanent structures needed for the blueberry operation. Costs assume the structures are purchased new. Purchase price and useful life may vary depending on type of materials used and age of the facility.

This 2-acre blueberry stand is equipped with a drip irrigation system. The cost of the system (excluding labor) is approximately \$5,000. Table 4 includes detailed information about the irrigation system. The system is supplied by surface water.

All labor in this operation is classified as either general hired, owner labor, or harvest labor. General hired labor is valued at \$6.25 per hour and includes worker's compensation, unemployment insurance, and other labor overhead expenses. Owner labor is valued at \$7.00 per hour, and harvest labor is hired at \$0.50 per pound of harvested blueberries.

Establishment costs

The cost of establishing the blueberry stand must be recovered over the stand's useful life. The process involves carrying forward, with interest, the total establishment costs for year 0 (the preparation year), year 1 (the planting year), and years 2 and 3 (maintenance years). Total establishment costs (plus interest) for all 4 years (\$11,911.02) are amortized over the productive life of the blueberry stand (17 years at 12 percent interest). Amortized establishment costs are identified under fixed costs in the full production budget summarized in Table 8.

Budgets

The two categories of costs listed in the budgets are fixed and variable costs. Variable costs are those costs over which you have direct control. They can be increased or decreased at your discretion, or avoided if you chose not to produce. Variable costs increase as

the level of production increases. Examples of variable costs are blueberry plants, fertilizer, chemicals, fuel, repairs, hired labor, and interest on operating capital.

Fixed costs are those costs that remain unchanged no matter how much is produced or whether production takes place at all. These costs are associated with owning fixed inputs, and include depreciation, taxes, insurance, and interest.

Fixed and variable costs can be either cash or noncash costs. Cash costs are out-of-pocket expenses; they can be variable like fuel or fixed like property taxes. Cash costs must be paid outright. Noncash costs do not involve an immediate "cash" payment. For example, when you provide your own labor, cash is not exchanged, hence your labor is a noncash cost. If you choose to hire labor for the same operation, then the payment for labor becomes a cash cost. Accounting for noncash costs is particularly important in analyzing the actual cost of an enterprise. For this reason, both cash and noncash costs are treated as expenses in this budget.

Long-term, intermediate, and short-term capital are used in this budget to finance establishment costs, machinery, equipment, permanent structures, irrigation, and operating inputs. Interest on operating capital is treated as a cash expense. The cost of operating capital is 12 percent. Interest on investment is calculated at 12 percent and treated as a noncash expense. Overhead accounts for 5 percent of each year's variable costs, and includes costs such as insurance, office supplies, telephone bills, etc. (University of Idaho field crop and livestock budgets generally assume an overhead rate of 2 percent, but a management-intensive, high-valued crop like blueberries is expected to have a higher overhead cost. Thus, a 5 percent overhead rate is used.)

Table 2. Estimated equipment investment for a 2-acre northern Idaho blueberry farm.¹

Item	Size	1991 price (\$)	Annual use	Years to trade	Cost/hour (\$)	Cost/year (\$)
Tractor	24 hp	10,700	50 hr	15	14.09	704.50
Trailer	8 ft	1,000	30 hr	15	0.32	9.60
Boom sprayer	50 gal	650	10 hr	15	1.13	11.30
Fertilizer spreader	10 ft	3,500	5 hr	15	31.46	157.30
Cone fertilizer attachment	—	525	5 hr	15	—	—
Mower	5 ft	1,000	10 hr	15	11.18	111.80
Rotary tiller	5 ft	2,500	15 hr	15	14.25	213.75
Roller/packer	5 ft	1,500	5 hr	15	1.38	6.90
Misc. equipment	—	625	—	—	—	—

(handspreader, backpack sprayer, shears, weedeater, scale, buckets, 15 picking stands)

¹All equipment is purchased new and used entirely in the blueberry operation.

Table 3. Permanently installed resources for a 2-acre northern Idaho blueberry farm.

Item	Size/type	1991 purchase price	Useful life
Refrigeration	10' x 16'	\$10,000	20 years
Deer fence	New Zealand	\$ 640	20 years

For further reading

CIS 932 Blueberry Production: Overview (50 cents)

To order copies of this and other University of Idaho College of Agriculture publications, contact the University of Idaho Cooperative Extension System office in your county or write to Agricultural Publications, Idaho Street, University of Idaho, Moscow, Idaho 83843 or call (208) 885-7982.

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Table 4. Drip irrigation system for 2 acres of blueberries.¹

Item	Size	Quantity	Cost (\$)
Mainline PVC	1½-inch	140 feet	78
Tubing (\$0.12/ft)		8,800 feet	1,056
Valves (\$24 each)		2	48
Fittings and tees			48
Timer			72
Major shut-off	2-inch		160
Filters			600
Emitters (\$0.16 each)		4,400	704
Fertilizer injector 6 gal/min ²			160
Power pump and power unit	3 hp		2,000
Total cost			4,926

¹The irrigation system is assumed to have a 20-year useful life.

²No injected chemicals are explicitly recommended in this budget. However, the irrigation system is equipped with a fertilizer injector to provide additional flexibility in responding to changes in cultural practices.

Note: Installation labor requirements for 2 acres are 64 hours of hired labor; it is assumed this drip irrigation system is supplied by surface water.

Table 5. Costs per acre in preparation year (year 0) for blueberries in northern Idaho.

Activity	Machinery (\$)	Labor (\$)	Materials (\$)	Total (\$)	Your cost
Variable costs					
Custom soil tests	—	—	—	40.00	_____
Fertilizer:					
Gypsum, sulfur	0.54	2.33	378.20	381.07	_____
Ammonium sulfate	0.54	2.33	208.00	210.87	_____
Rototill	3.79	23.29	—	27.08	_____
Pack ground	0.73	4.99	—	5.72	_____
Spray nonselective herbicide	0.67	5.82	30.39	36.88	_____
Seed covercrop (oats)	0.54	2.33	12.00	14.87	_____
Spot spray weeds	—	5.60	6.08	11.68	_____
Rototill	3.79	23.29	—	27.08	_____
Pack ground	0.73	4.99	—	5.72	_____
Seed covercrop (rye grass)	0.54	2.33	19.50	22.37	_____
Overhead (5%)	—	—	—	42.90	_____
Interest on operating capital	—	—	—	74.68	_____
Total variable costs				900.92	_____
Fixed costs					
Machinery and equipment				396.28	_____
Land (taxes and interest)				30.25	_____
Total fixed costs				426.53	_____
Total costs				1,327.45	_____

Table 6. Costs per acre in establishment year (year 1) for blueberries in northern Idaho.

Activity	Machinery (\$)	Labor (\$)	Materials (\$)	Total (\$)	Your cost
Variable costs					
Custom soil tests	—	—	—	20.00	_____
Install deer fence	—	140.00	—	140.00	_____
Fertilizer:					
Ammonium sulfate	0.54	2.33	104.00	106.87	_____
Gypsum	0.54	2.33	24.00	26.87	_____
Rototill	3.79	23.29	—	27.08	_____
Pack ground	0.73	4.99	—	5.72	_____
Custom backhoe	—	—	—	420.00	_____
Install drip irrigation system	—	200.00	—	200.00	_____
Plant blueberry plants	—	406.00	848.24	1,254.24	_____
Water plants	7.50	38.50	—	46.00	_____
Mulch rows (sawdust)	0.60	92.68	436.00	529.28	_____
Seed covercrop (rye grass)	0.33	1.40	19.50	21.22	_____
Pack ground	0.73	4.99	—	5.72	_____
Spread fertilizer by hand	—	35.00	8.80	43.80	_____
Hand weeding (4 times)	—	560.00	—	560.00	_____
Spot spray weeds	—	5.60	6.08	11.68	_____
Debud labor	—	56.00	—	56.00	_____
Foliage analysis	—	—	—	30.00	_____
Custom soil tests	—	—	—	20.00	_____
Mow covercrop	0.37	3.14	—	3.51	_____
Rodent control	—	—	—	15.00	_____
Dormant spray	0.67	5.82	40.64	47.13	_____
Drip irrigation system expenses	—	—	—	52.67	_____
Deer fence maintenance	—	5.00	—	5.00	_____
Overhead (5%)	—	—	—	191.90	_____
Interest on operating capital	—	—	—	190.25	_____
Total variable costs				4,029.94	_____
Fixed costs					
Machinery and equipment				367.18	_____
Drip irrigation system				127.28	_____
Permanent fixtures				57.64	_____
Land (taxes and interest)				30.25	_____
Total fixed costs				582.35	_____
Total costs				4,612.29	_____

Table 7. Costs per acre in maintenance year (year 2) for blueberries in northern Idaho.¹

Activity	Machinery (\$)	Labor (\$)	Materials (\$)	Total (\$)	Your cost
Variable costs					
Pre-emergent spray (fall and spring)	1.34	11.64	338.39	351.37	_____
Pruning	—	70.00	—	70.00	_____
Dormant spray (fall and spring)	1.34	11.64	81.28	94.26	_____
Fertilizer: Gypsum	0.54	2.33	24.00	26.87	_____
Spot spray weeds (4 times)	—	11.20	12.16	23.36	_____
Spray nonselective herbicide	0.33	2.91	30.39	33.63	_____
Rototill	1.89	11.65	—	13.54	_____
Seed covercrop (fescue)	0.33	1.40	71.50	73.23	_____
Pack ground	0.36	2.50	—	2.86	_____
Hand weeding (4 times)	—	560.00	—	560.00	_____
Rodent control	—	—	—	15.00	_____
Fertilize by hand (twice)	—	70.00	17.60	87.60	_____
Debud Labor	—	56.00	—	56.00	_____
Mow covercrop (3 times)	1.11	9.42	—	10.53	_____
Foliage analysis	—	—	—	30.00	_____
Custom soil tests	—	—	—	20.00	_____
Drip irrigation system expenses	—	—	—	52.67	_____
Deer fence maintenance	—	—	—	5.00	_____
Overhead (5%)	—	—	—	79.28	_____
Interest on operating capital	—	—	—	57.87	_____
Total variable costs				1,663.07	_____
Fixed costs					
Machinery and equipment				224.97	_____
Drip irrigation system				127.28	_____
Permanent fixtures				57.64	_____
Land (taxes and interest)				30.25	_____
Total fixed costs				440.14	_____
Total costs				2,103.21	_____

¹Differences in costs for maintenance years 2 and 3 are explained in Table 1.

Table 8. Costs per acre in full production year (years 7 to 20) for blueberries in northern Idaho.¹

Activity	Machinery (\$)	Labor (\$)	Materials (\$)	Total (\$)	Your cost
Variable costs					
Pre-emergent spray (spring and fall)	1.34	11.64	226.78	239.76	_____
Pruning	—	70.00	—	70.00	_____
Dormant spray (spring and fall)	1.34	11.64	81.28	94.26	_____
Fertilizer: Gypsum, NH ₄ SO ₄	0.54	2.33	28.00	30.87	_____
Ammonium sulfate	0.54	2.33	4.00	6.87	_____
Mulch rows (sawdust)	0.19	30.12	146.00	176.31	_____
Fertilize by hand (twice)	—	70.00	17.60	87.60	_____
Mow covercrop (4 times)	1.48	12.56	—	14.04	_____
Spot spray weeds (4 times)	—	22.40	24.32	46.72	_____
Hand weeding (4 times)	—	560.00	—	560.00	_____
Rodent control	—	—	—	15.00	_____
Bees	—	—	—	40.00	_____
Harvest labor	—	—	—	3,000.00	_____
Portable toilet	—	—	—	24.00	_____
Foliage analysis	—	—	—	30.00	_____
Custom soil tests	—	—	—	20.00	_____
Drip irrigation system expenses	—	—	—	52.67	_____
Deer fence maintenance	—	5.00	—	5.00	_____
Refrigeration operating expenses	—	—	—	37.00	_____
Overhead (5%)	—	—	—	236.04	_____
Interest on operating capital	—	—	—	207.76	_____
Total variable costs				4,993.90	_____
Fixed costs					
Establishment costs				1,672.98	_____
Machinery and equipment				168.29	_____
Drip irrigation system				127.28	_____
Permanent fixtures				919.14	_____
Land (taxes and interest)				30.25	_____
Total fixed costs				2,917.94	_____
Total costs				7,911.84	_____

¹Differences in costs between full production years (7 to 20) and partial production years (4 to 6) are explained in Table 1.

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