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Costs of Tart Cherry Production in Western Michigan

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Cooperative Extension Service

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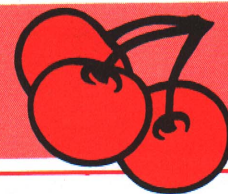
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## COSTS OF TART CHERRY PRODUCTION IN WESTERN MICHIGAN



By Myron Kelsey and Larry Bradford<sup>1</sup>

This cost evaluation of tart cherry production in western Michigan is a projection of costs developed through small group discussions with cherry growers. In the discussions, growers described common growing and harvesting practices of average cherry growers in the area. Also agreed upon was the size of cherry acreage, equipment and 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 a grower to develop costs and better evaluate a farm situation. Each of the appropriate tables in this report includes a "Your Farm Cost" column for the grower to note the costs for a particular operation. Where costs cannot be determined, the grower may wish to adjust and substitute the study data.

Data assembled assumed equipment and labor were available for a hypothetical farm of 200 acres of diversified tree fruit, including 100 acres of tart cherries. However, the data in Table 1 are presented for 10 acres of tart cherries because it may be easier for a grower to visualize many of the resource inputs on this basis (See Table 1 on page 2).

### 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 by producers. However, to allow for differences in the proportion of work performed by regular hired help, which is a cash expense, or 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 \$7.00 per hour plus Social Security, Workers' Compensation Insurance and other fringes to equal \$10 per hour. Part-time labor was paid \$7.50 per hour with Social Security, Workers Compensation, and other fringes.

### Equipment Costs

Major factors considered in the computation of equipment costs are initial costs, salvage value, years of life, annual usage, repair costs, insurance, interest and operating expenses such as gas and oil. The 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.

### 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 type of labor, machinery used and hours of use, and kinds and amounts of material used by opera-

tion. If a grower's costs for particular items are substantially higher than those shown, those components need to be closely analyzed to see if they can be reduced. A high cost for a particular component may be justified if it contributes to sufficiently higher yield or improved quality.

Variable costs incurred in the harvesting of an acre with estimated total production of 2.5 tons of cherries are shown in Table 2. At this level, a custom harvest charge of 5 cents per pound was computed.

### Overhead Costs

The overhead, or fixed cost, for cherry production (Table 3) includes 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. 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 was charged at 10% and 12.5% on growing costs and establishment cost.

You should evaluate your farm situation and decide whether fixed costs should be considered as part of the total cost for decision-making purposes. One example of this type of consideration is the fact that orchard overhead is a fixed cost if owned outright, but if rented, it is a variable cost.

<sup>1</sup>Professor and Extension Specialist, Department of Agricultural Economics, and District Extension Horticulture and Marketing Agent, respectively.

**Table 1. Variable Growing Costs for 10 Acres of Tart Cherries, Northwestern Michigan, 1984**

Operation	Labor			Machinery					Materials		Cost Per 10 Acres	Total Variable Cost
	Hrs/10 Acres	Wage Rate	Cost	Equipment	Hours of Use	Variable Cost/Unit	Total Variable Cost	Fixed Cost/Unit	Fixed Cost	Item		
Trimming (Every 2 yrs, Avg. Cost)	62	\$10.00	\$620.00	Chain saw	2	\$1.20	\$ 2.40	\$ 1.25	\$ 2.50		\$	\$ 622.40
Removing Brush	4	10.00	40.00	Tractor (large)	4	7.02	28.04	9.37	37.48			
				Rotary mower	4	1.71	6.84	4.02	16.08			74.88
Fertilizer	4	7.50	30.00	Tractor (med)	4	6.79	27.16	5.93	23.72	500# 33-0-0@		
				Fertilizer spreader	4	3.76	15.04	10.71	42.84	\$175/ton	437.50	509.70
Fertilizer (Every Other Year—annual cost)	2	7.50	15.00	Tractor (large)	2	7.02	14.04	9.37	18.74	300# 0-0-60	97.50	130.29
				Fertilizer spreader	.75T	5.00T	3.75			every other yr@\$130/T		
Lime (Every Third Year—annual cost)										2 T/acre custom applied@\$18/T	120.00	120.00
Weed Control (Spray 1/3 acreage)	9	10.00	90.00	Tractor (med)	7	6.79	47.53	5.93	41.51	\$12 material cost per acre sprayed	40.00	211.69
				Weed sprayer	7	4.88	34.16	8.87	62.09			
Mowing (2 times)	10	7.50	75.00	Tractor (large)	10	7.02	70.02	9.37	93.70			
				Rotary mower	10	1.71	17.10	4.02	40.20			162.12
Bee Rental										3 hives per 10 acres @ \$27 ea.		81.00
Summer Tipping				Sickle bar-custom @ \$17/acre								170.00
Spray Program (6 sprays)	12	10.00	120.00	Tractor (large)	12	7.02	84.24	9.37	112.44	Insecticides and Fungicides	1,465.30	1,729.30
				P.T.O. Sprayer	12	4.98	59.76	12.15	145.80			
Lesser Peach Borer (Spray 1/4 acreage)	10	7.50	75.00	Tractor (large)	5	7.02	35.10	9.37	46.85	Thiodan .5 gal/A		
				High pressure sprayer	5	.53	2.65	32.41	162.05	sprayed @ \$16/gal	20.00	132.75
Mouse Baiting	1	7.50	7.50	Tractor (med)	1	6.79	6.79	5.93	5.93	10# bait/acre @ \$34/cwt.	34.00	49.56
				Shibbe spreader	1	1.27	1.27	8.92	8.92			
Trickle Irrigation 1/3 acreage including well and pump	3.3	7.50	25.00	Trickle irrigation		\$2.50	8.33	\$15/A	\$ 50.00			\$133.98
				Electric & Repairs		30.50/A	100.65					
Tree Replanting Annual cost during first 1/2 orchard life	2.5	7.50	18.75	Tractor (med)	2.5	6.79	16.98	5.93	14.83	Trees 1.5/acre @ \$8.00	120.00	156.21
				Trailer	2.5	.19	.48	4.10	12.25			
Growth Regulator*	3	10.00	30.00	Tractor (large)	3	7.02	21.09	9.37	28.11	Giberalan@\$20/A	200.00	266.03
				P.T.O. sprayer	3	4.98	14.94	12.15	36.45			
Alar Spray (Cover 2/3 acreage)	2	10.00	20.00	Tractor (large)	2	7.02	14.04	9.37	18.74	5# Alar/acre @ \$17/lb.	566.67	610.67
				P.T.O. sprayer	2	4.98	9.96	12.15	24.30			
Ethral Spray	3	10.00	30.00	Tractor (large)	3	7.02	21.06	9.37	28.11	1 pint Ethral/A @ \$5.90/pint	59.00	125.00
				Sprayer	3	4.98	14.94	12.15	36.45			
Pest Mgt. Service	15/A		150.00									150.00
Orchard Cleanup	4	7.50	30.00	Tractor (med)	2	6.79	13.58	5.93	11.86			
				Trailer	2	.19	.38	4.10	8.20			43.96
Management	70	10.00	700.00									700.00
Pickup Operation				Pickup	750mi	.16/mi	120.00	.38/mi	285.00			120.00
<b>TOTAL</b>			<b>\$2,076.25</b>				<b>\$982.32</b>		<b>\$1,415.15</b>		<b>\$3,240.97</b>	<b>\$6,299.54</b>

\*Cost on older orchards only.



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**Table 2. Variable Harvest Cost for 50 Cwt. Tart Cherries  
Northwest Michigan, 1984**

Full Time Labor (4 hrs @ \$10.00)	\$ 40.00
Custom Shaking (5¢/lb, 5000 lbs/acre)	250.00
Well & Pad Operation (2.5 T @ 2.40 T)	6.00
	<u>\$296.00</u>
Cost per Pound	5.92 cents

**Table 3. Tart Cherry Overhead Cost Per 10 Acres Production  
Northwest Michigan, 1984**

Item	Cost
Growing Equipment (fixed cost)	\$1,415.15
Interest on Growing Cost ( $6299.54 \times .125 \times .5$ )	393.72
Interest on Land (\$2000/acre @ 10%)	2,000.00
Interest on Average Value of Establishment Cost ( $57,124.17 \div 2 \times 12.5\%$ )	3,570.26
Depreciation of Establishment Cost ( $57,124.17 \div 20$ years)	2,856.21
Real Estate Taxes (\$35/acre)	350.00
Marketing	—
	<u>\$10,585.34</u>

**Table 4. Total Cost of Tart Cherry Production  
Northwest Michigan, 1984  
5,000 pounds per acre**

	Per 10 Acres	Per Acre	Cents Per Pound
Variable Growing Cost (Harvest Year)	\$ 6,299.54	\$ 629.95	12.60
Variable Harvest Cost	2,960.00	296.00	5.92
Overhead Cost	10,585.34	1,058.53	<u>21.17</u>
			39.69

**Table 5. Effect of Varying Yield on Cost/Hundredweight  
for Tart Cherries  
Northwest Michigan, 1984**

Yield Cwt/Acre	Variable Growing Cost	Variable Harvest Cost	Total Variable Cost	Overhead Cost	Total Cost
----- Cents Per Pound -----					
20	31.5	8.9	40.4	52.9	93.3
30	21.0	7.9	28.9	35.3	64.2
40	15.8	6.9	22.7	26.5	49.2
50	12.6	5.9	18.5	21.2	39.7
60	10.5	5.9	16.4	17.6	34.0
70	9.0	5.4	14.4	15.1	29.5
80	7.9	5.4	13.3	13.2	26.5
90	7.0	4.9	11.9	11.8	23.7
100	6.3	4.9	11.2	10.6	21.8

## Production Costs

Per acre yields are very important factors in determining production costs per hundredweight (Table 5). In computing per hundredweight costs, it was assumed that preharvest costs per acre, such as spraying, pruning, cultivation, etc., do not vary greatly regardless of the yield. Custom harvest rates were charged at 5 cents per pound harvested (Table 2). This rate was increased with lighter yields and reduced to 4 cents per pound at heavier yields.

In addition, overhead cost for interest on orchard value and depreciation will vary considerably from farm to farm depending on when the orchard was planted. Since these costs include an estimate 1984 establishment cost they overstate actual costs on currently producing orchards.

**Table 6. Establishment Cost for 10 Acres of Tart Cherries (Excluding Interest)  
Northwest Michigan, 1984**

<b>Site Preparation</b>	
General land development and taxes (\$300/acre)	\$3,000.00
<b>Planting Year (Year one)</b>	
Ground preparation, 4 hrs labor @ \$7.50 + equipment @ \$21.40/hr	115.60
Marking, 5 hrs @ \$10.00	50.00
10 hrs @ \$7.50	75.00
Trees (125/acre @ \$5.00)	6,250.00
Custom tree planting @ \$.25/tree	312.50
1 Bale straw/tree @ \$1.50 ea	1,875.00
Prune and train, 30 hrs labor @ \$10.00	300.00
Spraying (3 times)	
6 hrs. labor @ \$10.00	60.00
Material @ \$5.98/acre/spray	179.40
Equipment, \$67.04/10 acres/spray	201.12
Cover crop—machinery, material and labor @ \$15.00/acre	150.00
Mouse Bait—machinery, material and labor @ \$6.44/acre	64.40
Fertilizer—Equipment and labor	105.58
1# fertilizer/tree @ \$200/ton	125.00
Management, 70 hrs @ \$10.00	700.00
Real estate taxes @ \$35/acre	350.00
	\$10,913.60
<b>Growing cost (Year two)</b>	
Prune (30 hrs @ \$10.00)	300.00
Tree replacement (10 hrs @ \$7.50 + 50 trees @ \$5.00 + equipment @ \$17.00/hr)	495.00
Herbicide spray (equipment, labor and material)	212.00
Insect and disease control (3 times) equipment, labor & material	440.00
Mow (2 times) labor and equipment @ \$16.20/acre	162.00
Mouse control, equipment, labor & material @ \$6.44/acre	64.40
Fertilizer—Equipment and labor	106.00
—1# fertilizer/tree @ \$.10/lb.	125.00
Management, 50 hrs @ \$10.00	500.00
Real estate taxes @ \$35/acre	350.00
	\$2,754.40

<b>Growing Cost (Year three)</b>	
Prune (40 hrs & \$10.00)	\$400.00
Tree replacement (8 hrs & \$7.50 + 40 trees @ \$5.00 + equipment @ \$17.00/hr)	396.00
Herbicide spray (equip, labor and material)	212.00
Insect and disease control (4 times) equipment, labor & material @ \$16/acre/spray	640.00
Mow (2 times) labor and equipment @ \$16.20/acre	162.00
Mouse control @ \$6.44/acre	64.40
Fertilizer—Equipment and labor	106.00
—2# fertilizer/tree @ \$.10/lb.	250.00
Management, 55 hrs @ \$10.00	550.00
Real estate taxes @ \$35/acre	350.00
	\$3,130.40

<b>Growing Cost (Year four)</b>	
Prune (50 hrs @ \$10.00)	\$500.00
Tree replacement (7 hrs @ \$7.50 + 30 trees @ \$5.00 + equipment @ \$17.00/hr)	321.50
Herbicide spray (equipment, labor and material)	212.00
Insect and disease control (4 times) equipment, labor & material @ \$18/acre/spray	720.00
Mow (2 times)	162.00
Mouse control	64.40
Fertilizer—Equipment and labor	112.00
—3# fertilizer/tree @ \$.10/lb.	375.00
Management, 60 hrs @ \$10.00	600.00
Real estate taxes @ \$35/acre	350.00
	\$3,416.90

<b>Growing Cost (Year Five)</b>	
Prune (60 hrs @ \$10.00)	600.00
Tree replacement (5 hrs @ \$7.50 + 20 trees @ \$5.00 + equipment @ \$17.00/hr)	222.50
Herbicide spray	212.00
Insect and disease control (4 times, equipment, labor & material @ \$20/acre/spray)	800.00
Mow (2 times)	162.00
Mouse Control	64.40
Fertilizer—Equipment and labor	118.00
—4# fertilizer/tree @ \$.10/lb.	500.00
Management, 65 hrs @ \$10.00	650.00
Real estate taxes @ \$35/acre	350.00
	\$3,673.90

**Table 7. Total Establishment Costs Including Interest  
10 Acres Tart Cherries  
Northwest Michigan, 1984**

Year	Growing Cost	Interest <sup>1</sup>	Annual Total	Accumulated Cost
Site Preparation	\$ 3,000.00	\$2,187.50	\$ 5,187.50	\$ 5,187.50
Planting Year	10,913.60	3,330.54	14,244.14	19,431.64
Year Two	2,754.40	4,601.11	7,355.51	26,787.15
Year Three	3,130.40	5,544.04	8,674.44	35,461.59
Year Four	3,416.90	6,646.26	10,063.16	45,524.75
Year Five	3,678.90	7,920.52	11,599.42	57,124.17

<sup>1</sup>Interest includes 10% interest on land (\$20,000 value), 12.5% interest on prior year accumulated cost, and 12.5% interest on one half current growing year cost.