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Cost of Producing Raspberries in Michigan

Michigan State University Extension Service

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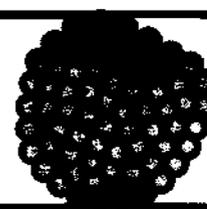
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COST OF PRODUCING RED RASPBERRIES IN MICHIGAN



By Myron P. Kelsey,¹ Robert R. Tritten² and Uta Kniese³

This cost evaluation of red raspberry production in Michigan is a projection of costs developed from a small group discussion with red raspberry growers in the spring of 1988. Participants described common growing and harvesting practices used by average raspberry growers in the area. They agreed on the acreage, equipment and cultural practices generally used by average raspberry growers in the area.

These figures do not reflect the average cost of raspberry production for all growers because costs vary considerably from farm to farm. However, the data can help you develop cost projections and better evaluate your farm. Each of the appropriate tables in this report includes a "Your farm" column for you to note your costs for a particular operation. Where costs cannot be determined, 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 100 acres of diversified tree and small fruit, including 20 acres of raspberries. However, the data in Table 1 are presented for 10 acres of red raspberries to make it easier to visualize many of the resource inputs. Per-acre costs, as shown in Tables 2-5, can be determined from Table 1 by dividing by 10.

LABOR COSTS

The full-time labor classification includes the working time of the operator and regular hired help used for raspberry production. 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 \$5.50 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. Part-time labor was charged at a rate of \$4.50 per hour, including fringes such as Social Security, Worker's Compensation insurance, etc.

EQUIPMENT COSTS

Major factors considered in the computation of equipment costs are initial cost, salvage value, years of life, annual usage, repair costs, insurance, interest and operating expenses such as gas and oil. The operating or variable costs for each piece of equipment are charged to the crop in Tables 1, 6, 7 and 8 on the basis of direct hourly use of the equipment. The fixed costs, such as depreciation and interest, are shown in Table 1 but are included in fixed costs only in Table 3.

VARIABLE COSTS

Variable costs are those that change directly with increases or decreases in the acreage or yield of raspberries. Examples of costs that vary with acreage are spray material, fertilizer, hired labor and machinery operating costs. Costs that vary directly with harvest yields are harvest hours and machinery time.

Variable costs incurred in raspberry production are categorized by labor, machinery and materials in Table 1. The details of hours and types of labor, machinery used and hours of use, and types 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 to see if you can reduce them. A high cost for a particular component may be justified if it contributes to sufficiently higher yield or improved quality.

OVERHEAD COSTS

The overhead or fixed costs of red raspberry production (Table 3) include allocation of machinery overhead on the basis of the proportion of total farm use in red raspberries, interest on investment, depreciation of investment in the development costs and property taxes. The details of establishment cost are shown in Table 6, 7, 8 and 9.

The fixed costs of machinery are allocated to red raspberries on the basis of hours of use relative to the total hours of equipment use on the farm. Fixed costs of machinery include depreciation, interest on investment, and insurance and housing costs. Interest, insurance and housing costs equal 12.7 percent of average value.

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Table 1. Variable growing cost for 10 acres of red raspberries, Michigan, 1988.

Operation	Labor			Equipment	Machinery				Materials			Your farm
	Labor (hr)	Wage rate	Cost		Hours of use	Unit var. cost	Total var. cost	Fixed unit cost	Total fixed cost	Item	Cost per 10 acres	
Weed control (1/3 acreage)	4	\$5.50	\$22.00	Tractor (40 hp) Weed sprayer	3 3	\$6.50 \$4.00	\$19.50 \$14.00	\$5.00 \$8.07	\$15.00 \$26.61	Surflan: 2 lb/A @ \$8.50/lb (1/3 acreage)	\$56.67	\$112.01
2nd weed control application (1/3 acreage)	4	\$5.50	\$22.00	Tractor (40 hp) Weed sprayer	3 3	\$6.50 \$4.00	\$19.50 \$14.00	\$5.00 \$8.07	\$15.00 \$26.61	Surflan: 2 lb/A @ \$8.50/lb (1/3 acreage)	\$56.67	\$112.01
Irrigation	4	\$5.50	\$22.00							Elec., acid & filter @ \$100/A	\$1,000.00	\$1,022.00
Fertilization	3	\$5.50	\$16.50	Tractor (40 hp) Spreader	3 3	\$6.50 \$0.00	\$19.50 \$2.40	\$5.00 \$2.40	\$15.00 \$7.20	12-12-12: 500 lb @ \$150/ton Am.nit.: 100 lb/A @ \$7.50/cwt	\$375.00 \$75.00	\$450.00
Cultivation (2 times)	30	\$5.50	\$165.00	Tractor (40 hp) Cultivator	30 30	\$6.50 \$1.50	\$195.00 \$45.00	\$5.00 \$2.70	\$150.00 \$81.00			\$405.00
Weed spray	8	\$5.50	\$44.00	Tractor (40 hp) Weed sprayer	6 6	\$6.50 \$4.00	\$39.00 \$29.20	\$5.00 \$8.07	\$30.00 \$53.22	Casaron: 100 lb/A @ \$1.49/lb (1/3 acreage)	\$496.67	\$608.95
SPRAYING												
1st lime sulphur	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Lime Sulfor: 10 gal/A @ \$6.00/gal	\$600.00	\$707.00
Preblossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.00/lb Benlate: 1/2 lb/A @ \$10/lb Diazinon: 2 lb/A @ \$5.63/lb	\$72.00 \$50.00 \$112.00	\$262.20
Early blossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.00/lb Benlate: 3/4 lb/A @ \$10/lb	\$72.00 \$75.00	\$174.00
Full blossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.00/lb Benlate: 3/4 lb/A @ \$10/lb	\$72.00 \$75.00	\$174.00
Postblossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.00/lb Benlate: 3/4 lb/A @ \$10/lb	\$72.00 \$75.00	\$174.00
1st cover	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.00/lb Benlate: 3/4 lb/A @ \$10/lb Diazinon: 2 lb/A @ \$5.63/lb	\$72.00 \$75.00 \$112.00	\$287.20
2nd cover	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Diazinon: 2 lb/A @ \$5.63/lb	\$112.00	\$140.20
Postharvest	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.00	\$13.00 \$3.00	\$5.00 \$3.00	\$10.00 \$6.00	Diazinon: 2 lb/A @ \$5.63/lb	\$112.00	\$140.20
Spring tipping	5	\$5.50	\$27.50	Custom rate	5	\$300	\$1,500.00					\$1,527.50
Fall cane removal	40	\$4.50	\$180.00									\$180.00
Pickup operation (miles)					500	\$0.16	\$80.00	\$4.38	\$198.00			\$80.00
Management & labor supervision	30	\$5.50	\$165.00									\$165.00
Totals			\$752.00				\$2,111.26		\$737.64		\$3,900.40	\$6,763.66

Table 2. Variable harvest cost for 18 acres (350 6-quart boxes/A) of pick-your-own red raspberries, Michigan, 1988.

	Units	Rate	Total	Your farm
Labor supervision (hr)	700	\$5.50	\$3,850.00	-----
Boxes (6-quart)	3500	\$0.16	\$560.00	-----
Depr. on scale / cash register (yr)	10	\$600.00	\$60.00	-----
Total variable cost			\$4,470.00	-----
Variable harvest cost per acre			\$447.00	-----
Variable harvest cost per box (350/A)			\$1.28	-----

Table 3. Overhead cost for 18 acres of red raspberries, Michigan, 1988.

Item	Total	Your farm
Equipment, growing	\$737.64	-----
Interest on harvest year growing cost (6,903.39 x .1 x .5)	\$338.18	-----
Interest on land (10% of \$900/A)	\$900.00	-----
Interest on ave. value of establishment cost (\$43,248.87 / 2 x 10%)	\$0.00	-----
Depreciation of establishment cost ((\$43,248.87 / 15 years)	\$0.00	-----
Real estate taxes (18 acres)	\$300.00	-----
Total overhead cost	\$2,275.82	-----
Overhead cost per acre	\$227.58	-----
Total cost per box (350)	\$0.65	-----

TABLE 4. Total cost of production of 18 acres (350 boxes/A) of red raspberries, Michigan, 1988.

	Total	Your farm
Variable growing cost	\$6,763.66	-----
Variable harvest cost	\$4,470.00	-----
Overhead cost	\$2,275.82	-----
Total cost	\$13,509.48	-----
Total cost per box	\$3.86	-----

Table 5. Effect of varying yield on cost/box and cost/lb for red raspberries in Michigan, 1988.

Yield/acre	Variable		Total Variable cost	Your farm	Overhead cost	Total cost/box	Total cost/lb	Your farm
	Growing cost	Harvest cost						
250	2.71	1.28	3.98	-----	0.91	4.89	0.57	-----
300	2.25	1.28	3.53	-----	0.76	4.29	0.50	-----
350	1.93	1.28	3.21	-----	0.65	3.86	0.45	-----
400	1.69	1.28	2.97	-----	0.57	3.54	0.41	-----
450	1.50	1.28	2.78	-----	0.51	3.29	0.39	-----
500	1.35	1.28	2.63	-----	0.46	3.09	0.36	-----

Table 6. Soil buildup year in preparation for planting red raspberries, Michigan, 1988.

Operation	Labor			Equipment	Machinery					Materials			Your farm
	Labor (hr)	Wage rate	Cost		Hours of use	Unit var. cost	Total var. cost	Fixed unit cost	Total fixed cost	Item	Cost per 10 acres	Total variable cost	
Backgrass control	8	\$5.50	\$44.00	Tractor (40 hp)	8	\$6.58	\$52.00	\$5.00	\$40.00	Roundup: 2 qt/A @ \$24/qt	\$400.00	\$615.04	
				Weed sprayer	8	\$4.88	\$39.04	\$8.87	\$70.96				
2nd weed control application (1/2 acreage)	4	\$5.50	\$22.00	Tractor (40 hp)	3	\$6.58	\$19.50	\$5.00	\$15.00	Roundup: 2 qt/A @ \$24/qt (1/2 acreage)	\$240.00	\$296.14	
				Weed sprayer	3	\$4.88	\$14.64	\$8.87	\$26.61				
Fall plowing	6	\$5.50	\$33.00	Tractor (60 hp)	6	\$6.69	\$40.14	\$5.93	\$35.50			\$82.14	
				Plow	6	\$1.50	\$9.00	\$2.69	\$16.14				
Disk (2 times)	3	\$5.50	\$16.50	Tractor (60 hp)	3	\$6.69	\$20.07	\$5.93	\$17.79			\$42.00	
				Disk	3	\$1.81	\$5.43	\$3.23	\$9.69				
Drag (2 times)	2	\$5.50	\$11.00	Tractor (60 hp)	2	\$6.69	\$13.38	\$5.93	\$11.86			\$26.88	
				Drag	2	\$1.25	\$2.50	\$2.69	\$5.38				
Fumigate	20	\$5.50	\$110.00	Tractor (60 hp)	10	\$6.69	\$66.90	\$5.93	\$59.30				
				Fumigator	10								
				Tractor (40 hp)	10	\$6.50	\$65.00	\$5.00	\$50.00				
				Cultipacker	10	\$1.50	\$15.00	\$2.70	\$27.00				Vorlex: 25 gal/A @ \$20.10/gal
Soil test	2	\$5.50	\$11.00						2 samples @ \$4	\$8.00	\$19.00		
Pickup operation (miles)					500	\$0.16	\$80.00	\$0.28	\$190.00		\$90.00		
Management & labor supervision	20	\$5.50	\$110.00								\$110.00		
Totals			\$357.50				\$442.60		\$575.31		\$5,753.00	\$6,553.10	

Table 7. Planting year for 10 acres of red raspberries, Michigan, 1988.

Operation	Labor			Equipment	Machinery					Materials			Your farm
	Labor (hr)	Wage rate	Cost		Hours of use	Unit var. cost	Total var. cost	Fixed unit cost	Total fixed cost	Item	Cost per 10 acres	Total variable cost	
Disk (2 times)	3	\$5.50	\$16.50	Tractor (60 hp)	3	\$6.69	\$20.07	\$5.93	\$17.79				
				Disk	3	\$1.81	\$5.43	\$3.23	\$9.69			\$42.00	
Drag (2 times)	2	\$5.50	\$11.00	Tractor (60 hp)	2	\$6.69	\$13.38	\$5.93	\$11.86				
				Drag	2	\$1.25	\$2.50	\$2.69	\$5.38			\$26.00	
Planting	32	\$5.50	\$176.00	Tractor (60 hp)	10	\$6.69	\$66.90	\$5.93	\$59.30				
				Planter/rent/str	10	\$5.00	\$50.00						
				Truck (miles)	50	\$0.25	\$12.50	\$0.38	\$19.00	Plants: 2400/A @ \$35/1000	\$8,400.00	\$8,345.40	
Irrigation, trickle: installation	60	\$5.50	\$330.00						Trickle irrigation: 2 @ \$650/A	\$4,500.00	\$4,830.00		
Irrigation: operation	4	\$5.50	\$22.00						Elec., acid & filter 2 @ \$100/A	\$1,000.00	\$1,022.00		
Hand hoeing (2 times)	6	\$4.50	\$27.00								\$27.00		
Cultivation (4 times) + sidedress fertilizer	60	\$5.50	\$330.00	Tractor (40 hp)	60	\$6.50	\$390.00	\$5.00	\$300.00				
				Cultivator	60	\$1.50	\$90.00	\$2.70	\$162.00	12-12-12: 250 lb @ \$150/ton	\$187.50	\$997.50	
Weed spray	8	\$5.50	\$44.00	Tractor (40 hp)	8	\$6.50	\$52.00	\$5.00	\$40.00	Casaron: 100 lb/A @ \$1.49/lb			
				Weed sprayer	8	\$4.88	\$39.04	\$8.87	\$70.96	(1/3 acreage)	\$496.67	\$631.71	
Spray (5 times)	30	\$5.50	\$165.00	Tractor (40 hp)	30	\$6.50	\$195.00	\$5.00	\$150.00	Captan: 3 lb/A @ \$1.88/lb	\$270.00		
				Sprayer	30	\$4.88	\$146.40	\$8.87	\$266.10	Benlate: .5 lb/A @ \$10/lb	\$250.00		
										Guthion: 2 qt/A @ \$27.50/gal	\$487.50	\$1,713.90	
Pickup operation (miles)					500	\$0.16	\$80.00	\$0.38	\$190.00			\$80.00	
Management & labor supervision	20	\$5.50	\$110.00									\$110.00	
Totals			\$1,231.50				\$1,163.22	\$1,302.00		\$17,431.67	\$19,826.39		

Table B. Training year for establishing 10 acres of red raspberries, Michigan, 1988.

Operation	Labor			Machinery					Materials			Your farm
	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	
Weed control (1/3 acreage)	4	\$5.50	\$22.00	Tractor (40 hp) Weed sprayer	3 3	\$6.50 \$4.88	\$19.50 \$14.64	\$5.00 \$8.87	\$15.00 \$26.61	Surflan: 2 lb/A @ \$8.50/lb (1/3 acreage)	\$56.67	\$112.81
2nd weed control application (1/3 acreage)	4	\$5.50	\$22.00	Tractor (40 hp) Weed sprayer	3 3	\$6.50 \$4.88	\$19.50 \$14.64	\$5.00 \$8.87	\$15.00 \$26.61	Surflan: 2 lb/A @ \$8.50/lb (1/3 acreage)	\$56.67	\$112.81
Irrigation	4	\$5.50	\$22.00							Elec., acid & filter: @ \$100/A	\$1,000.00	\$1,022.80
Fertilization	3	\$5.50	\$16.50	Tractor (40 hp) Spreader	3 3	\$6.50 \$8.88	\$19.50 \$2.40	\$5.00 \$2.40	\$15.00 \$7.20	12-12-12: 500 lb @ \$150/ton Am.nit.: 100 lb/A @ \$7.50/cwt	\$375.00 \$75.00	\$488.40
Cultivation (2 times)	30	\$5.50	\$165.00	Tractor (40 hp) Cultivator	30 30	\$6.50 \$1.58	\$195.00 \$45.00	\$5.00 \$2.70	\$150.00 \$81.00			\$485.00
Weed spray (1/3 acreage)	4	\$5.50	\$22.00	Tractor (40 hp) Weed sprayer	3 3	\$6.50 \$4.88	\$19.50 \$14.64	\$5.00 \$8.87	\$15.00 \$26.61	Casaron: 100 lb/A @ \$1.49/lb (1/3 acreage)	\$496.67	\$552.81
SPRAYING												
1st time sulphur	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.88	\$13.00 \$3.68	\$5.00 \$3.00	\$10.00 \$6.00	Line Sulfur: 10 gal/A @ \$6.88/gal	\$688.00	\$707.60
Preblossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.88	\$13.00 \$3.68	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.88/lb Benlate: 1/2 lb/A @ \$10/lb Diazinon: 2 lb/A @ \$5.63/lb	\$72.00 \$50.00 \$112.60	\$262.20
Early blossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.88	\$13.00 \$3.68	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.88/lb Benlate: 3/4 lb/A @ \$10/lb	\$72.00 \$75.00	\$174.60
Full blossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.88	\$13.00 \$3.68	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.88/lb Benlate: 3/4 lb/A @ \$10/lb	\$72.00 \$75.00	\$174.60
Postblossom	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.88	\$13.00 \$3.68	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.88/lb Benlate: 3/4 lb/A @ \$10/lb	\$72.00 \$75.00	\$174.60
1st cover	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.88	\$13.00 \$3.68	\$5.00 \$3.00	\$10.00 \$6.00	Captan: 4 lb/A @ \$1.88/lb Benlate: 3/4 lb/A @ \$10/lb Diazinon: 2 lb/A @ \$5.63/lb	\$72.00 \$75.00 \$112.60	\$287.20
2nd cover	2	\$5.50	\$11.00	Tractor (40 hp) High pressure sprayer	2 2	\$6.50 \$1.88	\$13.00 \$3.68	\$5.00 \$3.00	\$10.00 \$6.00	Diazinon: 2 lb/A @ \$5.63/lb	\$112.60	\$146.20
Pickup operation (miles)					500	\$0.16	\$80.00	\$0.38	\$190.00			\$80.00
Management & labor supervision	30	\$5.50	\$165.00									\$165.00
Totals			\$511.50				\$568.52		\$688.83		\$3,787.80	\$4,859.82

You should decide whether to consider fixed costs as part of the total cost for decision-making purposes. For example, overhead is a fixed cost if you own the raspberry acreage, but a variable cost if you rent the acreage.

PRODUCTION COSTS PER BOX

Per-acre yields are very important in determining production costs per box or pound of red raspberries (Table 5). Variable costs per box and per pound are based on the fact that preharvest costs per acre such as spraying and fertilizing do not vary greatly, regardless of the yield obtained. For these purposes, a box is assumed to be 8.525 pounds.

ESTABLISHMENT COSTS

The establishment costs for red raspberry acreage are shown in Tables 6-9. These include one year of soil buildup (Table 6), the planting year (Table 7) and one training year before harvesting begins (Table 8). The total establishment cost in Table 9 is used in Table 3 to determine interest on establishment cost and to depreciate the establishment cost over 15 years.

Table 9. Establishment cost of 10 acres of red raspberries, Michigan, 1988.

Soil buildup year		Your farm
Variable cost	\$6,553.10	-----
Fixed machinery cost	\$575.31	-----
Interest on land (\$900/acre @ 10%)	\$900.00	-----
Real estate taxes (\$30/acre)	\$300.00	-----
Interest on variable and fixed cost (10% x 1/2 year)	\$356.42	-----
Total soil buildup year	\$8,684.83	-----
Planting year		
Variable cost	\$19,826.39	-----
Fixed machinery cost	\$1,302.00	-----
Interest on land (\$900/acre @ 10%)	\$900.00	-----
Real estate taxes (\$30/acre)	\$300.00	-----
Interest on soil buildup year cost (\$8,684.83 @ 10%)	\$868.48	-----
Interest on variable and fixed cost (10% x 1/2 year)	\$1,056.42	-----
Total planting year	\$24,253.37	-----
Growing year		
Variable cost	\$4,859.82	-----
Fixed machinery cost	\$680.03	-----
Interest on land (\$900/acre @ 10%)	\$900.00	-----
Real estate taxes (\$30/acre)	\$300.00	-----
Interest on soil buildup year cost (\$8,684.83 @ 10%)	\$868.48	-----
Interest on planting year cost (\$24,253.37 @ 10%)	\$2,425.34	-----
Interest on variable and fixed cost (10% x 1/2 year)	\$276.99	-----
Total growing year	\$10,310.66	-----
Total establishment cost	\$43,248.87	-----

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