

# COSTS OF PRODUCING CAULIFLOWER IN WESTERN MICHIGAN



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## Marketing Cauliflower

Michigan is seeing increased interest in the production of cole crops, including cauliflower. Factors that potential producers should be aware of include the need for definite market outlets, competition from other production areas and proper postharvest handling procedures.

Marketing considerations begin with identifying a reliable outlet—e.g., wholesale buyer, broker, processor, farm market, etc. Many Michigan cauliflower producers have both fresh market and processing outlets. To maintain their markets, growers need to produce both a consistent supply of cauliflower and a high quality product.

Cauliflower buyers in today's marketplace are increasingly quality conscious. Discussions of quality should center on proper varieties, head and package size, and cooling requirements. Fresh market prices fluctuate in response to quality and to supply and demand. It is therefore important for producers to communicate daily with their markets.

Per capita consumption of fresh cauliflower has increased dramatically in the past 10 years. Production nationwide has kept pace with this increase, however, so growers need to maintain quality, have dependable markets and know their costs of production.

Cauliflower is an important crop on many vegetable farms in Michigan. The state has the climate and the soils to produce a high quality product, but diseases, pests and local extremes in weather make cauliflower a very risky crop that requires extensive horticultural skills. The high cash cost and production problems demand a high level of skill in, and information for, making business management decisions. This report is an attempt to provide some of that necessary information.

The information here can be of value to the cauliflower grower making decisions about expanding, reducing or holding constant the cauliflower enterprise. Cauliflower growers can compare their costs with those given here to get an indication of how efficient they are in producing cauliflower compared with a "typical" grower. Vegetable growers can compare the costs given here with the cost of producing other vegetables to determine their enterprise mix. Finally, growers, sellers, processors and buyers will find the information useful in marketing decisions.

## The Typical Farm

Data for this study were developed by bringing together a group of vegetable growers who were willing to share their records for their farms and the cauliflower enterprise. Through consensus, a "typical farm" was outlined, with the size, investments and costs representative of vegetable growers in western Michigan. These data were then compared with data supplied by input suppliers, specialists and studies done in other states. The resulting information provided here is a "best estimate" and will therefore vary from figures found on any particular farm.

Our typical farm has the following statistics:

- 120 total acres, of which 80 acres are tillable.
- Most or all of the 80 acres are in intensive vegetable production, with 20 acres in cauliflower.

- The cauliflower yields 10,000 lbs per acre, with 70 percent of the crop going to the fresh market and 30 percent to the processing market.

## Structuring The Cost

The various costs included in this study are divided into two categories: fixed and variable. Fixed costs include those that vary little, if any, with the amount produced on the farm, such as property taxes and interest on investment. Variable costs include those that vary more directly with production, including hired labor, fuel, fertilizer, pesticides, etc.

### FIXED COSTS

Table 1 lists the machinery and equipment complement needed to operate our 120-acre farm. An annual depreciation is calculated for this machinery. "Average value" is also calculated for use in determining another fixed cost, interest on investment.

Table 2 shows the investments in land, buildings and improvements for our typical farm. Again, the depreciation is determined for the buildings and improvements and average value calculated so as to determine interest on investment.

Table 3 brings together costs associated with machinery, equipment, land, buildings and improvements outlined in Table 1 and 2 and also illustrates the other fixed costs associated with operating a vegetable farm of this size. At the bottom of Table 3 is "total fixed costs per tillable acre." In calculating this figure, we assume that the total fixed costs of operating this farm are to be spread across the productive acres on the farm. There are many ways that the fixed costs of a farm business can be distributed to those enterprises of the business that are producing income. When all or most of the total tillable acres are devoted to similar types of enterprises, such as intensive vegetables, figuring cost per tillable acre is a common and relatively accurate distribution method. The annual fixed costs associated with the

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**Table 1. Machinery and equipment costs for cauliflower production  
Western Michigan, 1986**

| Item                        | New Price        | Salvage Value <sup>1</sup> | Average Value <sup>2</sup> | Annual Depreciation <sup>3</sup> |
|-----------------------------|------------------|----------------------------|----------------------------|----------------------------------|
| <b>TRACTORS</b>             |                  |                            |                            |                                  |
| 60 H.P. Diesel (2 tractors) | \$38,000         | \$18,000                   | \$28,000                   | \$2,000                          |
| 30 H.P. Gas                 | 10,000           | 3,000                      | 6,500                      | 700                              |
| I.H. Model BN (fork lift)   | 7,000            | 4,000                      | 5,500                      | 300                              |
| <b>TILLAGE</b>              |                  |                            |                            |                                  |
| Plow                        | 6,000            | 1,000                      | 3,500                      | 500                              |
| Harrow                      | 1,300            | 100                        | 700                        | 120                              |
| <b>PLANTING</b>             |                  |                            |                            |                                  |
| Transplanter                | 4,000            | 2,000                      | 3,000                      | 200                              |
| Drill                       | 5,000            | 1,000                      | 3,000                      | 400                              |
| Fertilizer spreader         | 1,200            | 200                        | 700                        | 100                              |
| Sidedresser (old)           | 500              | 500                        | 500                        | --                               |
| <b>CROP MAINTENANCE</b>     |                  |                            |                            |                                  |
| Cultivator                  | 3,000            | 1,000                      | 2,000                      | 200                              |
| 250 Gal. Sprayer            | 2,500            | 500                        | 1,500                      | 200                              |
| 3 Pt. Sprayer               | 1,500            | 500                        | 1,000                      | 100                              |
| Irrigation Equipment        | 12,000           | 2,000                      | 7,000                      | 1,000                            |
| <b>HARVEST</b>              |                  |                            |                            |                                  |
| 40 Bulk Boxes               | 1,300            | 100                        | 700                        | 120                              |
| Trailer                     | 1,000            | 400                        | 700                        | 60                               |
| <b>PACKING AND COOLING</b>  |                  |                            |                            |                                  |
| Conveyor, etc.              | 6,000            | 1,000                      | 3,500                      | 500                              |
| Refrigeration               | 5,000            | 1,000                      | 3,000                      | 400                              |
| <b>MISCELLANEOUS</b>        |                  |                            |                            |                                  |
| Trucks (3)                  | 28,000           | 4,000                      | 16,000                     | 2,400                            |
| Fuel tanks                  | 200              | 200                        | 200                        | --                               |
| Tools, parts                | 5,000            | 2,000                      | 3,500                      | 300                              |
| <b>TOTALS</b>               | <b>\$138,500</b> |                            | <b>\$90,500</b>            | <b>\$9,600</b>                   |

<sup>1</sup>A 10 year life is assigned to all machinery and equipment.

<sup>2</sup>Average value is calculated to create a basis for determining interest on machinery and equipment investment and a repair charge (see Table 3). When determining this value for a specific farm use an estimated market value of the machinery and equipment on that farm.

$$\text{Annual Depreciation} = \frac{\text{New Price} - \text{Salvage Value}}{10}$$

**Table 2. Land, buildings and improvement costs for a typical farm producing cauliflower  
Western Michigan, 1986<sup>1</sup>**

| Item   | New Price       | Salvage Value | Average Value   | Annual <sup>2</sup> Depreciation |
|--|-----------------|---------------|-----------------|----------------------------------|
| Land (120 A)                                 | \$120,000       | \$ ---        | \$120,000       | \$ ---                           |
| Packing/Storage Shed                         | 20,000          | 5,000         | 12,500          | 600                              |
| Cooling Room                                 | 12,000          | 2,000         | 7,000           | 400                              |
| 2 Water Wells                                | 8,000           | 0             | 4,000           | 320                              |
| <b>TOTALS (Bldgs. and Improvements Only)</b> | <b>\$40,000</b> |               | <b>\$23,500</b> | <b>\$1,320</b>                   |

<sup>1</sup>"Typical Farm" consists of 120 acres total with 80 acres tillable and 20 acres of that 80 in cauliflower production.

<sup>2</sup> A 25 year life was assigned to all Buildings and Improvements.

**Table 3. Fixed costs for the farm and per acre of cauliflower  
Western Michigan, 1986**

| Item   | Cost            | Your Farm       |
|--|-----------------|-----------------|
| <b>Depreciation</b>                          |                 |                 |
| Bldgs. & Improv. (from Table 2)              | \$1,320         | \$ _____        |
| Mach. & Equip. (from Table 1)                | 9,600           | _____           |
| Total Depreciation                           | \$10,920        | \$ _____        |
| <b>Interest<sup>1</sup></b>                  |                 |                 |
| Land (\$120,000 x 5%)                        | \$6,000         | \$ _____        |
| Bldg. & Improv. (\$23,500 x 10%)             | 2,350           | _____           |
| Mach. & Equip. (\$90,500 x 10%)              | 9,050           | _____           |
| Total Interest                               | \$17,400        | \$ _____        |
| <b>Repairs &amp; Maintenance<sup>1</sup></b> |                 |                 |
| Bldgs. & Improv. (\$23,500 x 3%)             | \$ 705          | \$ _____        |
| Mach. & Equip. (\$90,500 x 10%)              | 9,050           | _____           |
| Total Repairs                                | \$ 9,755        | \$ _____        |
| <b>Taxes</b>                                 |                 |                 |
| Real Estate                                  | \$ 3,600        | \$ _____        |
| <b>Insurance</b>                             |                 |                 |
| Prop., Mach. & Equip.                        | \$ 900          | \$ _____        |
| Vehicles (inc. license)                      | 540             | _____           |
| Total Insurance                              | \$ 1,440        | \$ _____        |
| <b>TOTAL FIXED COST (farm)</b>               | <b>\$43,115</b> | <b>\$ _____</b> |
| <b>TOTAL FIXED COST PER TILLABLE ACRE</b>    |                 |                 |
| (\$43,115 ÷ 80 acres) <sup>2</sup>           | \$ 539          | \$ _____        |

<sup>1</sup>The investments cited in this section are taken from Tables 1 and 2.

<sup>2</sup>The fixed costs are distributed over the 80 acres that are producing income.

**Table 4. Variable costs per acre for cauliflower production  
Western Michigan, 1986**

| Item                                | Am't/Acre                              | Price      | Cost/Acre         |
|-------------------------------------|--|------------|-------------------|
| <b>GROWING</b>                      |  |            |                   |
| Seed                                | 2 oz.                                  | 10.00      | \$20.00           |
| Plants                              | 8,000 plugs                            | 28.50      | 228.00            |
| Fertilizer N                        | 200 lbs.                               | .24        | 48.00             |
| P                                   | 150 lbs.                               | .21        | 31.50             |
| K                                   | 250 lbs.                               | .12        | 30.00             |
| Solubor                             | 2 lbs.                                 | 3.15       | 6.30              |
| Limestone                           | 1/2 ton                                | 15.00      | 7.50              |
| Fungicide - Bravo                   | 1 qt. (4X)                             | 25.00 gal. | 43.75             |
| - Kocide                            | 2 lb. (4X)                             | 2.15       | 17.20             |
| Insecticide - Pydrin                | 8 oz. (3X)                             | 15.40 pt.  | 23.10             |
| - Lorsban                           | 50 oz. (1X)                            | 42.60 gal. | 16.65             |
| Herbicide - Treflan                 | 1 qt.                                  | 34.50 gal. | 8.60              |
| Cultural labor - Prep. <sup>1</sup> | 5 hrs.                                 | 5.50       | 27.50             |
| - Planting                          | 18 hrs.                                | 4.50       | 81.00             |
| - Tying                             | 50 hrs.                                | 4.50       | 225.00            |
| - Cultivation                       | .3 hrs. (3X)                           | 5.50       | 4.95              |
| - Hoeing                            | 8 hrs.                                 | 4.50       | 36.00             |
| - Irrigation                        | 8 hrs.                                 | 4.50       | 36.00             |
| - Spraying                          | .3 hrs. (8X)                           | 5.50       | 13.20             |
| - Fringe benefits                   | 15% of payroll                         |            | 63.55             |
| Fuel oil                            |  |            | 60.00             |
| Utilities                           |  |            | 10.00             |
| Supplies (Tie bands)                |  |            | 23.60             |
| Interest on Oper. Cap.              | \$1,049.40 x 12% x .5 yr.              |            | 62.96             |
| <b>HARVESTING, MARKETING</b>        |  |            |                   |
| Labor                               |  |            |                   |
| - Harvest                           | 60 hrs.                                | 4.50       | 270.00            |
| - Packing (70% of crop)             | 233 cases                              | .50        | 116.50            |
| - Fringe benefits                   | 15% of payroll                         |            | 57.98             |
| Supplies - Pkgs. (for 70% of crop)  | 233 cases                              | 1.25       | 291.25            |
| - Raingear, knives, etc.            |  |            | 24.00             |
| Cooling                             | 233 cases                              | .50/case   | 116.50            |
| Brokerage                           | 15% of fresh market gross <sup>2</sup> |            | 209.70            |
| Transportation                      | 10,000 lbs.                            | \$.008     | 80.00             |
| <b>TOTAL VARIABLE COST PER ACRE</b> |  |            | <b>\$2,290.29</b> |

<sup>1</sup>Does not include the cost of producing a cover crop but a cover crop planted the previous fall is recommended.

<sup>2</sup>Fresh market gross receipts = 233 cases @\$6.00 = \$1,398.

operation of a typical vegetable farm with 80 acres of intensive crops are estimated to be \$539 per acre of vegetables grown.

### VARIABLE COSTS

Table 4 includes the variable costs associated with the production of cauliflower. The costs are given on a per acre basis, with the per acre costs based on the production of 20 acres. The amounts of inputs listed in Table 4 do not necessarily reflect recommendations by Cooperative Extension Service specialists. Instead, they represent grower practices.

One item in Table 4 needs explanation: interest on operating capital. Regardless of whether a grower borrows operating money to plant and grow the crop or takes it out of savings, a charge must be made for its use. Interest is charged on the growing costs but not on the harvesting and marketing costs, because it is assumed that the

latter will be paid from receipts as they occur. On many farms, this is not the case because the receipts come in long after harvest. On such farms, interest should be charged to the total variable costs rather than to the growing costs alone. As shown in Table 4, the variable costs per acre of cauliflower for a 20-acre typical enterprise total \$2,290.29 per acre.

### TOTAL COSTS AND RETURNS

Table 5 brings together the variable costs and the fixed costs for growing cauliflower and compares these costs with typical gross receipts. These costs are calculated both on a per acre basis and a per pound of product basis.

The figures in Table 5 indicate that this typical cauliflower enterprise was not profitable. Using the per pound figures, we can see that the price per pound failed to cover even the variable costs. Of course, on a particular farm the yield may be higher, the price may

be higher or the costs may be lower than those on the typical farm. If any of these situations were to exist, the crop could show a profitable return. On the other hand, it is possible that on a particular farm the costs could be higher, the yield lower or the price lower, resulting in an even greater loss than that shown in Table 5.

Another way of evaluating the costs and returns in Table 5 is to calculate what price would be needed at the given yield to cover all costs and/or to calculate what yield would be needed at a given price to cover all costs. These are called break-even values. In this situation, the break-even price would be the price that equals the total cost, which is 28.3 cents. The break-even yield, given our 17.1 cents price, would be 16,545 lbs.

Table 5. Per acre and per pound costs and returns of cauliflower production  
Western Michigan, 1986

| Item                           | Per Acre    | Per Pound |
|--------------------------------|-------------|-----------|
| Gross Receipts (10,000 lbs.)   |             |           |
| - 233 cases (30 lbs.) @ \$6.00 | \$1,398     |           |
| - 3,000 lb. @ \$.105           | 315         |           |
|                                | \$1,713     | \$.171    |
| <b>VARIABLE COSTS</b>          |             |           |
| Growing                        |             |           |
| Seeds and Plants               | \$248.00    | \$.025    |
| Fertilizer and lime            | 123.30      | .012      |
| Spray and Dust                 | 109.30      | .011      |
| Cultural labor                 | 487.20      | .049      |
| Fuel, Oil                      | 60.00       | .006      |
| Supplies                       | 23.60       | .002      |
| Utilities                      | 10.00       | .001      |
| Total Growing                  | \$1,061.40  | \$.106    |
| Interest on Oper. Capital      | 62.96       | .006      |
| Total Growing + Interest       | \$ 1,124.36 | \$.112    |
| Harvesting and Marketing       |             |           |
| Labor                          | \$ 444.48   | \$.044    |
| Packages, supplies             | 315.25      | .032      |
| Cooling                        | 116.50      | .012      |
| Brokerage                      | 209.70      | .021      |
| Transportation                 | 80.00       | .008      |
| Total Harvesting, Mktng        | \$ 1,165.93 | \$.117    |
| TOTAL VARIABLE                 | \$ 2,290.29 | \$.229    |
| <b>FIXED COST</b>              |             |           |
| Depreciation                   | \$ 136.50   | \$.013    |
| Interest on Investment         | 217.50      | .022      |
| Repairs and Maintenance        | 122.00      | .012      |
| Taxes                          | 45.00       | .005      |
| Insurance                      | 18.00       | .002      |
| TOTAL FIXED                    | \$ 539.00   | \$.054    |
| TOTAL COST (Var. + Fixed)      | \$ 2,829.29 | \$.283    |
| Net Return (loss)              | \$-1,116.29 | -\$-.112  |

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