



## **Organic Seed Alliance**

*Advancing ethical seed solutions to meet food  
and farming needs in a changing world*

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# **Enterprise Budgeting Tool for Seed Producers**

## ***User Guide***

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# Contents

- Introduction..... 1
- Software Requirements..... 3
- Data Requirements..... 4
- Navigating the User Forms..... 5
- Understanding the Summary Tabs ..... 6
  - Timeline ..... 6
  - Operation Budget (Area Modeled)..... 6
  - Operation Budget (Per Acre) ..... 7
  - Modeled Area Summary ..... 8
  - Per Acre Summary..... 9
- Methodology ..... 10

## Introduction

As a business, farming carries financial risk. There are a whole host of forces, many outside the grower's control, that could make or break the farm's financial performance. Farm budgets can arm growers with the knowledge to make informed decisions about their operation and reduce some of the uncertainty associated with farming. Unlike other commercial crops, there has not been a large effort dedicated to publishing farm production practices and associated costs associated with seed production, especially on a small or medium scale.

Farm economics can involve many different areas of study, but its essence lies in examining the costs of producing agricultural products and the revenue generated from those products; in short, profitability. If you asked a group of farmers why they farm, many would talk about a connection to the land and loving the way of life before mentioning profitability. But to those that rely on farming as a livelihood, profitability is inescapable. This is why farm economics is important: It helps growers to keep the life they love and depend on.

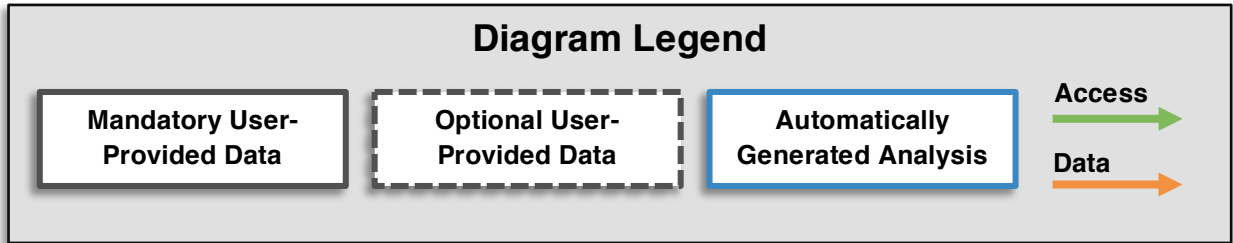
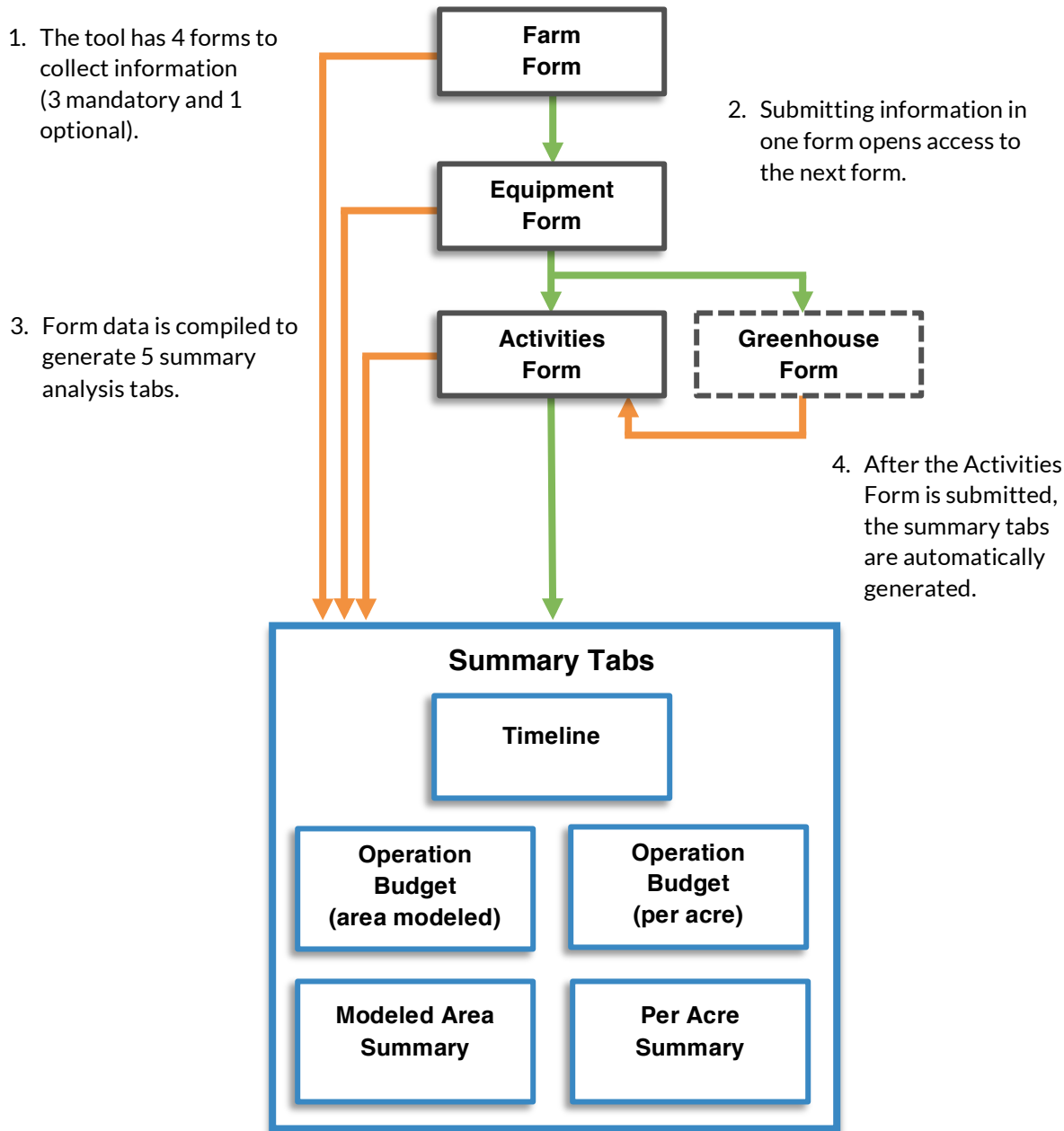
This budget tool is designed to help growers better understand the economics of their operations, and help producers understand:

- How profitable or unprofitable is a crop?
- What are the most significant costs or barriers to profitability?
- What is the timing of costs?
- What product price would be needed to make an operation worthwhile?
- How would profitability change if the operation were scaled up?

By inputting some basic information into the budgeting tool, growers can gain a better insight into these questions. The tool also provides farmers a way of organizing and recording information on the economics of their operations for later reference.

This user guide is designed help the grower navigate the tool and better understand how it works. On the next page, the Budgeting Tool Flow Diagram gives a basic overview of how the tool works and how user-provided information is used in the model to generate economic summaries of the agricultural operation.

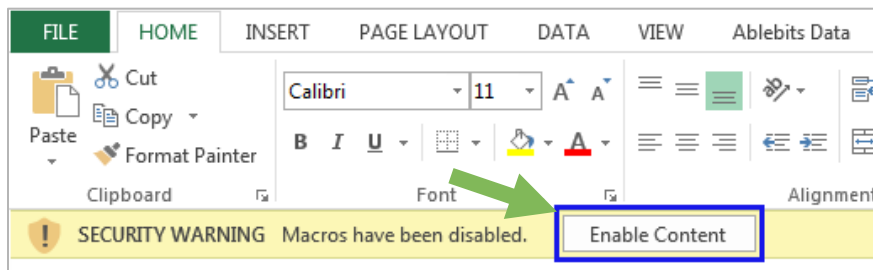
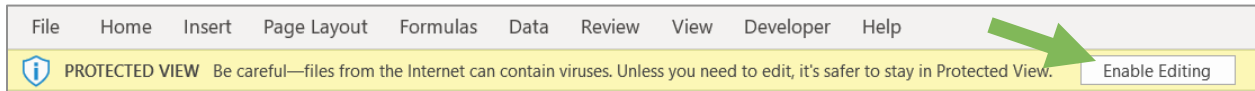
# Enterprise Budgeting Tool Flow Diagram



## Software Requirements

The budgeting tool is based in a Microsoft Excel file, so users will need access to Microsoft Excel in order to use the tool. Excel versions 97-2003 or later should all work with the tool.

When a user opens the tool file, they will likely get a message (either in a pop-up window or in a yellow bar at the top of the file window) asking if they would like to either “Enable Editing”, “Enable Content”, or “Enable Macros”. In order for the tool to work properly, the user must give their permission by pressing the appropriate button, as indicated by the green arrows below.



## Data Requirements

In order for the tool to provide the most accurate and complete summary possible of an agricultural operation, the user must input accurate and complete data on their operation. The table below outlines the general types of data the user needs to provide. The tool is designed to analyze a single crop, so complete data is required for only the crop being modeled.

### Budget Tool Data Requirements

<p><b><u>Farm</u></b></p> <ul style="list-style-type: none"> <li>• Size of crop area</li> <li>• Size of farm area</li> <li>• Product yield and price</li> <li>• Cost of land (\$/acre)</li> <li>• Labor costs (\$/hour)</li> <li>• A general sense of overhead costs</li> </ul>	<p><b><u>Equipment</u></b></p> <ul style="list-style-type: none"> <li>• Equipment used for crop production</li> <li>• List price of equipment</li> <li>• Equipment speed (mph)</li> <li>• Width of equipment</li> <li>• Hours used per year</li> <li>• Fuel type and cost</li> <li>• Horsepower (if applicable)</li> </ul>
<p><b><u>Activities &amp; Inputs</u></b></p> <ul style="list-style-type: none"> <li>• All activities supporting crop production</li> <li>• Annual timing of activities</li> <li>• Labor hours spent on each activity</li> <li>• Area impacted by each activity</li> <li>• Inputs used during each activity</li> <li>• Quantity and price of inputs</li> </ul>	<p><b><u>Greenhouse heat (optional)</u></b></p> <ul style="list-style-type: none"> <li>• Nearest city in Montana</li> <li>• Dimensions of the greenhouse</li> <li>• Wall material</li> <li>• Portion of greenhouse used to support the crop being modeled</li> <li>• Fuel type and price per unit</li> <li>• Heating schedule and dates</li> </ul>

## Navigating the User Forms

The user inputs data into the tool through 4 user forms (3 are mandatory and 1 is optional). After submitting each form, the data is organized and recorded into the spreadsheet. Instructions are found in the upper left corner of each tab that describes how to access each user form and modify submitted data. The diagram below highlights the most essential aspects of the user forms, with the corresponding numbers described below.

The image shows two side-by-side screenshots of web forms. The left form is titled 'Farm Form' and the right is 'Equipment Form'. Both have a close button (X) in the top right corner, labeled with a green box containing the number 6. The 'Farm Form' has sections for 'Land & Crop', 'Products & Revenue', and 'Cost'. The 'Equipment Form' has a title and a description, followed by several input fields and dropdown menus. Numbered callouts (1-7) are placed over various elements in both forms to indicate key features.

1. Input text or numbers (as appropriate) into text boxes.
2. In dropdown menus, one option must be selected.
3. Click on question marks to show helpful tips.
4. Some boxes are optional or “not applicable” based on other selections.
5. Press “Submit” to submit the information from the form into the tool.
6. Press “Quit” to close the form and discard any information in the form or press the “X” to close the form window.
7. The Equipment and Activities Forms can be submitted more than once (one submission for each piece of equipment or activity). Press the “I’m done” button once a form has been submitted for each piece of equipment or activity.

# Understanding the Summary Tabs

## Timeline

The Timeline tab summarizes the costs of activities provided in the Activities tab, including the cost of inputs and labor. Each month in the year is shown with a black outline and divided into four weeks. Each activity is represented by a single row that is highlighted blue if the activity occurs within the time period. For example, in the screenshot below, two activities are modeled, and a Land Prep activity labeled “Work” occurs in the third week of February, and “Harvesting” happens in the first three weeks in March. Each activity’s cost (including inputs and labor), are summarized in the blue cells in between the labels and calendar. In the example below, “Work” entails \$110 and “Harvesting” costs \$78.

This timeline is automatically populated by the information provided in the Activities table.		Month	Jan				Feb				Mar			
		Week	1	2	3	4	1	2	3	4	1	2	3	4
<b>Year 1</b>														
<b>Planting</b>														
Land Prep														
Work	\$110													
<b>Harvest &amp; Post-Harvest</b>														
Harvest														
Harvesting	\$78													

## Operation Budget (Area Modeled)

The Operation Budget for the area modeled (labeled *OperationBudget(areaMODELED)* in the tool) combines the costs provided in the Farm, Equipment, and Activities tabs. The resulting table outlines the total costs for the operation. Each activity is represented by a single row, divided into the tractor, equipment, labor, and input costs (divided into columns). Total costs for each activity are shown in the far-right column.

This table is automatically populated using the information provided in the Farm and Activities questions tabs.		<b>Costs Per Area Modeled</b>								
	<b>Time Period</b>	<b>Tractor Cost</b>		<b>Equipment Cost</b>		<b>Labor</b>		<b>Input</b>	<b>Total</b>	
	<b>From To</b>	<b>Variable</b>	<b>Fixed</b>	<b>Variable</b>	<b>Fixed</b>	<b>Hours</b>	<b>Cost</b>	<b>Costs</b>	<b>Costs</b>	
<b>Land Prep</b>										
Work	2/15 2/21	\$40.45	\$8.07	\$0.00	\$0.00	5.0	\$100.00	\$10.00	\$158.52	
<b>Harvest</b>										
Harvesting	3/1 3/15	\$0.00	\$0.00	\$0.00	\$0.00	5.0	\$75.00	\$2.50	\$77.50	
<b>Other Equipment Operating Costs:</b>										
Additional machine hours		\$40.45		\$0.00					\$40.45	
Overhead (general)		\$4.05		\$0.00			\$8.75	\$0.63	\$13.42	
Retail Overhead									\$0.00	
Land Costs									\$80.00	
<b>Total Costs:</b>									<b>\$369.89</b>	



## Operation Budget (Per Acre)

This tab (labeled *OperationBudget(acre)* in the tool) displays costs in the same format as the Operation Budget (area modeled) tab and draws on the same input tabs. However, this tab converts all costs into a per-acre basis, making it more useful for comparing different operations and understanding scaling.

This table is automatically populated using the information provided in the Farm, Equipment, and Activities questions tabs.

	Costs Per Acre										Total Costs
	Time Period		Tractor Cost		Equipment Cost		Labor		Input		
	From	To	Variable	Fixed	Variable	Fixed	Hours	Cost	Costs		
<b>Land Prep</b>											
Work	2/15	2/21	\$20.23	\$4.03	\$0.00	\$0.00	2.5	\$50.00	\$5.00		\$79.26
<b>Harvest</b>											
Harvesting	3/1	3/15			\$0.00	\$0.00	2.5	\$37.50	\$1.25		\$38.75
<b>Other Equipment Operating Costs:</b>											
Additional machine hours			\$20.23		\$0.00						\$20.23
Overhead (general)			\$2.02		\$0.00			\$4.38	\$0.31		\$6.71
Retail Overhead											\$0.00
Land Costs											\$40.00
<b>Total Costs: \$184.94</b>											

## Modeled Area Summary

This summary tab (labeled *PerMODELEDAreaSummary* in the tool) summarizes both the costs and revenues of the whole operation, providing an overall estimate of net revenues. It pulls revenue data from the Farm tab and reorganizes the costs from the input tabs. Costs are split into variable expenses (which tend to change with the size of the operation) and fixed expenses (which tend to remain the same if an operation is scaled down or up). Inputs are combined into broad activity categories and all labor is combined. Net revenues are shown in the bottom right corner.

Area Modeled:		2 acres		
Income	Unit	Price/Unit	Quantity	Amount
Product	pounds	\$50.00	100.00	\$5,000.00
<b>Income Per Area:</b>				<b>\$5,000.00</b>
<b>Variable Expenses</b>				
Land Prep	Inputs	\$10.00	1.00	\$10.00
Harvest	Inputs	\$2.50	1.00	\$2.50
Labor, all	Hours	\$17.50	10.00	\$175.00
Fuel Costs - Diesel	Gallons	\$3.00	22.00	\$66.00
Fuel Costs - Gas	Gallons	\$0.00	0.00	\$0.00
Fuel Costs - LP	Gallons	\$0.00	0.00	\$0.00
Electricity	kWh	\$0.00	0.00	\$0.00
Oil & Lubricants	Inputs	\$9.90	1.00	\$9.90
Repair & Maintenance	\$ per area	\$5.00	1.00	\$5.00
Other Equipment Operating Cc	\$ per area	\$0.00	1.00	\$0.00
<b>Variable Costs Per Area:</b>				<b>\$268.40</b>
<b>Fixed Expenses</b>				
Tractors / Powered Unit	\$ per area			\$8.07
Implements	\$ per area			\$0.00
Harvesting Equipment	\$ per area			\$0.00
Irrigation Equipment	\$ per area			\$0.00
Post Harvest	\$ per area			\$0.00
Other	\$ per area			\$0.00
Land Costs	\$ per area			\$80.00
General Overhead	\$ per area			\$13.42
Retail Overhead	\$ per area			\$0.00
<b>Fixed Costs Per Area:</b>				<b>\$101.49</b>
<b>Net Revenues Per Area:</b>				<b>\$4,630.12</b>

## Per Acre Summary

This summary tab (labeled *PerAcreSummary* in the tool) presents the costs and revenues in the same format as the Modeled Area Summary. But, like the Operation Budget (per acre) tab, it converts all values to a per-acre basis, which is similarly useful for comparing operations and understanding the impacts of scaling an operation up or down.

<b>Income</b>	<b>Unit</b>	<b>Price/Unit</b>	<b>Quantity</b>	<b>Amount</b>
Product	pounds	\$50.00	50	\$2,500.00
<b>Income Per Acre:</b>				<b>\$2,500.00</b>
<b>Variable Expenses</b>				
Land Prep	\$ of inputs	\$5.00	1.00	\$5.00
Harvest	\$ of inputs	\$1.25	1.00	\$1.25
Labor, all	Hours	\$17.50	5.00	\$87.50
Fuel Costs - Diesel	Gallons	\$2.50	11.00	\$27.50
Fuel Costs - Gas	Gallons	\$0.00	0.00	\$0.00
Fuel Costs - LP	Gallons	\$0.00	0.00	\$0.00
Electricity	kWh	\$0.00	0.00	\$0.00
Oil & Lubricants	Acre	\$4.13	1.00	\$4.13
Repair & Maintenance	Acre	\$5.00	1.00	\$5.00
Other Equipment Operating Costs	Acre	\$0.00	1.00	\$0.00
<b>Variable Costs Per Acre:</b>				<b>\$130.38</b>
<b>Fixed Expenses</b>				
Tractors / Powered Unit	Acre			\$2.49
Implements	Acre			\$0.00
Harvesting Equipment	Acre			\$0.00
Irrigation Equipment	Acre			\$0.00
Post Harvest	Acre			\$0.00
Other	Acre			\$0.00
Land Costs	Acre			\$10.00
General Overhead	Acre			\$6.52
Retail Overhead	Acre			\$0.00
<b>Fixed Costs Per Acre:</b>				<b>\$19.00</b>
<b>Net Revenues Per Acre:</b>				<b>\$2,350.62</b>

## Methodology

Most of the tool's functions involve calculations that simply transform, reorganize, and sum the data provided by the user into compatible units. Examples include:

- Multiplying input quantity by the per-unit price to calculation total input cost
- Summing the labor costs of each activity to calculate the total cost of labor
- Multiplying costs by a unit ratio to convert it to a per-acre cost

There are two areas within the model, machinery costs and greenhouse heating costs, that rely on a hybrid of user inputs and published data to derive costs. These costs are difficult to estimate and assign to a specific crop, even with complete and accurate financial records. Thus, calculations were made within the model, based on limited input from the user, to facilitate the ease of use and functionality of the model. Imputed machinery costs include operating costs (fuel, oil/lubricant, repairs) and ownership costs (depreciation, interest, and insurance). These costs are estimated by combining the user-provided information with methods used in a cost calculation tool developed by the University of Iowa called "Machine Cost Calculator, Ag Decision Maker A3-A29".<sup>1</sup> Additional data on machine costs was drawn from a University of Idaho publication.<sup>2</sup> The greenhouse heating tool adopts the data and methods used in the USDA's Virtual Grower 3 Model.<sup>3</sup> Weather data for the model was obtained from the National Solar Radiation Database.<sup>4</sup>

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<sup>1</sup> Edwards, W. (2015, May). Machine Cost Calculator, Ag Decision Maker A3-29. Retrieved from <https://www.extension.iastate.edu/agdm/crops/xls/a3-29machcostcalc.xlsx>

<sup>2</sup> Painter, K. (2011). Costs of Owning and Operating Farm Machinery in the Pacific Northwest: 2011. University of Idaho. Retrieved from <https://www.extension.uidaho.edu/publishing/pdf/PNW/PNW0346/PNW346.pdf>

<sup>3</sup> USDA. (2017, February 2). *Virtual Grower 3 Model*. Retrieved from <https://www.ars.usda.gov/midwest-area/wooster-oh/application-technology-research/docs/virtual-grower-3-model/>

<sup>4</sup> NREL. (2008, August 20). *National Solar Radiation Data Base, 1991-2005 Update: Typical Meteorologica Year 3*. Retrieved from [https://rredc.nrel.gov/solar/old\\_data/nsrdb/1991-2005/tmy3/](https://rredc.nrel.gov/solar/old_data/nsrdb/1991-2005/tmy3/)