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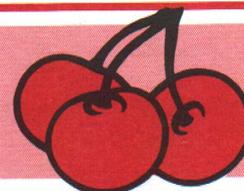
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COST OF PRODUCING TART CHERRIES IN NORTHWESTERN MICHIGAN



By Myron P. Kelsey,¹ L. Andrew Norman² and Uta Kniese³

This cost evaluation of tart cherry production in northwestern Michigan is a projection of costs developed through small group discussions with cherry growers from Antrim to Mason counties. In the discussions, growers described common growing and harvesting practices of average cherry growers in the area. They also agreed on the size of cherry acreage, the equipment and the cultural practices generally used by an average grower.

These figures do not reflect the average cost of tart cherry production for all growers in the state. Costs vary considerably by area and from farm to farm.

The data can help you develop 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 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 200 acres of diversified tree fruit, including 100 acres of tart cherries. The data in Table 1 are presented for 10 acres of tart cherries, however, to make it easier for you to visualize many of the resource inputs.

LABOR COSTS

The full-time labor classification includes the working time of the operator and regular hired help devoted to cherries. 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 same rate. As a result, producers who do a major portion of the work may have a lower cash labor cost than the figures indicate. This rate is a base rate of \$7 per hour plus Social Security, Worker's Compensation insurance and other fringes to equal \$9 per hour. Part-time labor was paid \$6 per hour with Social Security, Worker's Compensation and other fringes.

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 hourly operating costs, which include only gas and oil and repairs for each piece of equipment, are given in Table 1 and are based on the direct use of the equipment. The overhead machinery costs on an hourly basis are also shown in Table 1 but are included in overhead costs only in Table 3.

VARIABLE COSTS

Variable costs are those that change directly with increases or decreases in the acreage of tart cherries. Examples of such costs are spray material, fertilizer, hired labor and machinery operating costs.

Variable costs incurred in cherry production are categorized by labor, machinery and materials in Table 1. Included in Table 1 are the details of hours and types of labor, machinery used and hours of use, and kinds and amounts of materials used by operation. If your costs for particular items are substantially higher than those shown, you 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 sufficiently higher yield or improved quality.

Variable costs incurred in harvesting an acre with estimated total production of 3.25 tons of cherries are shown in Table 2. At this level, a custom harvest charge of 3 cents per pound was computed. Table 1 costs include annual operating costs for 40 percent of the acreage to be under trickle irrigation. This figure, particularly, should be adjusted to reflect your farm costs.

OVERHEAD COSTS

The overhead or fixed costs of cherry production (Table 3) include allocation of machinery overhead on the basis of the proportion of total farm use in cherries, interest on orchard investment, orchard depreciation and taxes. The details of orchard establishment cost are shown in Tables 6 and 7.

The fixed costs of machinery are allocated to tart cherries on the basis of hours of use relative to the total hours of equipment use on the farm.

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Table 1. Variable growing cost for 18 acres of tart cherries, northwestern Michigan, 1989.

Operation	Labor				Machinery				Materials				
	Labor (hrs)	Wage rate	Cost	Equipment	Hours of use	Unit var. cost	Total var. cost	Fixed unit cost	Total fixed cost	Item	Cost per 18 acres	Total variable cost	Your farm cost
Trimming every 2 yr -- avg. cost	60	\$9.00	\$540.00	Chain saw	2	\$1.20	\$2.40	\$1.25	\$2.50			\$542.40	
Brush removal	4	\$9.00	\$36.00	Tractor (88 hp) Rotary mower	4	\$7.82	\$28.88	\$9.37	\$37.48			\$70.92	
Fertilizer: nitrogen	2	\$9.00	\$18.00	Tractor (68 hp) Fertilizer spreader	2	\$6.79	\$13.58	\$5.93	\$11.86	33-0-0; 500 lb	\$175/ton	\$437.50	\$476.68
Fertilizer: potash (every other year) -- annual cost	1	\$9.00	\$9.00	Tractor (88 hp) Fertilizer spreader	1	\$7.82	\$7.82	\$9.37	\$9.37	288 lb 0-0-68 every other yr	\$148/ton	\$97.50	\$117.27
Line (every eighth year) -- annual cost					1	\$3.76	\$3.76			5 tons/A custom applied	\$15/ton	\$93.75	\$93.75
Weed control	4	\$9.00	\$36.00	Tractor (68 hp) Weed sprayer	3	\$6.79	\$20.37	\$5.93	\$17.79	material cost		\$128.00	\$191.81
Mowings (3 times)	18	\$9.00	\$99.00	Tractor (88 hp) Rotary mower	18	\$7.82	\$78.20	\$9.37	\$93.78				\$177.38
Bee rental										3 hives/10 A	\$75.00	\$75.00	
Summer tipping: sickle bar										Custom rate	\$8.50/A	\$85.00	\$85.00
Spray program (4 sprays)	8	\$9.00	\$72.00	Tractor (88 hp) PTO sprayer	8	\$7.82	\$56.16	\$9.37	\$74.96	Insecticides and fungicides		\$558.00	\$718.00
Lesser peach borer (spray 1/4 acreage)	4	\$6.00	\$24.00	Tractor (88 hp) High pressure sprayer	2	\$7.82	\$14.04	\$9.37	\$18.74	Lorsban: 2 qt/100 gal	\$32.50/gal	\$48.60	\$79.78
Mouse baiting										Zinc phosphide	corn @ \$11/A	\$10.00	\$10.00
Trickle irrigation (incl. well & pump) -- 40% of acreage	20	\$6.00	\$120.00	Trickle irrigation Electric & repairs	4	\$40.00	\$160.00	\$15/A	\$60.00			\$280.00	\$280.00
Tree replacement (annual cost during first 1/2 orchard life)	2.5	\$9.00	\$22.50	Tractor (68 hp) Trailer	2.5	\$6.79	\$16.98	\$5.93	\$14.83	1.5 trees/A	\$75.00	\$114.95	\$114.95
Growth regulator	3	\$9.00	\$27.00	Tractor (88 hp) PTO sprayer	3	\$7.82	\$21.06	\$9.37	\$28.11	Gibberellin		\$180.00	\$163.00
Ethrel spray	3	\$9.00	\$27.00	Tractor (88 hp) Sprayer	3	\$7.82	\$21.06	\$9.37	\$28.11	.8 pt Ethrel/A		\$68.00	\$123.00
Pest management service @ \$15/A												\$150.00	\$150.00
Management & labor supervision	50	\$9.00	\$450.00									\$450.00	\$450.00
Pickup operation (miles)				Pickup	400	\$0.16	\$64.00	\$0.38	\$152.00			\$64.00	\$64.00
Totals	172		\$1,471.50				\$616.85		\$898.93			\$1,744.35	\$3,981.90

Table 2. Variable harvest cost for 10 acres (6,500 lb/A) of tart cherries, northwestern Michigan, 1989.

	Unit	Price	Total	Your farm
Full-time labor	4	\$9.0000	\$36.00	-----
Custom shaking @ 3 cents/lb	6,500	\$0.0300	\$195.00	-----
Cherry tax: @ .75 cents/lb	6,500	\$0.0075	\$48.75	-----
Total variable cost per acre			\$279.75	-----
Total variable cost per pound			\$0.04	-----

Table 3. Overhead cost for growing and harvesting 10 acres of tart cherries, northwestern Michigan, 1989.

	Purchased orchard	Established orchard	Your farm
Equipment, growing	\$898.93	\$898.93	-----
Interest on land (\$800/A @10%)	\$800.00	\$800.00	-----
Property taxes (@ \$35/A)	\$350.00	\$350.00	-----
Int. on ave. orchard establishment cost of \$4,766/A @ 10%		\$2,383.01	-----
Depreciation of establishment cost (20 yr)		\$2,383.01	-----
Int. on ave. purchased orchard cost of \$2,200/A @ 10%	\$1,100.00		-----
Deprec. of purchased orchard cost (20 yr)	\$1,100.00		-----
Int. on 1/2 growing & harvest cost @ 10%	\$338.97	\$338.97	-----
Total overhead cost	\$4,587.90	\$7,153.91	-----
Total cost per pound	\$0.07	\$0.11	-----

Table 4. Total growing and harvesting cost for 10 acres (6,500 lb/A) of tart cherries, northwestern Michigan, 1989.

	Purchased orchard	Established orchard	Your farm
Variable growing cost	\$3,981.90	\$3,981.90	-----
Variable harvest cost	\$2,797.50	\$2,797.50	-----
Overhead cost of established orchard		\$7,153.91	-----
Overhead cost of purchased orchard	\$4,587.90		-----
Total variable cost	\$11,367.30	\$13,933.31	-----
Total cost per acre	\$1,136.73	\$1,393.33	-----
Total cost per pound	\$0.17	\$0.21	-----

Table 5. Effect of varying yield on cost/lb for tart cherries, northwestern Michigan, 1989.

Yield, lb/acre	Variable		Total variable cost	Your farm	Purchased orchard		Established orchard		Your farm
	Growing cost	Harvest cost			Overhead cost	Total cost	Overhead cost	Total cost	
2,000	\$0.20	\$0.04	\$0.24	-----	\$0.23	\$0.47	\$0.36	\$0.60	-----
3,000	\$0.13	\$0.04	\$0.18	-----	\$0.15	\$0.33	\$0.24	\$0.41	-----
4,000	\$0.10	\$0.04	\$0.14	-----	\$0.11	\$0.26	\$0.18	\$0.32	-----
5,000	\$0.08	\$0.04	\$0.12	-----	\$0.09	\$0.21	\$0.14	\$0.27	-----
6,000	\$0.07	\$0.04	\$0.11	-----	\$0.08	\$0.19	\$0.12	\$0.23	-----
7,000	\$0.06	\$0.04	\$0.10	-----	\$0.07	\$0.17	\$0.10	\$0.20	-----
8,000	\$0.05	\$0.04	\$0.09	-----	\$0.06	\$0.15	\$0.09	\$0.18	-----
9,000	\$0.04	\$0.04	\$0.09	-----	\$0.05	\$0.14	\$0.08	\$0.17	-----
10,000	\$0.04	\$0.04	\$0.08	-----	\$0.05	\$0.13	\$0.07	\$0.15	-----

Table 6. Establishment cost for 10 acres of tart cherries
(excluding interest), northwestern Michigan, 1989.

	Your farm

Site preparation	
General land development and taxes (\$300/A)	\$3,000.00

Planting year (year one)	

Ground preparation: 4 hr labor @ \$9/hr & equipment @ \$21.40/hr	\$121.60
Marking: 5 hr @ \$9	\$45.00
10 hr @ \$6	\$60.00

Trees: 125/A @ \$5.25	\$6,562.50

Custom tree planting: @ \$.25/tree	\$312.50

1 bale straw/tree @ \$1.50/bale	\$1,875.00

Spraying (3 times):	
6 hr labor @ \$9	\$54.00
material @ \$5.98/A/spray	\$179.40
equipment @ \$67.04/10 A/spray	\$201.12

Cover crop: machinery, material and labor @ \$15/A	\$150.00

Mouse bait: machinery, material and labor @ \$6.44/A	\$64.40

Fertilizer: equip. & labor	\$105.58
1 lb fert./tree @ \$.10/lb	\$125.00

Trickle irrigation: depr. & int./yr	\$887.50
operating cost/yr	\$300.00

Management: 10 hr @ \$9	\$90.00

Real estate taxes @ \$35/A	\$350.00

Total	\$11,483.60

Growing cost (year two)	

Prune: 10 hr @ \$9	\$90.00

Tree replacement: 10 hr @ \$9 + 50 trees @ \$5.25 + equip. @ \$17/hr	\$522.50

Herbicide spray: equip., labor, mat.	\$212.00

Insect & disease control (3 times): equip., labor, material	\$440.00

Table 6 (continued)

Mow (2 times): labor & equip. @ \$16.20/A	\$162.00
Mouse control: equip., labor, mat. @ \$6.44/A	\$64.40
Fertilizer: equip. & labor 1 lb fert./tree @ \$.10/lb	\$106.00 \$125.00
Trickle irrigation: depr. & int./yr operating cost/yr	\$887.50 \$300.00
Management: 10 hr @ \$9	\$90.00
Real estate taxes @ \$35/A	\$350.00
Total	\$3,349.40

Growing cost (year three)

Prune: 30 hr @ \$9	\$270.00
Tree replacement: 8 hr @ \$9 + 40 trees @ \$5.25 + equip. @ \$17/hr	\$418.00
Herbicide spray: equip., labor, mat.	\$212.00
Insect & disease control (4 times): equip., labor, material	\$640.00
Mow (2 times): labor & equip. @ \$16.20/A	\$162.00
Mouse control: equip., labor, mat. @ \$6.44/A	\$64.40
Fertilizer: equip. & labor 2 lb fert./tree @ \$.10/lb	\$106.00 \$250.00
Trickle irrigation: depr. & int./yr operating cost/yr	\$887.50 \$300.00
Management: 15 hr @ \$9	\$135.00
Real estate taxes @ \$35/A	\$350.00
Total	\$3,794.90

Growing cost (year four)

Prune: 40 hr @ \$9	\$360.00
Tree replacement: 7 hr @ \$9 + 30 trees @ \$5.25 + equip. @ \$17/hr	\$339.50
Herbicide spray: equip., labor, mat.	\$212.00
Insect & disease control (4 times): equip., labor, material	\$720.00

Table 6 (continued)

Mow (2 times): labor & equip. @ \$16.20/A	\$162.00
Mouse control: equip., labor, mat. @ \$ 6.44/A	\$64.40
Fertilizer: equip. & labor 3 lb fert./tree @ \$.10/lb	\$112.00 \$375.00
Trickle irrigation: depr. & int./yr operating cost/yr	\$887.50 \$300.00
Management: 20 hr @ \$9	\$180.00
Real estate taxes @ \$35/A	\$350.00
Total	\$4,062.40
Growing cost (year five)	
Prune: 50 hr @ \$9	\$450.00
Tree replacement: 5 hr @ \$9 + 20 trees @ \$5.25 + equip. @ \$17/hr	\$235.00
Herbicide spray: equip., labor, mat.	\$212.00
Insect & disease control (4 times): equip., labor, material	\$800.00
Mow (2 times): labor & equip. @ \$16.20/A	\$162.00
Mouse control: equip., labor, mat. @ \$ 6.44/A	\$64.40
Fertilizer: equip. & labor 4 lb fert./tree @ \$.10/lb	\$118.00 \$500.00
Trickle irrigation: depr. & int./yr operating cost/yr	\$887.50 \$300.00
Management: 30 hr @ \$9	\$270.00
Real estate taxes @ \$35/A	\$350.00
Total	\$4,348.90
Total of 5 years	\$30,039.20

Table 7. Total establishment costs, including interest, for 10 acres of tart cherries, northwestern Michigan, 1989.

Year	Growing cost	Your farm	Interest	Your farm	Annual total	Your farm	Accumulated cost	Your farm
Site preparation	\$3,000.00	-----	\$950.00	-----	\$3,950.00	-----	\$3,950.00	-----
Planting year	\$11,483.60	-----	\$1,769.18	-----	\$13,252.78	-----	\$17,202.78	-----
Year two	\$3,349.40	-----	\$2,687.75	-----	\$6,037.15	-----	\$23,239.93	-----
Year three	\$3,794.90	-----	\$3,313.74	-----	\$7,108.64	-----	\$30,348.57	-----
Year four	\$4,062.40	-----	\$4,037.98	-----	\$8,100.38	-----	\$38,448.94	-----
Year five	\$4,348.90	-----	\$4,862.34	-----	\$9,211.24	-----	\$47,660.18	-----

These are shown in Table 1 by operation but are not included in the total of variable costs. Fixed costs on machinery include depreciation, interest on investment, insurance and housing costs. Interest on land and growing and establishment costs was charged at 10 percent. Fixed costs vary from farm to farm more than the variable costs shown in Table 1. Such costs are the land acquisition cost and orchard establishment costs. The figures in Table 3 reflect two ways of acquiring an orchard. Possible sale value is one way to evaluate the orchard cost. Growers felt a 10- to 15-year-old orchard could possibly be purchased for \$3,000 per acre, which would be divided for depreciation into \$800 land value and \$2,200 orchard value. If a grower establishes an orchard, current establishment costs illustrated in Tables 6 and 7 are more appropriate to use.

You should evaluate your farm situation and decide whether to consider fixed costs as part of the total cost for decision-making purposes. For example, orchard overhead is a fixed cost if you own the orchard outright, but a variable cost if you rent.

PRODUCTION COSTS

Per-acre yields are very important in determining production costs per pound (Table 5). In computing per pound costs, it was assumed that pre-harvest costs per acre, such as spraying, pruning, cultivating, etc., do not vary greatly, regardless of the yield. Custom harvest rates were charged at 3 cents per pound harvested at the 6,500-pound-per-acre rate. It was assumed that the total variable and fixed costs for an owner-operator of a harvester would vary with an increase or decrease in yield. Therefore, harvest costs per pound in Table 5 are shown to be the same at all yield levels. In practice, costs would decrease for yields over 6,500 pounds and increase for yields below 6,500 pounds per acre (Table 2).

In addition, overhead costs for interest on orchard value and depreciation will vary considerably from farm to farm, depending on when the orchard was planted. These costs include an estimated 1989 establishment cost, so they may overstate actual costs on currently producing orchards. You are encouraged to substitute your land and orchard acquisition or establishment costs in these tables.

ESTABLISHMENT COSTS

Tables 6 and 7 illustrate current establishment costs for a tart cherry orchard. Individual cash costs will vary widely, depending on the site preparation and the cultural practices needed to establish the orchard. This example includes the cost of trickle irrigation, which is expensive but should obtain higher economic yields at an earlier age.

The first column of Table 7 repeats the costs per year shown in Table 6. In the second column, an interest charge of 10 percent is calculated on the land investment of \$800 per acre, one-half year's interest charge on the current growing year cost, and an interest cost on the prior year's accumulated cost in the last column.

The final accumulated cost of year five is used in Table 3 to calculate operating year's depreciation of the establishment cost and interest on the establishment cost. If you purchase an orchard, substitute the purchase cost for the establishment cost. Generally the sale value of an orchard is considerably less than the establishment cost because both sellers and buyers tend to undervalue the costs involved in orchard establishment.

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