Costs of Producing Tart Cherries in Northwestern Michigan

Michigan State University
Cooperative Extension Service
Myron Kelsey, Extension Specialist and Professor, Department of Agricultural Economics
Glenn Kole, District Extension Farm Management Agent
James Nugent, District Horticulture and Marketing Agent
James Bardenhagen, County Extensions Director, Leelanau County

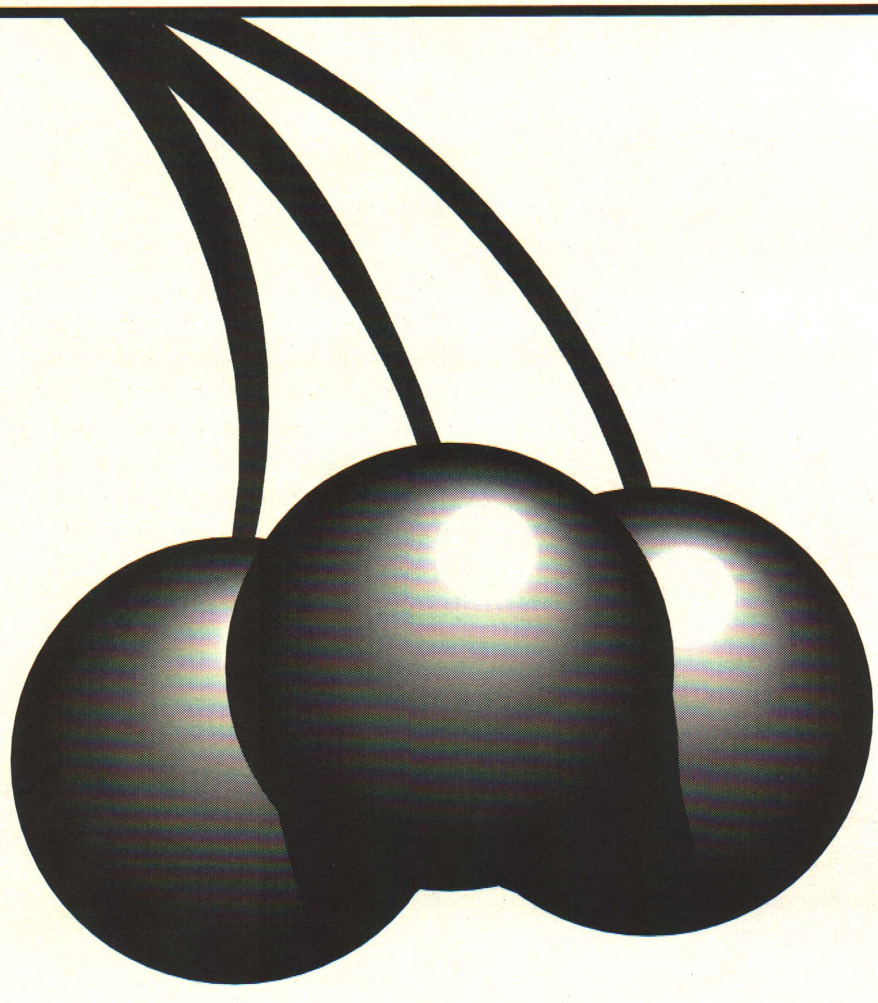
January 1997
8 pages

Michigan State University Extension Extension Bulletin E-1108 January 1997 (Major Revision)

COST OF

PRODUCING TART CHERRIES

IN NORTHWESTERN MICHIGAN



By

Myron P. Kelsey,

Glenn Kole,

James Nugent

and

James Bardenhagen[1]

AG FACTS

COST OF

PRODUCING TART CHERRIES

IN NORTHWESTERN MICHIGAN

By Myron P. Kelsey, Glenn Kole, James Nugent and James Bardenhagen[1]

This cost evaluation of tart cherry production in northwestern Michigan is a projection of costs developed through focus group discussions with cherry growers from Antrim, Leelanau and Grand Traverse counties in April 1996. In the discussions, growers described growing and harvesting practices of representative cherry growers in the area. They also agreed on the size of cherry acreage, the equipment and the cultural practices generally used by a grower.

These figures cannot necessarily reflect the average cost of tart cherry production for each grower in the state. Costs vary considerably by area and from farm to farm.

The data can provide an outline to help you develop cost information 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 or by the operator, both have been included as cash expenses. As a result, producers who do a major portion of the work may have a lower cash labor cost than the figures indicate.

Several rates were combined to determine a 23 percent labor fringe, i.e., 7.65 percent for FICA, 10.35 percent for workers compensation and 5 percent for a combination of housing, health insurance, unemployment, retirement plans, 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 hourly operating costs—which include gas, oil and repairs for each piece of equipment, plus overhead costs of depreciation interest and housing—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 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 an estimated total production of 3.5 tons of cherries are shown in Table 2. At 7,000 pounds per acre, harvest costs were 7.28 cents per pound.

[1]Professor and Extension specialist in Agricultural Economics, district Extension farm management agent, district horticulture and marketing agent, and county Extension director, Leelanau County, respectively.

Table 1. **Variable growing cost for 10 acres of tart cherries, northwestern Michigan, 1996.**

	Labor			*Machinery*				*Materials*			
Operation	**Labor (hrs)**	**Wage rate**	**Cost**	**Equipment**	**Hours of use**	**Unit cost**	**Total cost /10 acres**	**Item**	**Cost per 10 acres**	**Total variable cost**	**Your farm**
Trimming every 2 yr.— avg. cost	100	$11.69	$1,169.00	Chain saw & hand tools	100	$ .20	$20.00			$1,189.00	
Brush piling	5	8.00	40.00	Misc. tools	5	.20	1.00			41.00	
Brush removal	4	11.69	46.76	Tractor (60 hp)	4	11.65	46.60				
				Rotary mower	4	12.14	48.56			141.92	
Fertilizer: nitrogen	2	14.15	28.30	Tractor (60 hp)	2	11.65	23.30	33-0-0 300 lbs.	$342.00	401.10	
				Fertilizer spreader	Rent	5/ton	7.50	@ $228/ton			
Fertilizer: potash (annual cost)	1	14.15	14.15	Tractor (60 hp)	1	11.65	11.65	100 lb 0-0-60	$74.00	102.30	
				Fertilizer spreader	Rent	5/ton	2.50	@$148/ton			
Foliar nutrients								$16/A	$160.00	160.00	
Lime (every third year) — annual cost								3 tons/A custom applied @ $21/ton x 1/3 average	$210.00	210.00	
Weed control (2 applications) (cover area)	8	14.15	113.20	Tractor (60 hp)	6	11.65	69.90	material cost	$190.00	422.84	
				Weed sprayer	6	8.29	49.74	@ $19/A/apl			
Mowings (3 times)	10	14.15	141.50	Tractor (60 hp)	10	11.65	116.50			379.40	
				Rotary mower	10	12.14	121.40				
Bee rental								3 hives/10 A @ $35/hive	$105.00	105.00	
Summer tipping: sickle bar - custom rate @ $40/hr								4 hrs. custom rate @ $40/hr	$160.00	160.00	
Spray program (4 sprays)	8	14.15	113.20	Tractor (80 hp)	8	11.65	93.20	Insecticides & fungicides	$1,550.00	1,859.84	
				PTO sprayer	8	12.93	103.44	@ $155/A			
Lesser peach borer (spray 1/4 acreage, 300 gal.)	6	11.69	70.14	Tractor (80 hp)	4	11.65	46.60	Lorsban: 2 qt/100 gal	$68.63	317.37	
				High pressure sprayer	4	33.00	132.00	@ $45.75 gal.			
Mouse baiting								mouse bait @ $1/A	$10.00	10.00	
Tree replacement (annual cost during first 4 yrs. orchard life)	2.5	11.69	29.23	Tractor (40 hp)	2.5	14.34	35.85	½ trees/A $5/tree	$25.00	90.08	
Growth regulator	3	14.15	42.45	Tractor (80 hp)	3	11.65	34.95	Gibberellin @ $13.50/A	$135.00	251.19	
				PTO sprayer	3	12.93	38.79				
Ethrel spray	3	14.15	42.45	Tractor (80 hp)	3	11.65	34.95	7 pt Ethrel/A	$45.50	161.69	
				Sprayer	3	12.93	38.79	@ $6.50/pt			
Pest management service @ $25/A									$250.00	250.00	
Management & labor supervision	50	15.00	750.00							750.00	
Pickup operation (miles)			r	Pickup	400	mi .30	120.00			120.00	
Totals	**202.5**		**$2,600.38**				**$1,197.22**		**$3,325.13**	**$7,122.73**	

Table 2. Variable harvest and production costs per 7,000 lb./A of tart cherries, northwestern Michigan, 1996.

	Unit	Price	Total	Your farm
Full-time labor	4	$11.69	$46.76	
Custom shaking@ $200/hr.	2 hrs.		400.00	
Hauling @ .9 cents/lb.	7,000 lbs.	.009	63.00	
Total variable harvest cost per acre			509.80	
Total variable harvest cost per pound (at 7,000 lbs./acre)			.0728	
Cherry promotion assessment @ .75 cents/lb.			52.50	
Total harvest and assessment cost			562.26	
Total harvest and assessment cost/lb.			.08	

Table 3. Overhead cost for growing and harvesting 10 acres of bearing tart cherries, northwestern Michigan, 1996.

	Established orchard	Your farm
Interest on land ($2,000/A @ 8.5%)	$1,700.00	
Property taxes (@ $36/A)	360.00	
Interest on avg. orchard establishment cost of $4,942/A @ 8.5% (Table 7)	2,100.35	
Depreciation of establishment cost (20 yr.) (Table 7)	2,470.84	
Interest on growing & harvest cost [1/2 (7,122.73 + 5,622.60) @ 8.5%] (Tables 1 and 2)	541.68	
Total overhead cost	$7,172.87	
Total overhead cost per pound	.102	

Table 4. Total growing and harvesting cost for 10 acres (7,000 lb./A) of tart cherries, northwestern Michigan, 1996.

	Established orchard	Your farm
Variable growing cost (Table 1)	$7,122.73	
Variable harvest cost (Table 2)	5,622.60	
Overhead cost of established orchard (Table 3)	7,172.87	
Total cost	$19,918.20	
Total cost per acre	1,991.82	
Total cost per pound (@ 7,000 lb./acre)	.285	

Table 5. Effect of varying yield on cost/lb. for tart cherries, northwestern Michigan, 1996.

					Established orchard		
Yield lb./acre	Variable growing cost[1]	Variable harvest cost[2]	Total variable cost	Your farm	Overhead cost[3]	Total cost	Your farm
2,000	$0.356	$.13	$0.486		$0.359	$0.845	
4,000	0.178	.10	.278		.179	.457	
6,000	0.119	.08	.199		.120	.319	
7,000	0.102	.08	.182		.103	.285	
8,000	0.089	.08	.169		.090	.259	
10,000	0.071	.07	.141		.072	.213	
12,000	0.059	.07	.129		.060	.189	
14,000	0.051	.07	.121		.051	.172	

[1]Table 1
[2]Table 2
[3]Table 3

OVERHEAD COSTS

The overhead or fixed costs of cherry production (Table 3) include interest on orchard investment, orchard depreciation and taxes. The details of orchard establishment cost are shown in Tables 6 and 7.

Fixed costs on machinery include depreciation, interest on investment, insurance and housing costs. Interest on land and growing and establishment costs was charged at 8.5 percent. Fixed costs vary more from farm to farm than do the variable costs shown in Table 1. Such costs are the land acquisition cost and orchard establishment costs. 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 preharvest costs per acre, such as spraying, pruning, cultivating, etc., do not vary greatly, regardless of the yield. Custom harvest rates were charged at $200 per hour harvested at the 7,000-pounds-per-acre rate. Based on calculations made in "Yield Sensitivity Chart on Tart Cherry Harvest Cost," an article by Glenn Kole, the variable harvest costs in Table 5 have been adjusted to reflect lower costs per pound for higher yields and higher costs per pound for yields lower than the average.

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 1996 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.

Trickle irrigation costs were not included in this analysis. Initial investment in such a system would cost $500 to $700 per acre.

ESTABLISHMENT COSTS FOR A NEW ORCHARD

All preproductive establishment costs incurred in years 1-5, including interest, are capitalized in one establishment cost. Individual cash costs will vary widely, depending on the site preparation and the cultural practices needed to establish the orchard. This example does not include the cost of trickle irrigation, which is expensive but should obtain higher economic yields from trees at an earlier age.

The first column of Table 7 summarizes the costs per year shown in Table 6. In the second column, an interest charge of 8.5 percent is calculated on the land investment of $2,000 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 5 is used in Table 3 to calculate the operating year's depreciation of 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.

Table 6. **Establishment costs for 10 acres of tart cherries (excluding interest), northwestern Michigan, 1996.**

		Your farm
Site preparation prior to year 1		
General land development and taxes ($400/A)	$4,000.00	
Planting year (year 1)		
Ground preparation: 4 hr. labor @ $11.69/hr. & equipment @ $25.08/hr.	147.08	
Marking: 5 hr. @ $11.69	58.45	
10 hr. @ $8	80.00	
Trees: 125/A @ $6	7,500.00	
Custom tree planting: @ $.35/tree	437.50	
½ bale straw/tree @ $1.50/bale	937.50	
Spraying (3 times):		
6 hr. labor @ $11.69	70.14	
material @ $7/A/spray	210.00	
equipment @ $49.16/10 A/spray	147.48	
Cover crop: machinery, material and labor @ $17/A	170.00	
Mouse bait: machinery, material and labor @ $6.44/A	64.40	
Fertilizer: equip. & labor	106.00	
1 lb. fert./tree @ $.10/lb.	125.00	
Deer control @ $.50/tree	625.00	
Management: 10 hr. @ $15	150.00	
Real estate taxes @ $36/A	360.00	
Total	$11,188.55	
Growing cost (year 2)		
Prune: 10 hr. @ $11.69	116.90	
Tree replacement: 8 hr. @ $ +11.69 30 trees @ $6 + equip. @ $17/hr.	409.52	
Herbicide spray: equip., labor, mat.	212.00	
Insect & disease control (3 times): equip., labor, material	440.00	
Mow (2 times): labor & equip. @ $9.91/A/mowing	198.20	
Mouse control: equip., labor, mat. @ $6.44/A	64.40	
Fertilizer: equip. & labor	106.00	
1 lb. fert./tree @ $.10/lb.	125.00	
Deer control @ $.50/tree	625.00	
Management: 10 hr. @ $15	150.00	
Real estate taxes @ $36/A	360.00	
Total	$2,807.02	
Growing cost (year 3)		
Prune: 30 hr. @ $11.69	350.70	
Tree replacement: 8 hr. @ $11.69 + 20 trees @ $6 + equip. @ $17/hr.	349.52	
Herbicide spray: equip., labor, mat.	212.00	
Insect & disease control (4 times): equip., labor, material	570.16	
Mow (2 times): labor & equip. @ $9.91/A/mowing	198.20	
Mouse control: equip., labor, mat. @ $6.44/A	64.40	
Fertilizer: equip. & labor	106.00	
2 lb. fert./tree @ $.10/lb.	250.00	
Deer control @ $.30/tree	375.00	
Management: 15 hr. @ $15	225.00	
Real estate taxes @ $36/A	360.00	
Total	$3,060.98	
Growing cost (year 4)		
Prune: 40 hr. @ $11.69	467.60	
Tree replacement : 5 hr. @ 11.69 + 10 trees @ $6 + equip. @ $17/hr.	203.45	
Herbicide spray: equip., labor, mat.	212.00	
Insect & disease control (4 times): equip., labor, material	650.16	
Mow (2 times): labor & equip. @ $9.91/A/mow	198.20	
Mouse control: equip., labor, mat. @ $6.44/A	64.40	
Fertilizer: equip. & labor	106.00	
3 lb. fert./tree @ $.10/lb.	375.00	
Management: 20 hr. @ $15	300.00	
Real estate taxes @ $36/A	360.00	
Total	$2,936.81	
Growing cost (year 5)		
Prune: 50 hr. @ $11.69	584.50	
Tree replacement: 4 hr. @ $11.69		
10 trees @ $6 + equip. @ $17/hr.	174.76	
Herbicide spray: equip., labor, mat.	212.00	
Insect & disease control (4 times): equip., labor, material	730.16	
Mow (2 times): labor & equip. @ $9.91/A/mow	198.20	
Mouse control: equip., labor, mat. @ $6.44/A	64.40	
Fertilizer: equip. & labor	118.00	
4 lb. fert./tree @ $.10/lb.	500.00	
Management: 30 hr. @ $15	450.00	
Real estate taxes @ $36/A	360.00	
Total	$3,392.02	
Total of 5 years	**$27,385.38**	

Table 7. **Total establishment costs, including interest, for 10 acres of tart cherries, northwestern Michigan, 1996.**

Year	Growing cost	Your farm	Interest*	Your farm	Annual total	Your farm	Accumulated cost	Your farm
Site preparation	$ 4,000.00		$1,870.00		$ 5,870.00		$ 5,870.00	
Planting year	11,188.55		2,674.46		13,863.01		19,733.01	
Year 2	2,807.02		3,496.60		6,303.62		26,036.63	
Year 3	3,060.98		4,043.21		7,104.19		33,140.82	
Year 4	2,936.81		4,641.78		7,578.59		40,719.41	
Year 5	3,392.02		5,305.31		8,697.33		49,416.74	

**Includes annual interest of .085% on $20,000 land cost.*

Issued in furtherance of Extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the the U.S. Department of Agriculture. Arlen Leholm, director, Michigan State University Extension, E. Lansing, MI 48824.

Produced by Outreach Communications and printed on recycled paper using vegetable-based inks.

2.5M-KF-BP-Major revision-65¢, for sale only.

File 26.18 (Fruit-Commercial) or 17.335