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Purdue HortCalculator:

A Financial Tool for Sunflower Cut Flower Growers

Introduction

Growers have a tendency to invest time and money in the production of new crops and technologies that they hope will broaden their oncome stream without having a good idea of whether or not those investments will pay off. Here, we consider the economics of diversifying into the production of cut sunflower stems. Sunflowers are attractive and sell for a good price, and it seems logical to expect that selling them should make money. Even when production goes well, however, profits will depend on how costs add up and whether stems can be sold at expected prices. It is not always clear which crops will actually add to farm income. The purpose of this article is to show how the economics of sunflowers should be calculated.

Cut flowers represent an important segment of the U.S. horticulture industry, with domestic cut flower sales valued at approximately $350 million in 2023, according to the U.S. Department of Agriculture (USDA, 2023). In Indiana, 237 floriculture producers sold nearly $58 million worth of floriculture products in 2023.

Within the cut flower sector in the Midwest, sunflowers are frequently selected by growers due to their adaptability to open field production systems, relatively short production cycle, and strong demand in local and direct-to-consumer markets (ATTRA, 2023). These characteristics allow growers to incorporate sunflowers into mixed cropping systems alongside other annual flowers, supporting efficient use of land and seasonal labor. As a result, sunflowers are often used as a foundational crop within diversified cut flower enterprises, making them a suitable candidate for economic analysis.

Sunflower production involves several sources of economic uncertainty. Costs for inputs, labor, and marketing can change from season to season, while yields and the number of marketable stems may be affected by weather, pests, and harvest timing. For smaller cut flower growers, these factors can make it difficult to estimate production costs and

expected returns. Without a clear planning framework, growers may underestimate costs, overestimate sales, and misjudge profitability when making production and marketing decisions. This uncertainty highlights the need for practical financial tools that help growers plan, compare, and evaluate production decisions. One way to address this challenge is by using simple budgeting frameworks that allow growers to explore costs and potential returns before making production decisions.

Using Purdue Hortcalculator for Financial Decisions

The HortCalculator is a free, web-based tool developed by the Horticulture Business team at Purdue University to help specialty crop growers evaluate the financial side of their operations. The tool was originally designed for high tunnel spinach production and generates easy-to-read financial reports, including cost analysis, profitability, sensitivity analysis, and breakeven analysis. Building on this framework, the HortCalculator is now being adapted for cut flower production using enterprise budgets published by university Extension programs.

Why Financial Tools Matter

Good yields do not always mean good profits. Many growers know their crops are selling, but are not sure whether they are actually making money after all costs are accounted for. Without a clear picture of production costs and profit margins, it is easy to underestimate expenses or overestimate returns, especially when input prices keep changing.

Financial tools help growers put numbers to their decisions. By organizing costs and revenues in one place, growers can see which inputs reduce their profits the most, test “what-if” scenarios before committing to planting a crop and set realistic price and sales targets for the season. This kind of planning is especially valuable in specialty crops, where costs can vary widely depending on scale, management practices, and market channels. The HortCalculator was built with this in mind. It is a practical, easy-to-use tool that helps growers visualize costs, revenues, and potential returns. For growers looking to sharpen their business planning, financial tools like the HortCalculator can convert guessing into knowing.

The HortCalculator was developed as a practical tool to support this process by making economic analysis accessible and easy to use. Our goal is to help growers clearly visualize costs, expected revenues, and potential returns without requiring advanced financial knowledge. In an increasingly competitive agricultural environment, financial tools are no longer optional but essential for building a profitable and financially sustainable farm business.

Sunflower Analysis

This analysis uses data from the University of Tennessee Extension 2025 Enterprise Budget for single-stem sunflower cut flower production (University of Tennessee Extension, 2025). Because the web-based version of the HortCalculator for cut flowers is still under development, budget information was organized into an Excel spreadsheet that mirrors the structure and calculations of the tool. The spreadsheet generates the same outputs as the HortCalculator: cost analysis, profitability, breakeven, and sensitivity analyses. These reports summarize production costs and net returns, and allow growers to test how changes in prices or yields would affect their bottom line.

The example presented here demonstrates how the HortCalculator framework can be applied to sunflower production and other cut flowers. Growers can follow the same approach using their own farm records to reflect local conditions, keeping in mind that costs and prices vary by region and change over time. The results shown here are specific to the assumptions in the University of Tennessee Extension budget and may not apply to other operations. Because costs, yields, and prices vary across farms and regions, growers should enter their own data into the HortCalculator to generate reports tailored to their production system.

Production Inputs and Costs

Table 1 describes the farm and production setup from the University of Tennessee Extension budget. Sunflowers occupy 20% of the productive area within a diversified cut flower operation. This share is used to allocate labor, equipment, and overhead costs to the sunflower enterprise.

Table 1. Production and Farm Characteristics

Item	Value
Total farm area (all crops)	10,890 sq ft
Total productive area	5,000 sq ft
Area planted to sunflowers	1,000 sq ft
Share of productive area	20%
Production system	Open-field
Production cycles per year	1
Total marketable yield	2,800 stems
Market channel	Direct-to-consumer

Sales and Revenue Assumptions

Table 2 summarizes the sales assumptions used in this analysis. All sunflower stems are sold through direct-to-consumer channels at a single price point.

Table 2. Sales and Revenue Assumptions

Item	Value
Average price per stem	$1.70
Total stems sold	2,800
Total gross revenue	$4,760
Marketing channel	Direct-to-consumer

Variable Costs

Table 3 lists the variable costs: expenses that change with the level of production. These include seeds, transplants, fertilizer, pest management inputs, irrigation supplies, and marketing costs. The model also includes operating interest at 7% annually over six months. This represents the cost of using cash to pay for seeds, supplies, and labor months before flowers are sold. In simple terms, money is spent early in the season and recovered later. The rate is applied to total variable costs and can be adjusted based on each grower's situation.

Table 3. Variable Costs

Variable cost item	Total cost ($)
Seed (direct-seeded, 2,000 seeds)	73.6
Transplants (2,000 plugs)	199.47
Soil test (allocated 20% of farm test)	3
Fertilizer (20-10-20)	15.03
Fungicide (3 sprays)	8.39
Insecticide (4 sprays)	9.49
Dripline (annual purchase)	33.07
Irrigation attachments	67.06
Irrigation operation (water use)	67.44
Staples for ground cover	77.95
Black woven ground cover	30.01
Flower netting	75
Stakes	83.72
Machinery repair & maintenance (5%)	60
Fuel	22.5
Propane	0
Harvest containers	20.5
Marketing costs (20% of gross sales)	952
Operating interest	100.71
Total variable cost	1,898.93

Labor Costs

Table 4 shows labor costs for the sunflower enterprise. Labor estimates assume one full-time employee manages the overall cut flower operation, with a portion of time allocated to sunflowers based on area share. The wage rate reflects the 2025 USDA Adverse Wage Rate for farm workers.

Table 4. Labor Costs

Labor input	Value
Total labor hours	68
Hourly wage rate	$15.87
Total labor cost	$1,079.16

Fixed Costs

Table 5 presents fixed costs, which are shared farm expenses that do not change with production levels, such as equipment, buildings, and overhead. Because sunflowers represent 20% of the productive area, the same share of these costs is assigned to the sunflower enterprise. Land costs are not included in this analysis. Growers who rent land or assign an opportunity cost to owned land should account for those expenses when applying this framework to their own operation.

Table 5. Fixed Costs

Fixed cost category	Total cost ($)
Small tools and equipment	102.14
Tiller (Model 732)	18.56
Lawn mower (35-inch)	10.24
Irrigation system main component attachments	18.08
Storage and post-harvest handling building (15′ × 20′ × 16′)	166.97
Returns to land, ownership, and capital	297.81
General overhead cost	538.78
Total fixed cost	1,152.58

Cost Analysis: Where Does the Money Go?

Before asking whether sunflowers are profitable, most growers want to know where their money is going. Table 6 summarizes total production costs for sunflower cut flower production on a 1,000 ft² plot. Under the baseline scenario, total production costs are $4,130.68, or $4.13 per ft². Variable costs make up the largest share (46%), followed by fixed costs (28%) and labor (26%).

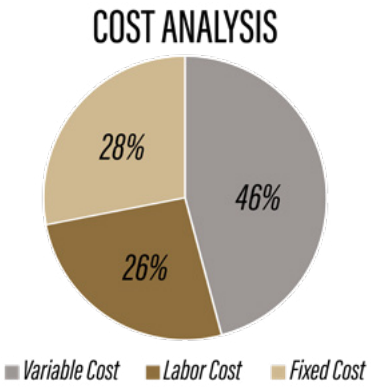
Table 6. Total production costs by cost category and per square foot for sunflower cut flower production (1,000 ft²)

	Total Sunflower Value ($)	Cost per ft²
Variable Cost	$1,898.93	$1.90
Labor Cost	$1,079.16	$1.08
Fixed Cost	$1,152.58	$1.15
TOTAL COST	**$4,130.68**	**$4.13**

What does this mean for growers?

Nearly half of every dollar spent goes to variable costs: things like seeds, fertilizer, irrigation, and marketing. These are the costs growers have the most control over from season to season. Labor and fixed costs, on the other hand, are harder to reduce without changing the scale or structure of the operation. For growers looking to trim expenses, the variable cost category is the place to start, but as we will see, cutting costs alone is not the key to profitability. Figure 1 shows how costs are distributed across these categories.

Figure 1. Distribution of total production costs for sunflower cut flower production.



Profitability Analysis: Do Sunflower Sales Cover the Costs?

The bottom-line question: do sunflower sales make a profit after all costs are paid? Table 7 shows the answer is yes, but just barely. Under baseline assumptions, gross revenue from 1,000 ft² of sunflowers is $4,760, total costs are $4,130.68, and net profits are only $629.32, or about $0.63 per ft².

Looking at the costs and returns from the standpoint of an individual sunflower stem makes the results easier to understand. Each stem sells for $1.70 but profits only $0.23. Each stem sold does contribute a small positive return, but there is little margin for error. A slow farmers market week, lower-than-expected yields, more weather damage, or higher than anticipated pest pressure could quickly reduce or eliminate that profit.

The takeaway for growers

Sunflower profitability depends more on selling most stems at expected prices than on cutting production costs. A grower who sells 90% of harvested stems at full price will come out ahead of one who cuts input costs by 10% but struggles to move the crop.

Table 7. Profitability analysis for sunflower cut flower production on a 1,000 ft² plot

	Total Sunflowers($)	Total Sunflowers per area ($/ft²)
Direct to Consumer Sales	$4,760.00	$4.76
Gross Revenue	$4,760.00	$4.76
Total Cost	$4,130.68	$4.13
Net Profit	**$629.32**	**$0.63**

Breakeven Analysis: How Many Stems Do I Need to Sell?

Knowing you made a profit this year is useful, but growers also need to plan ahead. How many stems must be sold to at least break even? Table 8 answers this question across three scenarios.

Table 8. Breakeven price and sales quantity for sunflower cut flower production (1,000 ft²)

Yield change \ Price change	Cost	-30% $1.19	-20% $1.36	-10% $1.53	Base $1.70	10% $1.87	20% $2.04	30% $2.21
-30%	$2,891.47	2430	2126	1890	1701	1546	1417	1308
-20%	$3,304.54	2777	2430	2160	1944	1767	1620	1495
-10%	$3,717.61	3124	2734	2430	2187	1988	1822	1682
Base	**$4,130.68**	3471	3037	2700	2430	2209	2025	1869
10%	$4,543.74	3818	3341	2970	2673	2430	2227	2056
20%	$4,956.81	4165	3645	3240	2916	2651	2430	2243
30%	$5,369.88	4513	3948	3510	3159	2872	2632	2430

Pessimistic Scenario: What If Prices Drop or Fewer Stems Sell? If prices fall or fewer stems reach the market, the breakeven point rises quickly. Under this scenario, growers must sell nearly all harvested stems just to cover costs, leaving almost no margin for crop loss or market shortfalls. This is the situation growers face during a tough season: every unsold stem is money lost.

Baseline Scenario: What Is the Minimum Sales Target? At the baseline price of $1.70 per stem, growers need to sell approximately 2,430 stems per 1,000 ft² to cover total costs of $4,130.68. With an expected harvest of 2,800 stems, that means selling about 87% of the crop just to break even. The remaining 13%, roughly 370 stems, represents the entire profit margin for the season. In practical terms, this means that pre-sale losses above 13% would eliminate profits entirely. This is a useful number to know before planting. If market conditions or crop quality make it unlikely that 87% of stems will sell, growers may want to reconsider their planting plans or adjust their pricing strategy.

Optimistic Scenario: What If Markets Work in My Favor? When prices rise or more stems reach buyers, fewer sales are needed to break even. For example, if prices increase by 20% to $2.04 per stem, the breakeven point drops to about 2,025 stems, giving growers a more comfortable cushion. Strong pricing and reliable market access reduce risk and provide flexibility to absorb some crop loss without losing money.

Why does this matter?

Expected sales are only moderately above the breakeven point. Sunflower production can be financially viable, but planning must be precise. Growers should set clear sales targets before planting, because there is little cushion between a profitable season and a losing one. Knowing the breakeven point helps growers decide how much to plant, what price to charge, and when to cut losses if the season is not going well.

Sensitivity Analysis: What Happens If Prices Drop or You Sell Fewer Stems?

What happens if the market does not perform as expected? Sensitivity analysis shows how net returns change when prices or sales volume shift, while production costs stay the same. Under baseline assumptions, sunflowers generate about $629 in net returns per 1,000 ft².

Table 9. Sensitivity of net returns to changes in price and sales volume for sunflower cut flower production.

Yield change \ Price change	Stems	–30% $1.19	–20% $1.36	–10% $1.53	Base $1.70	10% $1.87	20% $2.04	30% $2.21
–30%	1960	-$1,798.28	-$1,465.08	-$1,131.88	-$798.68	-$465.48	-$132.28	$200.92
–20%	2240	-$1,465.08	-$1,084.28	-$703.48	-$322.68	$58.12	$438.92	$819.72
–10%	2520	-$1,131.88	-$703.48	-$275.08	$153.32	$581.72	$1,010.12	$1,438.52
Base	**2800**	-$798.68	-$322.68	$153.32	$629.32	$1,105.32	$1,581.32	$2,057.32
10%	3080	-$465.48	$58.12	$581.72	$1,105.32	$1,628.92	$2,152.52	$2,676.12
20%	3360	-$132.28	$438.92	$1,010.12	$1,581.32	$2,152.52	$2,723.72	$3,294.92
30%	3640	$200.92	$819.72	$1,438.52	$2,057.32	$2,676.12	$3,294.92	$3,913.72

A 10% drop in price or sales cuts net returns sharply, down to about $153. A 20% drop pushes returns into negative territory, meaning the operation no longer covers its costs.

Why do profits fall so fast? Because many costs (labor, marketing, overhead) stay fixed regardless of how many stems are sold. A grower who plants 1,000 ft^2 of sunflowers will spend roughly the same amount on labor whether the crop yields 2,800 stems or 2,200 stems. When revenue drops, there is less income to cover those fixed expenses, and profits disappear quickly.

The practical lesson

Protecting revenue matters more than cutting costs. Growers who invest in strong market relationships, consistent product quality, and reliable sales channels will be better positioned to weather a tough season than those who focus only on reducing input expenses.

Take-Home Message

Sunflower cut flower production can be profitable, but the margins can be tight. This analysis shows that a 1,000 ft^2 planting can generate around $629 in net returns under favorable conditions, but that profit depends on selling most of the crop at expected prices. With a breakeven point of roughly 2,430 stems and an expected harvest of 2,800, there is not much room between success and loss.

The key insight for growers is this: profitability depends less on cutting costs and more on selling well, and for the highest possible price. Variable costs like seeds, fertilizer, and supplies can be trimmed, but the savings are often modest. Meanwhile, labor, marketing, and overhead expenses remain relatively fixed whether the season goes well or not. That means every unsold stem and every price drop hits the bottom line hard. A 10% decline in price or sales volume can cut profits by more than 75%. A 20% decline can push the operation into the red.

On the other hand, small improvements in marketing and sales can significantly strengthen returns. Growers who maintain strong relationships with buyers, deliver consistent quality, and price their product appropriately are better positioned to capture the full value of their crop. Diversifying sales channels, reducing postharvest losses, and timing harvests to meet peak demand can all help protect margins in a crop like sunflowers. Growers may also find opportunities to increase prices by offering specialty varieties, unique colors, or value-added products like bouquets and arrangements that command a premium over single stems. Building a reputation for quality and reliability can justify higher prices over time, especially with repeat customers at farmers markets or through CSA subscriptions.

For growers considering sunflowers as part of a diversified cut flower operation, this analysis offers a realistic look at what to expect. Sunflowers can contribute positively to farm income when managed with attention to both production and marketing. The numbers presented here are based on one enterprise budget and one set of assumptions, individual results will vary depending on local input prices, labor costs, and market conditions. Growers are encouraged to use tools like the HortCalculator to run their own numbers and see how the results apply to their specific situation.

The analysis presented here was conducted using an Excel-based model that mirrors the HortCalculator framework. While sunflower budgets are not yet available on the HortCalculator website, growers can visit the tool to explore how similar analyses are conducted for other crops, and to get familiar with the approach before the cut flower version is released.

To learn more about the HortCalculator and how it supports financial planning for specialty crops, visit: https://www.purdue.edu/hla/sites/hortbusiness/projects/hortcalculator/

To try the HortCalculator directly, visit: https://hortcalc.ceris.purdue.edu

Confidentiality

The HortCalculator does not collect your information for any purpose other than performing the calculations. Your information is not connected to any government agencies or outside organizations, and your data will never be shared. All information is stored securely on Purdue University's cloud system.

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