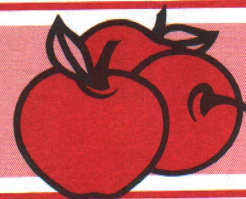


COST OF PRODUCING FRESH APPLES IN WESTERN MICHIGAN



By Myron P. Kelsey,¹ and Philip Schwallier²

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

These figures do not reflect the average cost of fresh apple production for all growers because costs vary considerably from farm to farm. 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. These costs include an estimated 1989 orchard acquisition cost and therefore overstate actual costs on currently producing orchards.

The data can help you develop your 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 those costs cannot be determined, you may wish to adjust and substitute the study data.

The assembled data assume equipment and labor are available for a hypothetical farm of 200 acres of diversified tree fruit, including 80 acres of apples. However, the data in Table 1 are presented for 10 acres of apples to make it easier for you to visualize many of the resource inputs.

Cost items excluded in this study are migrant housing costs, irrigation and bin rent. Storage, packing, package and selling charges are not included as well.

LABOR COSTS

The full-time labor classification includes the working time of the operator and regular hired help devoted to apples. 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 \$9 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. This rate includes Social Security, Worker's Compensation and other fringe benefits. A \$6 per hour rate was used for skilled part-time help.

EQUIPMENT COSTS

Some 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 costs for each piece of equipment are charged to the crop in Table 1 on the basis of direct hourly use of the equipment.

Variable costs are those that change directly with increases or decreases in the acreage of apples or yield. Exam-

ples of costs that vary with acreage are spray material, fertilizer, hired labor and machinery operating costs. Costs that vary directly with harvest yields are piecework rates.

VARIABLE COSTS

Variable costs incurred in apple production are categorized by labor, machinery and materials. The details of hours and types of labor, machinery used and hours of use, and kinds 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 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 with estimated total production of 500 bushels of apples are shown in Table 2. Labor is the major cost. Therefore, good labor management should enhance the profit picture. In most cases, there will be some higher or lower costs for some items associated with higher or lower yields.

OVERHEAD COSTS

The overhead or fixed costs of apple production (Table 3) include allocation of machinery overhead on the basis of the proportion of total farm use in apples, interest on orchard investment, orchard depreciation and property taxes. The fixed costs of machinery are allocated to apples on the basis of hours of use on apples relative to the total hours of use of the equipment on the farm. These costs are detailed by operation

¹Professor and Extension Specialist in Agricultural Economics

²District Extension Horticulture and Marketing Agent

Table 2. Variable harvest cost for fresh apples (500 bu/A), western Michigan, 1989.

	Hours	Rate	Total	Your farm
Labor				
Full-time	80	\$9.00	\$720.00	-----
Part-time	10	\$6.00	\$60.00	-----
Piecework fresh harvest (bushels)	4,650	\$0.87	\$4,045.50	-----
Piecework drops harvest (bins)	20	\$9.25	\$185.00	-----
Equipment use:				
Tractor (60 hp)	20	\$6.79	\$135.80	-----
Trailer	20	\$0.19	\$3.80	-----
Forklift	10	\$0.75	\$7.50	-----
Truck	300	\$0.39	\$117.00	-----
Total variable cost			\$5,274.60	-----
Total cost per bushel			\$1.05	-----

Table 3. Overhead cost for growing and harvesting 10 acres of fresh market apples, western Michigan, 1989.

	Purchased orchard	Established orchard	Your farm
Equipment, growing	\$2,280.91	\$2,280.91	-----
Equipment, harvest	\$423.00	\$423.00	-----
Interest on land (\$1,000/A @ 10%)	\$1,000.00	\$1,000.00	-----
Property taxes @ \$20/A	\$200.00	\$200.00	-----
Int. on ave. orchard establishment cost 10% of \$3,250/A		\$3,250.00	-----
Depr. of est. cost (20 yrs./\$6,500/A)		\$3,250.00	-----
Interest on ave. orchard purchase cost 10% of \$2,000/A	\$1,000.00		-----
Depr. of purchased orchard (20 yrs.)	\$1,000.00		-----
Interest on growing & harvest cost	\$704.51	\$704.51	-----
Total variable cost		\$6,608.42	\$11,108.42
Total cost per bushel		\$1.32	\$2.22

Table 4. Total growing and harvesting cost for 10 acres of fresh market apples (500 bu/A), western Michigan, 1989.

	Purchased orchard	Established orchard	Your farm
Variable growing cost	\$8,815.67	\$8,815.67	-----
Variable harvest cost	\$5,274.60	\$5,274.60	-----
Overhead cost established orchard		\$11,108.42	-----
Overhead cost purchased orchard	\$6,608.42		-----
Total variable cost		\$20,698.69	\$25,198.69
Total cost per bushel		\$4.14	\$5.04

Table 5. Effect of varying yield on cost/bushel for fresh market apples, western Michigan, 1989.

Yield/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	
300	2.94	\$1.05	\$3.99	-----	\$2.20	\$6.20	\$3.70	\$7.70	-----
400	2.20	\$1.05	\$3.26	-----	\$1.65	\$4.91	\$2.78	\$6.04	-----
500	1.76	\$1.05	\$2.82	-----	\$1.32	\$4.14	\$2.22	\$5.04	-----
600	1.47	\$1.05	\$2.52	-----	\$1.10	\$3.63	\$1.85	\$4.38	-----
700	1.26	\$1.05	\$2.31	-----	\$0.94	\$3.26	\$1.59	\$3.90	-----
800	1.10	\$1.05	\$2.16	-----	\$0.82	\$2.98	\$1.47	\$3.65	-----
900	0.98	\$1.05	\$2.03	-----	\$0.73	\$2.77	\$1.23	\$3.27	-----
1000	0.88	\$1.05	\$1.94	-----	\$0.66	\$2.60	\$1.11	\$3.05	-----

in Table 1 but are included in the totals only in Table 3. Fixed costs of machinery, which include depreciation, interest on investment, insurance and housing, equal 12.7 percent of average value. Orchard overhead will vary, depending on the cost to a grower of acquiring the orchard. The figures in Table 3 illustrate the purchase of an orchard for \$3,000 per acre with \$1,000 per acre allocated to the land value and \$2,000 to the orchard for depreciation. Also illustrated is the accumulated orchard development cost of \$6,500 per acre for an orchard grown by a producer.

You should evaluate your own farm situation and decide whether to consider fixed costs as part of the total cost for your 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 HUNDREDWEIGHT

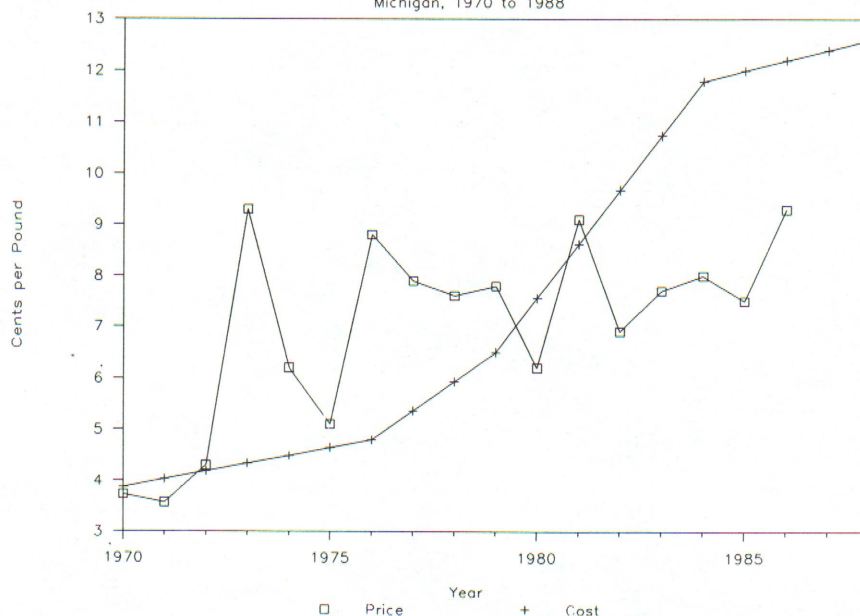
Per-acre yields are very important in determining cost per bushel of apples (Table 5). Costs per bushel vary with yield because preharvest costs per acre—such as spraying, pruning, mowing, etc.—do not vary greatly, regardless of the yield obtained. The Michigan Department of Agriculture annually publishes sale prices for fresh and processed apples and an overall average price of the two groups (Figure 1). This information will help you determine profitability in your farm analysis of costs. The sale prices are FOB sale prices and need to be adjusted down by subtracting the rent, storage, packing, package and selling charges to obtain a true comparison to fresh apple costs of production.

TRENDS

Costs of production studies have been done at various times at MSU since 1970. Figure 1 provides a graphic presentation of the total cost trend since 1970. It is clear that during the 1970s and 1980s, apple prices have been variable, but there has been very little trend toward higher prices, while the cost of production has increased considerably.

FIGURE 1. APPLE COST AND PRICES

Michigan, 1970 to 1988



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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, J. Ray Gillespie, Interim Director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824.

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