



# RUTGERS

THE STATE UNIVERSITY  
OF NEW JERSEY

## Rutgers Cost Accounting program: A Tool to estimate your production costs

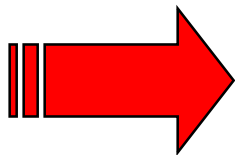


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# Current Situation

- Rising energy and other costs, but flat or declining prices
- Increasingly global and complex market
- Growing public concern about chemicals & water pollution
- Increasing demand for organic and local
- Maturing market



**Business survival may be at RISK!**

# The Cost-Price Squeeze for Growers

- Prices are Going Down
  - Retail Consolidation
  - Fewer Buyers
  - Oversupply
- Costs are Going Up
  - Labor, Pesticides, Fuel, Other inputs are higher
  - Labor in short supply
  - Buyer Requirements
    - Pay by Scan
    - Barcodes
    - Green and Local
  - Social Networking

# How do I enhance my profit margin?

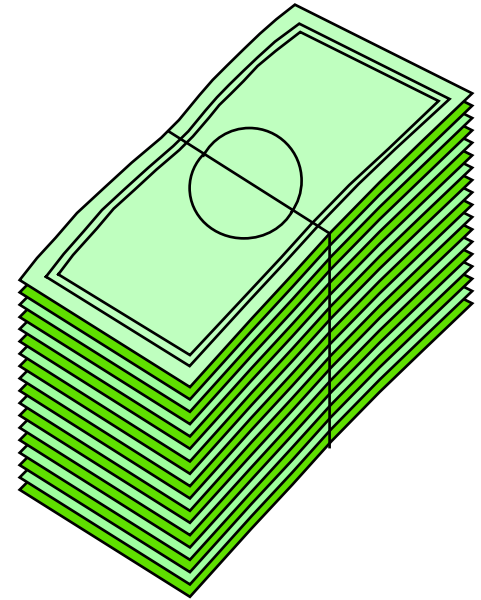
- Increase Sales
  - Increase Prices
  - Increase Inventory Turnover
    - Scheduling
    - Product Mix
    - Age of Accounts Receivable
  - Integrate Horizontally or Vertically
- Decrease Costs
  - Mechanize
  - Outsource (Inefficient activities or Buy In Product)
  - Decrease Overhead
  - Increase Volume – Spread Overhead over more Units

Costs vary from grower to grower due to:

- Size of operation
- Location
- Managerial practices
- Time of year
- Volume of production
- Availability of labor
- Product mix
- Market channel
- Technology

# The Bottom Line

Everyone's costs are different!



Growers must  
calculate their own  
costs!

# Why do growers not calculate their costs?

- They are plants people, and would rather grow plants than calculate costs.
- Fear of the unknown – Their favorite may not be profitable.
- It takes too much time.
- They are content with the status quo

*But.....*

*Cost Accounting is the only way to make accurate product mix and pricing decisions!*

# Tools for Cost Accounting

- Income Statement or Schedule F or C
- Production data
- Spreadsheet
- Desire to determine the most profitable crops





# Input Income Statement

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	A	B	C	D	E	F	G	H	I
1	Top of Page	<b>Step 1: Input Your Income Statement &amp; Balance Sheet</b>							
2	<- Prev   Home   Next ->								
3	Bottom of Page	Your Farm Name:		Year: <span style="background-color: #cccccc; padding: 2px 20px;"></span>					
4	Print	<b>Step 1A: Income Statement</b> <span style="float: right; font-size: small;">Input Values from Your Income Statement</span>							
5		<b>Sales:</b>		<i>Greenhouse Crops</i>	<i>Outdoor Crops</i>	<i>Totals</i>	<i>% of Sales</i>		
6		<b>Total Sales</b>		\$2,119,939	\$99,317	\$2,219,256	100.00%		
7	Enter your data in each cell with a yellow background.	<b>Direct Costs:</b>		<i>Greenhouse Crops</i>	<i>Outdoor Crops</i>	<i>Totals</i>			
8		Seeds, cuttings, or plants		\$440,863	\$50,000	\$490,863	22.12%		
9		Pots or containers		\$140,984		\$140,984	6.35%		
10		Growing Media		\$31,652	\$6,915	\$38,567	1.74%		
11		Fertilizer and chemicals		\$4,689		\$4,689	0.21%		
12		Fertilizer and chemicals		\$42,770	\$393	\$43,163	1.94%		
13		Tags				\$0			
14		Sales Commissions			\$2,875	\$2,875	0.13%		
15		Other		\$36,470	\$998	\$37,468	1.69%		
16			<b>Total Direct Costs</b>		\$697,428	\$61,181	\$758,609	34.18%	
17		<b>Salaries:</b>		<i>Greenhouse Crops</i>	<i>Outdoor Crops</i>	<i>Totals</i>			
18		Overhead salaries			\$2,895	\$2,895	0.13%		
19		FICA				\$0			
20		Unemployment insurance				\$0			

Hint: If you need to gather the information away from the computer, you can print out this page by clicking the Print button above.

Help

Table of Contents / Income / Ratios / Cost Detail / Greenhouse Crops / Greenhouse Labor / Outdoor Crops / Outdoor Labor / Green

# Input Balance Sheet

**Step 1: Input Your Income Statement & Balance Sheet**

Your Farm Name: \_\_\_\_\_ Year: \_\_\_\_\_

**Step 1B: Input Your Balance Sheet**

ASSETS		
	Year Start	Year End
<b>Current Assets</b>		
Cash/Checking/Savings		\$128,362.00
Accounts Receivable		\$86,364.00
Other Stock and Certificates		\$616.00
Supply and Material Inventory		
Prepaid Expenses		\$3,707.00
Other Current Assets		\$230,753.00
Other Current Assets		
Other Current Assets		
<b>Total current assets</b>	<b>\$0.00</b>	<b>\$449,802.00</b>
<b>Long Term Assets</b>	<b>Year Start</b>	<b>Year End</b>
Buildings and Improvements (Owned)		\$504,180.00
Machinery and Equipment (Owned)		\$276,784.00
Leased Structures		
Leased Machinery and Equipment		\$1,335.00

If you don't have both beginning and end of year figures, put everything into the Year End column.

Navigation: Table of Contents | **Income** | Ratios | Cost Detail | Greenhouse Crops | Greenhouse Labor | Outdoor Crops | Outdoor Labor | Green

# View Ratios & Financial Measures ( - )

## Profitability

The ability to earn a good profit and generate satisfactory return on investment.

	<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>	<i>Explanation</i>
1	<b>Net Income (Profit)</b>	<b>\$211,152</b>	<b>&gt;\$50,000 per family</b>	Sales - Total Costs	What remains after subtracting all the costs (including depreciation, interest, salaries, and taxes) from your sales. Also called <b>bottom line</b> , net earnings, net profit.
2	<b>Gross Margin</b>	<b>65.82%</b>	<b>30-40%</b>	(Sales - Total Direct Costs) / Sales	The amount of contribution to the business enterprise, after paying direct costs.
3	<b>Profit Margin</b>	<b>9.51%</b>	<b>10-15%</b>	Net Income / Sales	Profit per dollar of sales after paying the owner's salary and accounting for opportunity cost of capital invested.
4	<b>Return on Equity</b>	<b>27.85%</b>	<b>&gt;10%</b>	Net Income / Net Worth	Measures how effectively you are using your reserves to produce income.
5	<b>Return on Assets</b>	<b>17.14%</b>	<b>&gt;10%</b>	Net Income / Total Assets	Measures how you employ your assets to obtain sales revenue.

## Financial Efficiency

How well you employ your assets.

	<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>	<i>Explanation</i>
6	<b>Financial Efficiency Ratio</b>	<b>85.95%</b>	<b>&lt; 65%</b>	(Total Expenses-Interest-Depreciation) / Sales	Measures how you employ your assets to obtain sales revenue.
7	<b>Asset Turnover Ratio</b>	<b>180.12%</b>	<b>&gt; 25% - 30%</b>	Sales / Total Assets	How you are in utilizing your assets in generation of sales revenue. <b>Higher is better.</b> If low, it indicates the current level of investment needs to be used more efficiently or maybe some capital can be sold without adversely affecting operating efficiency.
8	<b>Operating Expense Ratio</b>	<b>13.54%</b>	<b>&lt;65%</b>	(Operating Expense - Depreciation) / Sales	For every dollar we took in, <b>how much did we need to spend?</b>
9	<b>Depreciation Expense Ratio</b>	<b>4.17%</b>	<b>&lt; 15%</b>	Depreciation Expense / Sales	Provides a measure of the capital costs incurred by the firm.
10	<b>Interest Expense Ratio</b>	<b>0.36%</b>	<b>&lt; 15%</b>	Interest Expense / Sales	Shows percent of your income needed to pay interest.

## Liquidity

The ability of the firm to meet its current obligations without disrupting normal business operations.

	<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>	<i>Explanation</i>
11	<b>Current Ratio</b>	<b>1.85</b>	<b>&gt;1.5</b>	Total Current Assets / Current Liability	Measures the ability to satisfy current debts with current assets.
12	<b>Working Capital</b>	<b>\$207,162</b>	<b>Positive, Stable</b>	Total Current Assets - Total Current Liabilities	Approximates the amount of funds available from within the business to purchase crop inputs and equipment necessary to produce products. In general, a lot of working capital = more success since you can expand and improve operations.

## Solvency

The ability to meet loan payments.

	<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>	<i>Explanation</i>
13	<b>Debt/Asset Ratio</b>	<b>38.47%</b>	<b>&lt;30%</b>	Total Liabilities / Total Assets	Measures the percentage of your total assets to which creditors have claims. Measures financial risk with debt financing. If = 0, the firm is out of debt.
14	<b>Equity/Asset Ratio</b>	<b>61.53%</b>	<b>&lt;60%</b>	Total Equity / Total Assets	What <b>portion</b> of the business <b>YOU own</b> .
15	<b>Debt/Equity Ratio</b>	<b>62.51%</b>	<b>&lt;150%</b>	Total Liabilities / Net Worth	What <b>portion</b> of the business <b>YOUR LENDERS own</b> .
16	<b>Working Capital Ratio</b>	<b>10.32%</b>	<b>&gt;50%</b>	(Current Assets-Current Liabilities)/Total Expenses	Measures the return on your assets without regard to how the firm is financed.
17	<b>Leverage Factor</b>	<b>1.625</b>	<b>5</b>	Total Assets / Net Worth	A measure of the firm's riskiness. It is the ratio of your assets to your net worth.

## Values from Income Statement

<b>Sales</b>	<b>\$2,219,256</b>	<b>100%</b>
<b>Directs costs</b>	<b>\$</b>	<b>% of Sales</b>
Seeds, cuttings, or plants	\$490,863	22.1%
Pots or containers	\$140,984	6.4%
Marketing containers	\$38,567	1.7%
Growing medium	\$4,689	0.2%
Fertilizer and chemicals	\$43,163	1.9%
Sales Commissions	\$2,875	0.1%
Other	<u>\$37,468</u>	<u>1.7%</u>
<b>Total Directs costs</b>	<b>\$758,609</b>	<b>34.2%</b>

## Labor

Item	\$	% of Sales
Overhead salaries (including benefits)	\$2,895	0.1%
General wages (including benefits)	<u>\$729,233</u>	<u>32.9%</u>
<b>Total Salaries and Wages</b>	<b>\$732,128</b>	<b>33.0%</b>

## Utilities

Item	\$	% of Sales
<b>Utilities</b>		
Heating fuel/Machinery Fuel	\$77,566	3.5%
Electricity	\$40,352	1.8%
Telephone	\$5,894	0.3%
Water	<u>\$464</u>	<u>0.0%</u>
<b>Total Utilities</b>	<b>\$124,276</b>	<b>5.6%</b>



Item	\$	% of Sales
Depreciation	\$92,642	4.2%
Interest	\$8,080	0.4%
Repairs	\$43,829	2.0%
Taxes	\$26,131	1.2%
Insurance	\$37,546	1.7%
Advertising	\$11,277	0.5%
Travel and entertainment	\$7,431	0.3%
Office expense	\$9,589	0.4%
Professional fees	\$19,444	0.9%
Truck expense & eq.rental	\$46,954	2.1%
Land rental	\$2,112	0.1%
Miscellaneous	<u>\$88,056</u>	<u>4.0%</u>
<b>Total Overhead</b>	<b>\$393,091</b>	<b>17.7%</b>



# Income Statement

# 138,759 Square Feet

	\$	<i>% of Sales</i>
<b>Sales</b>	<b>\$2,219,256</b>	<b>100%</b>
Total expenses	<u>\$2,008,104</u>	<u>90.5</u>
<b>Net Returns</b>	<b>\$211,152</b>	<b>9.5%</b>

# Assets

<b>Current Assets</b>	
Cash/Checking/Savings	\$ 128,362
Accounts Receivable	\$ 86,364
Other Stocks and Certificates	\$ 616
Prepaid Expenses	\$ 3,707
Other Current Assets	\$ 230,753
<b><i>Total Current Assets</i></b>	<b>\$ 449,802</b>
<b>Long Term Assets</b>	
Buildings & Improvements (Owned)	\$ 504,180
Machinery and Eq.(Owned)	\$ 276,784
Leased Machinery & Eq.	\$ 1,335
<b><i>Total Long Term Assets</i></b>	<b>\$ 782,299</b>
<b><i>Total Assets</i></b>	<b>\$ 1,232,101</b>

## Liabilities

<b>Current Liabilities</b>	
Accounts Payable	\$ 115,408
Operating Debt	\$ 4,013
Other Current Liabilities	\$ 123,219
<b><i>Total current liabilities</i></b>	<b>\$ 242,640</b>
<b>Long Term Liabilities</b>	
Leased Structures	\$ 1,335
Leased Machinery and Equipment	\$ 562
Other Liabilities	\$ 229,409
<b><i>Total long term liabilities</i></b>	<b>\$ 231,306</b>
<b><i>Total Liabilities</i></b>	<b>\$ 473,946</b>
<b><i>Net Worth (Owner's Equity)</i></b>	<b>\$ 758,155</b>

Ratios

138,759 Square Feet

Ratio	<i>Base</i>	<i>Fuel Tripled</i>
Net Income	\$211,152	(\$37,788)
Profit Margin	9.5%	-1.7%
Return on Equity	27.9%	-5.0%
Return on Assets	17.1%	-3.1%

# Profitability Ratios

<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>
<b>Net Income (Profit)</b>	<b>\$211,152</b>	<b>&gt;\$50,000 per family</b>	Sales - Total Costs
<b>Gross Margin</b>	<b>65.82%</b>	<b>30-40%</b>	(Sales - Total Direct Costs) / Sales
<b>Profit Margin</b>	<b>9.51%</b>	<b>10-15%</b>	Net Income / Sales
<b>Return on Equity</b>	<b>27.85%</b>	<b>&gt;10%</b>	Net Income / Net Worth
<b>Return on Assets</b>	<b>17.14%</b>	<b>&gt;10%</b>	Net Income / Total Assets

# Financial Efficiency Ratios:

## How well you employ your assets.

<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>
<b>Financial Efficiency Ratio</b>	<b>85.95%</b>	<b>&lt; 65%</b>	(Total Expenses-Interest-Depreciation) / Sales
<b>Asset Turnover Ratio</b>	<b>180.12%</b>	<b>&gt; 25% - 30%</b>	Sales / Total Assets
<b>Operating Expense Ratio</b>	<b>13.54%</b>	<b>&lt;65%</b>	(Operating Expense - Depreciation) / Sales
<b>Depreciation Expense Ratio</b>	<b>4.17%</b>	<b>&lt; 15%</b>	Depreciation Expense / Sales
<b>Interest Expense Ratio</b>	<b>0.36%</b>	<b>&lt; 15%</b>	Interest Expense / Sales

## Liquidity

The ability of the firm to meet its current obligations without disrupting normal business operations

<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>
<b>Current Ratio</b>	<b>1.85</b>	<b>&gt;1.5</b>	Total Current Assets / Current Liability
<b>Working Capital</b>	<b>\$207,162</b>	<b>Positive, Stable</b>	Total Current Assets - Total Current Liabilities

Solvency:  
The ability to meet loan payments.

<i>Measure</i>	<i>Your Figure</i>	<i>Recommendation</i>	<i>Formula</i>
<b>Debt/Asset Ratio</b>	<b>38.47%</b>	<b>&lt;30%</b>	Total Liabilities / Total Assets
<b>Equity/Asset Ratio</b>	<b>61.53%</b>	<b>&lt;60%</b>	Total Equity / Total Assets
<b>Debt/Equity Ratio</b>	<b>62.51%</b>	<b>&lt;150%</b>	Total Liabilities / Net Worth
<b>Working Capital Ratio</b>	<b>10.32%</b>	<b>&gt;50%</b>	(Current Assets-Current Liabilities)/Total Expenses
<b>Leverage Factor</b>	<b>1.625</b>	<b>5</b>	Total Assets / Net Worth



## Impact of 5% Price Increase

Ratio	<i>Base</i>	<i>Fuel Tripled</i>	5% Price Increase
Net Income	\$211,152	-\$37,788	\$73,175
Profit Margin	9.5%	-1.7%	3.1%
Return on Equity	27.9%	-5.0%	9.6%
Return on Assets	17.1%	-3.1%	5.9%

## Impact of 5% Cost Decrease

Ratio	Base	Fuel Tripled	5% Price Increase	5% Cost Decrease
Net Income	\$211,152	-\$37,788	\$73,175	\$75,064
Profit Margin	9.5%	-1.7%	3.1%	3.4%
Return on Equity	27.9%	-5.0%	9.6%	9.9%
Return on Assets	17.1%	-3.1%	5.9%	6.1%

# Sam Pull Greenhouse Production Schedule

Item	Petunia Flats	Marigold Flats	Geranium Flats	Geranium 4-inch	Poinsettia 6-inch
<b>No. of units</b>	50,000	50,000	50,000	100,000	126,000
<b>Sq. ft./unit</b>	1.64	1.64	1.64	0.11	1.00
<b>Weeks</b>	8	6	13	6	15
<b>% sold</b>	98	98	98	95	95
<b>Price</b>	\$7.93	\$7.00	\$11.73	\$1.66	\$5.46

# Sam Pull Greenhouse Production Schedule

Item	Petunia Flats	Marigold Flats	Geranium Flats	Geranium 4-inch	Poinsettia 6-inch
<b>Sales</b>	\$388,570	\$343,000	\$574,770	\$157,700	\$653,562
<b>Profit/crop</b>	\$69,828	\$50,068	\$54,000	\$14,037	\$64,379
<b>Profit/unit</b>	\$1.43	\$1.02	\$1.10	\$0.15	\$0.54
<b>Profit/sq.ft. week</b>	\$0.11	\$0.10	\$0.05	\$0.21	\$0.03
<b>Price</b>	\$7.93	\$7.00	\$11.73	\$1.66	\$5.46

# Sam Pull Greenhouse Production Schedule Tripled Fuel Prices

Item	Petunia Flats	Marigold Flats	Geranium Flats	Geranium 4-inch	Poinsettia 6-inch
<b>Sales</b>	\$388,570	\$343,000	\$574,770	\$157,700	\$653,562
<b>Profit/crop</b>	\$30,682	\$20,709	-\$9,612	\$10,098	-\$48,405
<b>Profit/unit</b>	\$0.63	\$1.42	-\$0.20	\$0.11	-\$0.40
<b>Profit/sq.ft. week</b>	\$0.05	\$0.04	-\$0.01	\$0.15	-\$0.03
<b>Price</b>	\$7.93	\$7.00	\$11.73	\$1.66	\$5.46

# Sam Pull Greenhouse Production Schedule Tripled Fuel Prices & 5% Price Increase

Item	Petunia Flats	Marigold Flats	Geranium Flats	Geranium 4-inch	Poinsettia 6-inch
<b>Sales</b>	\$407,999	\$360,150	\$603,508	\$165,585	\$686,240
<b>Profit/crop</b>	\$50,111	\$37,859	\$19,126	\$17,983	-\$15,726
<b>Profit/unit</b>	\$1.02	\$0.77	\$0.39	\$0.19	-\$0.13
<b>Profit/sq.ft. week</b>	\$0.08	\$0.08	\$0.02	\$0.27	-\$0.01
<b>Price</b>	\$8.33	\$7.35	\$12.32	\$1.74	\$5.73

# Sam Pull Greenhouse Production Schedule Tripled Fuel Prices & 5% Price Increase & 80% Sold

Item	Petunia Flats	Marigold Flats	Geranium Flats	Geranium 4-inch	Poinsettia 6-inch
<b>Sales</b>	-\$357,888	-\$322,291	-\$584,383	-\$147,601	-\$701,967
<b>Profit/crop</b>	-\$40,688	-\$42,291	-\$115,182	-\$14,802	-\$151,599
<b>Profit/unit</b>	-\$1.02	-\$1.06	-\$2.88	-\$0.19	-\$1.50
<b>Profit/sq.ft. week</b>	-\$0.06	-\$0.09	-\$0.11	-\$0.22	-\$0.08
<b>Price</b>	\$8.33	\$7.35	\$12.32	\$1.74	\$5.73

## Impact of 80% Sales (20% Shrink)

Ratio	<i>Base</i>	<i>Fuel Tripled</i>	80% Sales
Net Income	\$211,152	-\$37,788	-\$392,869
Gross Margin	65.8%	65.8%	59.3%
Profit Margin	9.5%	-1.7%	-21.1%
Return on Equity	27.9%	-5.0%	-51.8%
Return on Assets	17.1%	-3.1%	-31.9%



# Sam Pull Outdoor Production Schedule

Item	Cut Flowers
<b>No. of units</b>	26,136
<b>Acres</b>	1
<b>Weeks</b>	15
<b>% sold</b>	95
<b>Price</b>	\$4.00

# Sam Pull Outdoor Production Schedule Results

Item	Cut Flowers
<b>Sales</b>	\$80,129
<b>Profit/crop</b>	\$19,188
<b>Profit/unit</b>	\$0.77
<b>Profit/sq.ft. week</b>	\$0.03
<b>Price</b>	\$4.00

C11								
	A	B	C	D	E	F	G	H
1		<b>Greenhouse Cash Flow (12 months)</b>						
2								
3			From Income Statement					
4					Jan	Feb	Mar	Apr
5		Cash on Hand (beginning of month)						
6		CASH RECEIPTS						
8	Salary	Gross Income	\$2,119,939	\$6,000	\$2,000	\$10,000	\$521,256	\$750,000
9		Collections from Accounts Receivable accounts						
10		Other Income						
11		Other Income						
12		TOTAL CASH RECEIPTS	\$2,119,939	\$6,000	\$2,000	\$10,000	\$521,256	\$750,000
13	Wages	Total Cash Available (before cash out)	\$2,119,939	\$6,000	\$2,000	\$10,000	\$521,256	\$750,000

N18		fx													
	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	<b>Outdoor</b>														
3	<b>Cash Flow (12 months)</b>	From Income Statement													
4			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Item
5	<b>Cash on Hand</b> (beginning of month)														\$0
6															\$0
7	<b>CASH RECEIPTS</b>														\$0
8	Gross Income	\$2,219,256	\$6,000	\$2,000	\$10,000	\$500,000	\$750,000	\$300,000	\$50,000	\$40,000	\$20,000	\$20,000		\$500,000	\$2,198,000
9	Collections from Accounts Receivable accounts														\$0
10	Other Income														\$0
11	Other Income														\$0
12	<b>TOTAL CASH RECEIPTS</b>	\$2,219,256	\$6,000	\$2,000	\$10,000	\$500,000	\$750,000	\$300,000	\$50,000	\$40,000	\$20,000	\$20,000	\$0	\$500,000	\$4,417,256
13	<b>Total Cash Available</b> (before cash out)	\$2,219,256	\$6,000	\$2,000	\$10,000	\$500,000	\$750,000	\$300,000	\$50,000	\$40,000	\$20,000	\$20,000	\$0	\$500,000	\$4,417,256
14															\$0
15	<b>CASH PAID OUT</b>														\$0
16	<b>Direct Costs:</b>														\$0
17	Seeds, cuttings, or plants	\$50,000											\$50,000.00		\$50,000
18	Pots or containers	\$0													\$0
19	Marketing Containers	\$6,915											\$6,915.00		\$6,916
20	Growing Media	\$0													\$0
21	Fertilizer and chemicals	\$393											\$393.00		\$393
22	Tags	\$0													\$0
23	Sales Commissions	\$2,875													\$0

## Allows Producers to:

- Calculate Profitability of Greenhouse Crops
- Cost Accounting for Outdoor Crops
- Evaluate Financial Ratios
- Do Benchmark Analysis
- Do “what if” planning on paper instead of making bigger, real mistakes in the greenhouse.
- Help make production and marketing decision to improve business.
- Helps producers manage cash flows.

# Questions



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