

## How To Determine Your Cost of Production

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Cost of production is the dollar value of all your inputs for growing a specific crop. For example, to produce an acre of tomatoes, these inputs would include so many units of seed, fertilizer, irrigation water, labor and machinery time, etc. Each of these units has a dollar value. Add them up, and you have the cost of production for the crop.

Knowing the production costs of your crops is a prerequisite for determining how well your farm business is doing: the difference between the value of yield per acre and inputs value. It enables you to evaluate how efficiently resources are being used in your farm operations, to predict how your business will respond to specific changes, and how to make other useful decisions for attaining your goals.

Estimating costs is easy in some instances and more difficult in others. Assigning costs is more straightforward for those inputs or raw materials you purchase for a single production period. If you use 20 pounds of fresh tomato seed an acre at \$0.80 per pound, your seed cost is \$16 (the seed quantity multiplied by its price). Costs for fertilizer, pesticides, irrigation water, and hired labor can be determined the same way. Production expenses that aren't item-ized also are included in this category as miscellaneous expenses. These can include entries to cover expenses such as office use, supplies, bookkeeping, and legal fees. The name for a cost category is determined by its contents. For example, "direct operating costs" indicates that values of items included in the category are straightforward and used only in the production of one specific crop. A "variable cost" category means that its values can fluctuate, depending upon the amount of input used.

Another cost category is that of "imputed costs." In this category are costs for interest charges, insurance, depreciation and taxes.

Interest charge is the cost of your money that is tied up in the production of a crop. It reflects the amount of money you pay on borrowed money or that amount you could have earned had you invested your own resources in alternative uses in the market. Interest on operating capital is calculated using the current interest rate. In the attached cost example, an annual interest charge of 15 percent or 1.25 percent per month is assumed. Interest charge on operating costs is calculated as follows:

(Total cash operating expense for the month) x (The number of months the capital is used) x (Interest charge)

The number of months the capital is used begins when the operating capital is invested and ends when it is recovered (usually the harvesting period or sale month for the crop). For example, if your fertilization and weed control operations are done in April, your interest charge for these expenses will cover 5 months, assuming August is the recovery or sale time.

Thus, interest charge is calculated:

$$(40 + 40) * 5 * .0125 = \$5$   
Note: .0125 = 1.25% or 1.25/100

The same procedure is used to determine other operating expenses. Interest of investment is charged at the current annual interest rate of the average investment and is calculated as follows:

Interest on investment/acre = (Investment cost)/(2 X No. of acres) \* Annual Interest Rate  
Note: Investment cost is the Average investment per acre \* Average investment per acre

If your investment for machinery, equipment and irrigation system amounts of \$102,700 and your farm is 40 acres, your investment interest charge per acre will be:

$$(102,700)/(2*40) * .15 = \$192$$

Note: .15 = 15% or 15/100

The purpose of insurance is to cover the risk of having farm machinery or irrigation equipment destroyed or stolen. A charge of 0.5 to 1 percent of the average investment generally is sufficient. Insurance per acre at 0.5 percent is:

$$(102,700 / 2 * 40) * .005 = 6$$

Note: .005 = .5% or 5/100

The other imputed cost item is depreciation. Depreciation can be calculated in various ways for various purposes. Fast write-off techniques can be used on the original cost of machinery for income tax purposes. However, for continued production, the machinery needs to be replaced. In such cases, depreciation reflects the cost of replacement and is based on the current value of the machinery. The straight line method is the simplest and the most straightforward way of calculating depreciation. Simply divide the current cost of the machine by its useful life. Following is an example of a depreciation schedule. Since the purpose of the attached schedule is to serve as a guideline, an attempt has neither been made to provide exact machinery current costs nor a complete list of machinery complement. Current machinery values can be obtained from local dealers or up-to-date publications.

#### Depreciation Schedule

| Machine          | Current Price | Useful Life | Investment Per Acre | Depreciation Per Acre |
|------------------|---------------|-------------|---------------------|-----------------------|
| Tractor 70 hp    | 15,000        | 10          | 375                 | 38                    |
| Crawler 50 hp    | 50,000        | 15          | 1,250               | 83                    |
| Irrig. System    | 18,000        | 15          | 450                 | 30                    |
| Plow 4-16        | 2,000         | 10          | 50                  | 5                     |
| Cultivator-4 row | 2,600         | 10          | 65                  | 7                     |
| Planter-2 row    | 1500          | 10          | 38                  | 4                     |
| Tandem Disk-10'  | 4,600         | 10          | 115                 | 11                    |
| Pickup           | 9,000         | 5           | 225                 | 45                    |
| Total Investment | \$102,700     | -           | 2,568               | 223                   |

Costs such as interest on investment, insurance, depreciation and taxes are referred to as fixed or ownership costs. This means that whether or not you use an asset, such costs will be incurred just for owning it. Based on the above guideline, you can estimate your own cost of production for any crop. Attached is a sample of cost of fresh tomato production prepared for your reference.

For additional information on costs of production, contact your local Cooperative Extension office. The Extension office is usually located at the county seat in a building shared by other state agencies, such as the Office of the Agricultural Commissioner. County Extension offices are listed in the telephone book under "University of California," "Farm and Home Advisor's Office," or "Cooperative Extension." Staff at these offices can give you answers to specific questions regarding your operations.

#### Sample Cost Of Fresh Tomato Production Per Acre, 1980

##### (1) Direct or Operating Costs

|              | Unit | Quantity/Amt. | Price/Unit | Value or Cost/Acre |
|--------------|------|---------------|------------|--------------------|
| Pre-harvest: |      |               |            |                    |

|   | Unit  | Quantity/Amt. | Price/Unit | Value or Cost/Acre |
|---|-------|---------------|------------|--------------------|
| Fresh Tomato Seed   | pound | 20            | \$ .80     | \$16.00            |
| Custom Works (material and application)                   |       |               |            |                    |
| List & Preplant Fert.                                     | acre  | 1             | 40.00      | 40.00              |
| Weed Control  | acre  | 1             | 40.00      | 40.00              |
| Pest Control  | acre  | 1             | 20.00      | 20.00              |
| Side Dress Fert.  | acre  | 1             | 35.00      | 35.00              |
| Thin and Hoe  | acre  | 1             | 50.00      | 50.00              |
| Hand Hoe  | acre  | 1             | 40.00      | 40.00              |
| <b>Land Rent</b>  |       |               |            | <b>300.00</b>      |
| Fuel, Lube & Repairs (tractor, equip., irrigation system) | acre  | 1             |            | 45.00              |
| Irrigation & Machinery Labor                              | hours | 46            | 5.50       | 253.00             |
| Interest on Operating Capital @ 15%                       |       | 328           | .15        | 49.00              |
| <b>Total Pre-harvest Costs</b>                            |       |               |            | <b>\$888.00</b>    |
|   |       |               |            |                    |
| <b>Harvest:</b>   |       |               |            |                    |
| First Pick  | ton   | 10            | 39.00      | 390.00             |
| Second Pick   | ton   | 6             | 50.00      | 300.00             |
| Packing, Hauling & Marketing                              | ton   | 12            | 180.00     | 2,160.00           |
| <b>Total Harvest Costs</b>                                |       |               |            | <b>2,850.00</b>    |
|   |       |               |            |                    |
| <b>Total Operating Costs (Pre-harvest &amp; Harvest)</b>  |       |               |            | <b>3,738.00</b>    |

## (2) Ownership Costs

| Ownership Costs  | Quantity/Amt. | Price/Unit | Value or Cost/Acre |
|--|---------------|------------|--------------------|
| Depreciation (from depreciation schedule: tractor, equipment, irrigation system) |               |            | 223.00             |
| Interest charge on investment (tractor, equip., etc.)                            | 1,284         | .15        | 192.00             |
| Insurance  | 1,284         | .005       | 6.00               |
| Taxes  |               |            | 35.00              |
| <b>Total Ownership Costs</b>   |               |            | <b>\$456.00</b>    |
|  |               |            |                    |
| <b>Total Production Cost = (total operating + total ownership costs)</b>         |               |            | <b>\$4,194.00</b>  |

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