



No. 140

Extension Bulletin E-1116

May 1979

Costs of Plum Production in Western Michigan

By Myron Kelsey and Archie Johnson¹

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

It should be stressed that these figures do not reflect the average cost of plum production for all growers in the state because costs vary considerably by area in the state and from farm to farm.

The data can help a grower to develop his costs and better evaluate his farm situation. Each of the appropriate tables in this report includes a "Your Farm Cost" column for him to note his own cost for particular operations for the total plum enterprise. For operations where his costs cannot be determined, he may wish to adjust and substitute the study data.

The data were assembled assuming equipment and labor available for a hypothetical farm of 100 acres of diversified tree fruit, including 10 acres of plums. The data in Table 1 are presented for 10 acres of plums since it may be easier for a grower to visualize many of the resource inputs on this basis. Per acre costs, as shown in Tables 2 to 6, can be determined from Table 1, (p. 2-3) by dividing by 10.

The full-time labor classification includes the working time of the operator and regular hired help devoted to plums. Operator labor is not considered a cash expense by producers, 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 \$4.27 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. The labor charge is a base rate of \$3.50 per hour plus Social Security at 6.13% and Workers Compensation insurance at the proposed rate of 16%. Family labor was paid the minimum wage of \$2.90 per hour, which equals \$3.54 with Social Security and Workers Compensation.

Some major factors considered in computing 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 costs which include only 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.

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

Variable costs incurred in plum production are categorized by labor, machinery and materials in Tables 1 and 2. The details of hours and type of labor, machinery used and hours of use, and kinds and amounts of material used by operation are shown in Table 1. If an individual grower's costs for particular items are substantially higher than those shown, he may need to analyze those components closely to see if they can be reduced. A high cost for a particular component may be justified if it contributes to a sufficiently higher yield or improved quality.

The variable costs incurred in harvesting an acre of plums with estimated total production of 80 hundredweight are shown in Table 3. At this level, a custom harvest charge of two cents per pound was computed.

The overhead, or fixed cost, for plum production (Table 4) includes allocation of machinery overhead on the basis of production of total farm use in plums, interest on orchard investment, orchard depreciation, and taxes. The fixed costs of machinery are allocated to plums on the basis of hours of use relative to the total hours of use of the equipment on the farm. Fixed costs on machinery include depreciation, interest on investment, insurance and housing costs (interest, insurance and housing equal 9.7 percent of average value).

A grower should evaluate his own farm situation and decide whether fixed costs should be considered as part of the total cost for his decision making purposes. One example of this type of consideration is the fact that orchard overhead is a fixed cost to the owner, but if the orchard is rented, it is a variable cost for the operator.

Yield per acre is a very important factor in determining production costs per hundredweight (Table 6). 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 obtained. There is some variation in custom harvest rates based on the yield per acre.

¹Extension Specialist, and Specialist, Dept. of Agricultural Economics.

Table 1. Growing operations and related variable costs for 10 acres of plums, western Michigan, 1979

Operation	Labor		Equipment Used	Machinery		Cost Per Hour of Use	Cost	Materials		Total Cost Per 10 Acres
	Labor Hr. Per 10 Acres	Wage Rate		Hours of Use	Cost Per Hour of Use			Item	Cost Per 10 Acres	
Trimming	150	3.54	Chain Saw 40 HP Tractor Power Pruner	5 45 45	\$.57 2.21 .72	\$ 2.85 99.45 32.40				\$665.70
Removing Brush	10	4.27	40 HP Tractor Brush rake	10 10	2.21 .25	22.10 2.50				67.30
Fertilization	5	4.27	40 HP Tractor Fert. Spreader	5 5	2.21 .40	11.05 2.00	33-0-0 (300#/A @ \$181.70/ton)		\$272.10	306.50
Herbicide (Spray 1/4 of area)	6	4.27	Weed Sprayer 40 HP Tractor	5 5	.38 2.21	1.90 11.05	Simazine, 2#/A sprayed @ \$3.50/lb Paraquat, 1 qt/A sprayed @ \$10.50/qt.		17.50 26.25	82.22
Mowing (3 times)	7	4.27	60 HP Tractor Rotary Mower	7 7	2.95 1.70	20.65 11.90				62.44
Spray Program (250 gal. dilute spray per acre)										
Dormant	3	4.27	60 HP Tractor Air Blast Sprayer	3 3	2.95 4.53	8.85 13.59	Zineb, 2#/100 gal. @ \$1.44/lb Oil, 2 gal/100 gal. @ \$1.32 gal.		72.00 66.00	173.25
Pre Bloom	3	4.27	60 HP Tractor Air Blast Sprayer	3 3	2.95 4.53	8.85 13.59	Zineb, 2#/100 gal. @ \$1.44/lb. Systox (26% EC) .75 pint @ \$6.15/pt.		72.00 115.31	222.56
Bloom	3	4.27	60 HP Tractor Air Blast Sprayer	3 3	2.95 4.53	8.85 13.59	Benlate, 1#/100 gal. @ \$8.60/lb.		215.00	250.25
Petal Fall	3	4.27	60 HP Tractor Air Blast Sprayer	3 3	2.95 4.53	8.85 13.59	Ferbam, 1#/100 gal. @ \$1.09/lb Wettable sulphur, 3#/100 gal. @ \$.23/lb. Guthion, 50% W.P., 1/2#/100 gal. @ \$4.25/lb		27.25 17.25 53.13	132.88
Shuck Split	3	4.27	60 HP Tractor Air Blast Sprayer	3 3	2.95 4.53	8.85 13.59	Ferbam, 1#/100 gal. @ \$1.09/lb. Wettable sulphur, 3#100 gal @ \$.23/lb. Guthion, 50% W.P., 1/2#/100 gal. @ \$4.25/lb.		27.25 17.25 53.13	132.88

Table 1 (Continued) - Plums

Operation	Labor		Machinery			Materials		Total Cost Per 10 Acres
	Labor Hr. Per 10 Acres	Wage Rate	Equipment Used	Hours of Use	Cost Per Hour of Use	Item	Cost Per 10 Acres	
Spray Program (Cont.) First Cover	3	\$4.27	60 HP Tractor Air Blast Sprayer	3	\$2.95 4.53	Parathion, 1.5#/100 gal. @ .98/lb.	\$36.75	\$72.00
Second Cover	3	4.27	60 HP Tractor Air Blast Sprayer	3	2.95 4.53	Ferbam, 1#/100 gal. @ 1.09/lb Wettable sulphur, 3#/100 gal @ .23/lb. Guthion, 50% W.P., 1/2#/100 gal. @ 4.25/lb.	27.25 17.25 53.13	132.88
Third Cover	3	4.27	60 HP Tractor Air Blast Sprayer	3	2.95 4.53	Imidan, 1#/100 gal. @ 1.90/lb. Zineb, 2#/100 gal. @ 1.44/lb.	47.50 72.00	154.75
Fourth Cover	3	4.27	60 HP Tractor Air Blast Sprayer	3	2.95 4.53	Imidan, 1#/100 gal. @ 1.90/lb.	47.50	82.75
Pre-Harvest	3	4.27	60 HP Tractor Air Blast Sprayer	3	2.95 4.53	Captan, 2#/100 gal. @ .99/lb.	49.50	84.75
Orchard Clean-Up	12	3.54	40 HP Tractor (Used) Trailer	6 4	2.21 .48	Grafting Emulsion .1 gal/A @ \$10.00/gal. 1/2# Phygon/gal. @ 4.95/lb. 1/8# Thiodan/gal. @ 2.03/lb.	10.00 2.48 .25	69.19
Mousebaiting (Custom Applied)			Airplane @ 3.50/Acre		35.00	Zinc Phosphide Corn 100 # @ \$.28/#	28.00	63.00
Pick-Up Operation			Pick-up		750 mi. .12/mi.			90.00
Management & Labor Supervision	50	4.27						213.50
Miscellaneous Repairs	20	4.27						85.40
Tree Replanting	2.5	3.54	40 HP Tractor Trailer	1 1	2.21 .18	Trees 1.5/Acre @ \$3.00	45.00	56.24
Totals		Labor-\$1128.79			Machinery-\$583.62		Materials-\$1488.03	\$3200.44

Table 2.—Variable cost per acre of growing plums, western Michigan, 1979

Operation	Labor	Machinery	Materials	Total	Your farm cost
Hedging, trimming and brush removal	\$ 57.37	\$15.93	\$.00	\$ 73.30	_____
Fertilizer	2.13	1.30	27.21	30.64	_____
Weed Control	2.55	1.30	4.38	8.23	_____
Mowing	2.99	3.25	—	6.25	_____
Spraying	12.81	22.44	108.64	143.89	_____
Other	13.67	14.14	8.57	36.38	_____
Management	21.35	—	—	21.35	_____
Totals	\$112.87	\$58.37	\$148.80	\$320.04	_____

Table 3.—Variable harvest cost for 80 cwt. of plums, western Michigan, 1979

	Total	Your farm cost
Full-time labor (6 hours @ \$4.27)	\$ 25.62	_____
Custom Shaking (\$.02/lb.)	160.00	_____
Equipment	22.16	_____
Total	\$207.78	_____

Table 4.—Overhead costs for growing and harvesting one acre of plums, western Michigan, 1979

	Total	Your farm cost
Machinery	\$ 85.74	_____
Interest on average value of orchard (\$1200 ÷ 2 × 8%)	48.00	_____
Interest on land (\$800 × 5%)	40.00	_____
Orchard depreciation (\$1200 ÷ 10 yrs.)	120.00	_____
Property taxes @ \$18/Acre	18.00	_____
Total	\$311.74	_____

Table 5.—Total costs for growing and harvesting one acre of plums, western Michigan, 1979

	Total	Your farm cost
Variable		
Growing	\$320.04	_____
Harvesting	207.78	_____
Overhead Costs	311.74	_____
Total	\$839.56	_____

Table 6.—Effect of varying yield on cost/hundredweight for plums, western Michigan, 1979

Harvest yield per acre	Variable growing cost	Variable harvest cost	Total variable cost	Your farm variable cost	Overhead cost	Total cost	Your farm total cost
----- Per hundredweight -----							
20	\$16.00	\$2.60	\$18.60	_____	\$15.59	\$34.19	_____
40	8.00	2.60	10.60	_____	7.79	18.39	_____
60	5.33	2.60	7.93	_____	5.20	13.13	_____
80	4.00	2.60	6.60	_____	3.90	10.50	_____
100	3.20	2.60	5.80	_____	3.12	8.92	_____
120	2.67	2.60	5.27	_____	2.60	7.87	_____
140	2.29	2.60	4.89	_____	2.23	7.12	_____

Cooperative Extension Service Programs are open to all without regard to race, color, or national origin. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, East Lansing, Michigan 48824. Price 35 cents. 1P-1R-2M-6.79-St