Cost of Producing Blueberries in Southwest Michigan
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AG FACTS

Cost of Producing Blueberries in Southwestern Michigan

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This cost evaluation of blueberry production in southwestern Michigan is a projection of costs developed through small group discussions with blueberry growers in 1989 and the spring of 1993. Growers described common growing and harvesting practices used by average growers in the area. They agreed on the size of blueberry acreage, equipment and cultural practices generally used by an average growers

These figures do not reflect the average cost of blueberry production for all growers in the state because costs vary considerably by area and from farm to farm. The data can, however, help you develop your costs and better evaluate your farm situation. Each of the appropriate tables in this report includes a "Your farm" column for you to note your costs for particular operations in the total blueberry enterprise. For operations where you cannot determine your costs, you may wish to adjust and substitute the study data.

The assembled data assume that equipment and labor are available for a hypothetical farm of 80 acres of blueberries. However, the data in Table 1 are presented for 10 acres because it may be easier to visualize many of the resource inputs on this basis

LABOR COSTS

The full-time labor classification includes the working time of the operator and regular hired help devoted to blueberries. Operator labor is not considered a cash expense. But, to allow for differences in the proportion of work performed by regular hired help, which is a cash expense, or by the operator, both have been included at the $10 per hour rate. As a result, producers who do a major portion of the work may have a lower cash labor cost than the figures indicate.

EQUIPMENT COSTS

Some major factors considered in the figuring of equipment costs are initial cost, salvage value, years of life, annual use, repair costs, insurance, interest, and operating expenses such as gas and oil. The operating costs, which include gas and oil and repairs for each piece of equipment, are charged to the crop in Table 1 on the basis of hours of use of the equipment.

The details of hours and types of labor, machinery used and hours of use, and kinds and amounts of materials used by operation are shown in Table 1. If your costs for particular items are substantially higher than those shown, you may need to analyze those components closely to see if you can reduce them. A high cost for a particular component may be justified if it contributes to a sufficiently higher yield or improved quality.

VARIABLE COSTS

Variable costs are those that change directly with increases or decreases in the acreage of blueberries. Examples of such costs are spray material, fertilizer, hired labor and machinery operating costs. An interest charge on variable costs has not been included in these figures.

OVERHEAD COSTS

The overhead or fixed costs of blueberry production (Table 3) include allocating machinery overhead based on the proportion of total farm use in blueberries, interest on land investment and taxes. The overhead costs of machinery are allocated to blueberries on the basis of hours of use relative to the total hours of equipment use on the farm. Overhead costs on machinery include depreciation, interest on investment, insurance and housing costs (interest, insurance and housing equal 12.7 percent of average value).

Also included in overhead costs is an interest charge on the real estate value and average value of the blueberry bushes. If the acreage is being financed, this is an out-of-pocket cost. If the acreage is paid for, then interest is part of the return on investment for the owner. An acquisition cost of $5,000 per acre was determined for a purchased plantation. The value of the bushes at $4,000 was depreciated over a 25-year life.

Evaluate your farm situation and decide whether to consider fixed costs as part of the total costs for decision-making purposes. One example of this type of consideration is the fact that interest and taxes on land are fixed costs if you own the acreage, but rent is a variable cost if you lease the plantation.

PRODUCTION COSTS

Machine harvest costs are illustrated in Table 2 for a yield of 5,000 pounds per acre. As illustrated in Table 5, the total harvest costs per pound for a grower custom harvesting would not vary with lower or higher yields, since custom charges are on a per pound basis. However, costs per acre would vary directly with yield. Hand harvest

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costs average between 30 and 35 cents per pound. You need to use the "Your farm" column to adjust the harvest cost figures to reflect your harvest cost and your mix of hand and mechanical harvesting.

The yield obtained per acre is a very important factor in determining production cost per pound (Table 5). In computing per pound cost, it was assumed that preharvest costs per acre, such as spraying, planting, cultivation, etc., do not vary greatly regardless of the yield obtained.

Tables 6-13 illustrate current development costs for a blueberry plantation of 10 acres. The annual costs for ground preparation, planting and growing include a charge for overhead costs for machinery and real estate taxes. Interest charges, since they are such a large proportion of development costs, are added separately in Table 13.

The final accumulated cost is used in Table 3 to calculate both the operating year's depreciation of the development costs and interest on the establishment cost. If you purchase a plantation, use the purchased plantation column in Table 3. Generally the sale value of a plantation is considerably less than the development cost because both sellers and buyers tend to undervalue the costs involved in developing a plantation.

Table 1. Growing operations and related variable cost for 10 acres of blueberries, southwestern Michigan, 1992

	Labor			Machinery					Materials			
Operation	Labor (hr)	Wage rate	Cost	Equipment	Hours of use	Unit var. cost	Total var. Cost	Fixed unit cost	Total fixed cost	Item	Cost per 10 acres	Total variable cost	Your farm
Pruning	9,000	$0.19	$1,710.00									$1,710.00	
Brush removal	10	$10.00	$100.00	Tractor (60 hp)	10	$6.79	$67.90	$5.93	$59.30				
				Flail mower	10	$1.71	$17.10	$4.82	$40.20				
				Brush spider	10	$0.80	$8.00	$2.40	$20.00			$185.00	
Fertilizer: 1st application	3	$10.00	$30.00	Tractor (60 hp)	3	$6.79	$20.37	$5.93	$17.79	Amm.sul.:40 lb actual N @ $.32/lb	$128.00		
				Fertilizer spreader	3	$1.27	$3.81	$8.92	$26.76	Mg.: 5 lb/A @ $.33/lb	$16.50		
										0-0-60: 45 lb/A @ $.28/lb	$126.00	$324.48	
Fertilizer: 2nd application	3	$10.00	$30.00	Tractor (60 hp)	3	$6.79	$20.37	$5.93	$17.79	Amm.sul.: 50 lb actual N/A			
				Fertilizer spreader	3	$1.27	$3.81	$8.92	$26.76	@ $.32/lb		$160.00	$214.18
Lime (1ØZ of acreage)	1	$10.00	$2.50	Tractor (60 hp)	1	$6.79	$5.09	$5.93	$4.45	Hydrated lime: 1/2 ton/A			
				Fertilizer spreader	1	$1.66	$1.25	$4.76	$3.57	$45/ton (1ØZ/year)	$22.50	$36.34	
Weed control	3	$10.00	$30.00	Tractor (60 hp)	3	$6.79	$20.37	$5.93	$17.79	Princep: 2 lb/A @ $3/lb	$30.00		
(5ØZ of acreage sprayed)				Weed sprayer	3	$1.93	$5.79	$7.11	$21.33	Simbar: 1/2 lb/A @ $18.65/lb	$46.13	$132.29	
Spot weed control	8	$10.00	$80.00	Back pack sprayer	8	$0.00	$0.00	$2.25	$18.00	Roundup: 2 qt/A @ $13.25/qt	$53.00		
(5ØZ of acreage sprayed)										Sticker: 1 pt/A @ $1.75/pt	$3.50	$156.50	
Tillage	10	$10.00	$100.00	Tractor (60 hp)	10	$6.79	$67.90	$5.93	$59.30				
				Rototiller	10	$1.50	$15.00	$4.50	$45.00			$182.90	
Mowing (2 times)	7	$10.00	$70.00	Tractor (60 hp)	7	$6.79	$47.53	$5.93	$41.51				
				Rotary mower	7	$1.71	$11.97	$4.82	$20.14			$129.50	

Spray program											
Mummyberry	2	$10.00	$20.00	Tractor (60 hp)	2	$6.79	$13.58	$5.93	$11.86	Fungines: 24 oz/A @ $.45/oz	$108.00	
				PTO sprayer	2	$4.98	$9.96	$12.15	$24.30			$151.54
Prebloom	2	$10.00	$20.00	Tractor (60 hp)	2	$6.79	$13.58	$5.93	$11.86	Guthion: 1 qt/A @ $5.63/qt	$56.30	
				PTO sprayer	2	$4.98	$9.96	$12.15	$24.30	Benlate: 1 lb/A @ $11.80/lb	$118.00	
										Captec 4L,2 1/2qt./A@1.825/qt	$45.62	$263.46
Bloom	2	$10.00	$20.00	Tractor (60 hp)	2	$6.79	$13.58	$5.93	$11.86	Fungines: 24 oz/A @ $.45/oz	$108.00	
				PTO sprayer	2	$4.98	$9.96	$12.15	$24.30			$151.54
Petal fall	2	$10.00	$20.00	Tractor (60 hp)	2	$6.79	$13.58	$5.93	$11.86	Captec 4L,2 1/2qt/A @ $1.825/qt	$45.62	
				PTO sprayer	2	$4.98	$9.96	$12.15	$24.30	Diazinon: 2 lb/A @ $2.25/lb	$45.00	$134.16
First cover	2	$10.00	$20.00	Tractor (60 hp)	2	$6.79	$13.58	$5.93	$11.86	Guthion: 1 qt/A @ $5.63/qt	$56.30	
				PTO sprayer	2	$4.98	$9.96	$12.15	$24.30	Captec 4L,2 1/2qt/A @ $1.825/qt	$45.62	
										Benlate: 1 lb/A @ $11.80/lb	$118.00	$263.46
Second cover	2	$10.00	$20.00	Tractor (60 hp)	2	$6.79	$13.58	$5.93	$11.86	Captec 4L,2 1/2qt/A @ $1.825/qt	$45.62	
				PTO sprayer	2	$4.98	$9.96	$12.15	$24.30	Aqua malathion: 1 pt/A @ $3.25/lb	$32.50	$121.66
Third cover	2	$10.00	$20.00	Tractor (60 hp)	2	$6.79	$13.58	$5.93	$11.86	Captec 4L, 2 1/2qt/A @ $1.825/qt	$45.62	
				PTO sprayer	2	$4.98	$9.96	$12.15	$24.30	Aqua malathion: 1 pt/A @ $3.25/lb	$32.50	$121.66
Fourth cover	custom applied									$8.35/A	$83.50	$83.50
Bird Control	1	10	$							Shells,Balloons,LP gas @ $15/A	$150.00	$155.00
Plant removal	8	$7.00	$56.00	Tractor (60 hp)	8	$6.79	$54.32	$5.93	$47.44			
				Chain								$110.32
Plant inspection @ $6/A										$11.00 / Acre	$110.00	$110.00
Plant replacement	20	$7.00	$140.00	Tractor (60 hp)	10	$6.79	$67.90	$5.93	$59.30	Plants: 5/acre @ $2.50/ plant	$125.00	
				Trailer	10	$0.19	$1.90	$4.18	$41.80			$234.00
Irrigation (40% of acreage)	20	$10.00	$200.00	Repairs	4	$4.50	$18.00	$77.00	$308.00			
				Electric	4	$35.50	$142.00					$360.00
Bee rental										Hives: 3/A @ $25/hive	$750.00	$750.00
Pest management/consulting										$30.00 / Acre	$300.00	$300.00
Pickup operation (miles)					200	$0.16	$32.00	$0.38	$76.00			$32.00
Management & labor supervision	108	$10.00	$1,080.00									$1,080.00
Miscellaneous										$50/A	$500.00	$500.00
Totals	207		$3,698.50				$797.16		$1,652.33		$3,506.00	$7,994.48

Table 2. Variable Harvest Cost for 10 Acres of Blueberries, Southwestern Michigan, 1993

Table 2. Variable Harvest Cost for 10 Acres (5,000 lbs./acre) of Blueberries, Southwestern Michigan, 1993

	Pounds	Rate	Total	Your Farm
Labor				
Mechanical harvest, pick and clean	50,000	$ 0.19	$9,500.00	
Total variable cost			$9,500.00	
Variable cost per pound			$ 0.19	

Table 3. Overhead Cost for Growing and Harvesting 10 Acres of Blueberries, Southwestern Michigan,1993

Table 3. Overhead Cost for Growing and Harvesting 10 Acres of Blueberries, Southwestern Michigan, 1993

	Purchased Plantation	Developed Plantation	Your Farm
Equipment, growing	$ 1,652.55	$ 1,652.55	
Interest on land ($1,000/acre @ 8%)	800.00	800.00	
Property taxes @ $32/acre	320.00	320.00	
Interest on average cost*	1,600.00	5,672.40	
Plantation depreciation	1,600.00	5,672.40	
Interest on 1/2 growing cost @ 8%	319.78	319.78	
Total overhead cost	$ 6,292.33	$14,437.13	
Overhead cost per pound	$ 0.13	$ 0.29	

* Interest on average cost for a purchased blueberry plantation equals 1/2 the $40,000 purchase cost times 8%. A developed plantation equals 1/2 the $141,809.25 development cost times 8%.

Depreciation for a purchased blueberry plantation equals the $40,000 purchase cost divided by 25 years. A developed plantation equals the $141,809.25 development cost divided by 25 years.

Table 4. Total Growing and Harvesting Cost for 10 Acres of Blueberries, Southwestern Michigan,1993

Table 4. Total Growing and Harvesting Cost for 10 Acres (5,000 lbs./acre) of Blueberries, Southwestern Michigan, 1993

	Purchased Plantation	Developed Plantation	Your Farm
Variable growing cost	$ 7,994.48	$ 7,994.48	
Variable harvest cost	9,500.00	9,500.00	
Overhead cost	6,292.33	14,437.13	
Total overhead cost	$23,786.81	$31,931.61	
Overhead cost per pound	$ 0.48	$ 0.64	

Table 5. Effect of Varying Yield on Cost/Pound for Blueberries, Mechanical Harvest, 1993

Table 5. Effect of Varying Yield on Cost/Pound for Blueberries, Mechanical Harvest, 1993

	Variable				Purchased Plantation		Developed Plantation		
Yield/Acre Pounds	Growing Cost	Harvest Cost	Total Variable Cost	Your Farm	Overhead Cost	Total Cost	Overhead Cost	Total Cost	Your Farm
3,000	$0.27	$0.19	$0.46		$0.21	$0.67	$0.48	$0.94	
4,000	0.20	0.19	0.39		0.16	0.55	0.36	0.75	
5,000	0.16	0.19	0.35		0.13	0.48	0.29	0.64	
6,000	0.13	0.19	0.32		0.10	0.43	0.24	0.56	
7,000	0.11	0.19	0.30		0.09	0.39	0.21	0.51	
8,000	0.10	0.19	0.29		0.08	0.37	0.18	0.47	
9,000	0.09	0.19	0.28		0.07	0.35	0.16	0.44	
10,000	0.08	0.19	0.27		0.06	0.33	0.14	0.41	

Table 6. Ground Preparation Preplanting Year for 10 Acres of Blueberries

Table 6. Ground Preparation - Pre-planting Year

Ground clearing and ditching @ $800.00/acre	$ 8,000.00
Giant tilling @ $100.00/acre	1,000.00
Tiling @ $500/acre today	5,000.00
Soil samples and tests	130.00
Disk 2 times custom hired @ $10.00/acre	200.00
Leveling (4 hours labor @ $10.00 + 4 hours tractor @ $16.55 + 4 hours harrow @ $6.36)	131.64
Weed control (3 hours labor @ $10.00 + 3 hours tractor @ $16.55 + 3 hours weed sprayer @ $3.20)	89.25
+ (3 quarts Roundup/acre @ $13.25)	397.50
Cover crop (3 hours labor @ $10.00 + 3 hours tractor @ $19.81 + 3 hours seeder @ $6.82)	109.89
+ (1 bushel rye/acre @ $6.72/bushel)	67.20
Fertilizer (1 hour labor @ $10.00 + 1 hour tractor @ $19.81 + 1 hour spreader @ $6.82)	36.63
+ (300 pounds 10-20-10 @ $136.00/ton)	204.00
Real estate taxes @ $32.00/acre	320.00
Addition to development cost	$15,686.11

Table 7. Planting Year for 10 Acres of Blueberries

Table 7. Planting Year

Disk 2 times (custom hired @ $10.00/acre)	$ 200.00
Plant bushes (60 hours labor @ $8.00 + 20 hours tractor @ $16.55 + 20 hours trailer @ $4.29 + 20 hours transplanter @ $7.50)	1,196.80
1,200 2-year-old plants/acre @ $2.50 each	30,000.00
Deflowering (40 hours @ $8.00)	320.00
Irrigation set-up solid set @ $1,000/acre	10,000.00
Establishment of water source and pumps	10,000.00
Operating cost of irrigation equipment @ $25.00/acre	250.00
Weed control (4 1/2 hours equipment and labor for spray)	133.88
1 gallon Surflan/acre sprayed @ $65/gallon (spray 1/3 acreage)	216.67
Hand hoeing (2x @ 10 hours/acre @ $8.00/hour)	800.00
Labor tillage (7 hours @ $10.00 + 7 hours tractor @ $16.55 + 7 hours drag @ $6.36) 4x per year	921.48
Cover crop (labor and equipment + rye)	177.09
Spot spray perennial weeds 5% of acres treated (10 hours labor @ $10.00) + 10 hours backpack @ $2.25 + 2 quarts Roundup/acre @ $13.25 + 1 pint sticker @ $1.75	150.75
Real estate taxes @ $32.00/acre	320.00
Addition to development cost	$54,686.67

Table 8. Second Year for 10 Acres of Blueberries

Table 8. Second Year

Weed control (4 1/2 hours equipment and labor)	$ 133.88
1 gallon Surflan/acre sprayed @ $65/gallon + 1 pound Princep 50 wp. @ $3.90/pound (spray 1/3 acreage)	227.37
Hand hoeing (5 hours/acre @ $8.00)	400.00
Fertilizer (1 1/2 hours/acre @ $8.00) + (Slo-release Nitrogen 1/2 ounce/plant @ $.20/ounce)	120.00 1200.00
Irrigation-operating cost @ $25.00/acre	250.00
Foliar feed (2 hours labor @ $10.00 + 2 hours 35 h.p. tractor @ $19.81 + 2 hours sprayer @ $3.20)	66.02
1 gallon foliar fertilizer/acre @ $4.50	45.00
Rototill (10 hours labor @ $10.00 + 10 hours tractor @ $16.55 + 10 hours tiller @ $8.00)	345.50
Tillage 3x/year (7 hours labor/operation @ $10.00 + 7 hours tractor @ $16.55 + 7 hours drag @ $6.36)	691.11
Cover crop (labor and equipment + rye)	
Replace plants (16 hours/labor @ $8.00) + 8 hours 35 h.p. tractor @ $19.81 + 8 hours trailer @ $4.29)	177.09 320.80
75 plants/acre @ $2.50	1,875.00
Real estate taxes @ $32.00/acre	320.00
Addition to development costs, year 2	$ 6,171.77

Table 9. Third Year for 10 Acres of Blueberries

Table 9. Third Year

Weed control (4 1/2 hours equipment and labor)	$ 133.88
2 1/2 pounds Karmex 80 wp./acre @ $5.55/pound (spray 1/4 acreage)	34.69
Fertilizer (3 hours labor @ $10.00 + 3 hours tractor/spreader)	109.89
50 pounds 45-0-0 @ $192.00/ton	48.00
Irrigation (operating cost @ $35.00/acre)	350.00
Foliar feed (2 hours tractor @ $19.81 + 2 hours tractor @ $10.00 + 2 hours sprayer @ $3.20)	66.02
+ (1 gallon foliar fertilizer/acre @ $4.50)	45.00
Rototill (10 hours labor @ $10.00 + 10 hours tractor @ $16.55 + 10 hours tiller @ $8.00)	345.50
Tillage 3x/year (7 hours labor/operation @ $10.00 + 7 hours tractor @ $16.55 + 7 hours drag @ $6.36)	691.11
Cover crop (labor and equipment + rye)	177.09
Replace plants (16 hours labor @ $8.00 + 8 hours tractor @ $19.81 + 8 hours trailer @ $4.29)	320.80
25 plants/acre @ $2.50	625.00
Real estate taxes @ $32.00/acre	320.00
Addition to development cost	$ 3,266.98

Table 10. Fourth Year for 10 Acres of Blueberries

Table 10. Fourth Year

Weed control (4 hours equipment and labor)	$ 119.00
1 gallon Surflan/acre sprayed @ $65/gallon (spray 1/4 acreage)	162.50
Fertilizer (3 hours labor @ $10.00 + 3 hours tractor/spreader)	109.89
(100 pounds 45-0-0 @ $192.00/ton)	96.00
Irrigation (operating cost @ $35.00/acre)	350.00
Rototill (10 hours labor @ $10.00 + 10 hours tractor @ $16.55 + 10 hours tiller @ $8.00)	345.50
Tillage 3x/year (7 hours labor/operation @ $10.00 + 7 hours tractor @ $16.55 + 7 hours drag @ $6.36)	691.11
Cover crop (labor and equipment + rye)	177.09
Replace plants (8 hours labor @ $8.00 + 3 hours tractor @ $19.81 + 3 hours trailer @ $4.29)	120.30
+ (15 hours plants/acre @ $2.50)	375.00
Pruning 12,000 plants @ $.08/plant	960.00
Substitute with regular bearing spray program at 1/2 ratio of materials and at 1/2 time of application	
Fungicide spray - (2 hours labor @ $10.00 + 12 ounces/acre Funginex/acre @ $.45/ounce + 2 hours tractor and PTO sprayer @ $36.94/hour + 1 gallon foliar fertilizer/acre @ $4.50/gallon)	192.88
Cover spray - (2 hours labor @ $10.00 + 2 hours tractor and PTO sprayer @ $36.94/hour + 1/2 quart Guthion @ $5.63/quart + 1 1/4 quart/acre Captec 4L @ $1.825/quart + 1/2 pound Benlate/acre @ $11.80/pound)	203.84
Cover spray - (2 hours labor @ $10.00 + 2 hours tractor and PTO sprayer @ $36.94/hour + 1 1/4 quart/acre Captec 4L @ $1.825/quart + 1/2 pint Aqua Malathion @ $3.25/pint + 1 gallon foliar fertilizer/acre @ $4.50/gallon)	177.94
Real estate taxes @ $32.00/acre	320.00
	$ 4,401.05
Less net income after harvest of $.25/pound on 450 pounds/acre	1,125.00
Addition to development costs	$ 3,276.05

Table 11. Fifth Year for 10 Acres of Blueberries

Table 11. Fifth Year

Same costs as Table 1. of "Cost of Producing Blueberries in Southwestern Michigan Bulletin" E-2192, August 1993		$ 7,994.48
Plus fixed cost of machinery		1,652.55
Real estate taxes @ $32.00/acre		320.00
Except		
Reduce 2nd fertilizer application to 40 pounds N/A	$ 32.00	
Plant removal	157.76	
Bee rental	750.00	
Plant inspection	110.00	
1/2 spray program ([$1,290.98 variable cost + machinery fixed cost $253.12] + 2)	772.05	
Total exceptions		$ 1,821.81
Growing costs		$ 8,145.22
Less net income after harvest of $.25/pound on 1,200 pounds/acre		$ 3,000.00
Addition to development costs		$ 5,145.22

Table 12. Sixth Year for 10 Acres of Blueberries

Table 12. Sixth Year

Same costs as Table 1. of "Cost of Producing Blueberries in Southwestern Michigan" Bulletin, E-2192, August 1993		$ 7,994.48
Plus fixed cost of machinery		1,652.55
Real estate taxes @ $32.00/acre		320.00
Except		
No plant removal	$110.30	
Bee rental	750.00	
Total exceptions		(860.32)
Growing costs		$ 9,106.71
Less net income after harvest of $.25/pound on 2,700 pounds/acre		$ 6,750.00
Addition to development costs		$ 2,356.71

Table 13. Total Establishment Cost for 10 Acres of Blueberries

Table 13. Total Establishment Costs for 10 Acres of Blueberries

Year	Net Development Cost	Interest*	Annual Total	Accumulated Cost
Land cost				$ 10,000.00
Preplant	$ 15,686.11	$ 1,427.44	$ 17,113.55	27,113.55
Planting	54,686.67	4,356.55	59,043.22	86,156.77
Second	6,171.77	7,139.41	13,311.18	99,467.95
Third	3,266.98	8,088.12	11,355.10	110,823.05
Fourth	3,276.05	8,996.89	12,272.94	123,095.99
Fifth	5,145.22	10,053.49	15,198.71	138,294.70
Sixth	2,356.71	11,157.84	13,514.55	151,809.25
Total w/o land	$90,589.51	$51,219.74		$141,809.25

* Accumulated development cost @ 8% per year + 1/2 current year development cost @ 8%.

+ $151,8909.25 less $10,000 land cost = $141,809.25 total development cost to be amortized over 25 years = $567.24.

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