February 2002 EB 2002-03

NEW YORK GREENHOUSE BUSINESS SUMMARY AND FINANCIAL ANALYSIS, 2000

Wen-fei Uva and Steve Richards

Department of Applied Economics and Management
College of Agriculture and Life Sciences
Cornell University
Ithaca, NY 14853-7801

Publication price per copy is $7.00.

For additional copies, please contact:

Wen-fei Uva
Sr. Extension Associate
456 Warren Hall
Cornell University
Ithaca, NY 14853-7801

Email: WL32@CORNELL.EDU
Phone: 607-255-3688
FAX: 607-255-9984

Acknowledgements

The authors are Wen-fei L. Uva, Senior Extension Associate, Department of Applied Economics and Management, and Steve Richards, Extension Associate, Department of Applied Economics and Management in the College of Agriculture and Life Sciences at Cornell University.

This work was supported by a joint research and extension program funded by Cornell University Agricultural Experiment Station (Hatch funds) and Cornell Cooperative Extension (Smith Lever funds) received from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

Special appreciation goes to Dr. Wayne Knoblauch in the Department of Applied Economics and Management at Cornell University for providing assistance and reviewing the report. Finally, special thanks are extended to New York State greenhouse operators for providing valuable comments and participating in the study.

Table of Contents

		Page
I.	INTRODUCTION	1
II.	PROCEDURES	2
	Information Collected and Reported	2
	Accounting Conventions	2
	Concept of Square Foot Weeks	3
	Participating Business Characteristics	3
III.	FINANCIAL ANALYSIS PROCESS	5
	Step 1: Keeping Good Financial Records	5
	Chart of Accounts	6
	Cost Breakdown and Analysis	7
	Separate Variable Costs from Fixed Costs on the Chart of Accounts	8
	Step 2: Construct Financial Statements	9
	Income Statement	9
	The Balance Sheet	14
	Statement of Cash Flows	17
	Step 3: Financial Statement Analysis and Financial Ratios	21
	Financial Ratios	21
	Efficiency Measures	26
	Step 4: Benchmarking	30
	Greenhouse Business Benchmarks	30
IV.	CONCLUSION	34
	Benchmarking is Only Part of the Big Picture	34
	Setting Goals for Profit	34
REFERENCES		
LIST OF TABLES		
	Table 1. Scope of Greenhouse Businesses Surveyed	4
	Table 2. Chart of Accounts Used in the Cornell Greenhouse Analysis	6
	Table 3. Chart of Accounts after Separating Variable and Fixed Costs	8
	Table 4. Average Income Statement for All Greenhouse Businesses, 2000	11
	Table 5. Average Income Statement for 14 Wholesale Greenhouse Businesses, 2000	12
	Table 6. Average Income Statement for 15 Retail Greenhouse Businesses, 2000	13
	Table 7. Average Balance Sheet for Greenhouse Businesses, by Marketing Channels, 1999 and 2000	16
	Table 8. Average Annual Cash Flow from Operating Activities for All Greenhouses, 2000	18

Table of Contents (continued)

Page

LIST OF TABLES (continued)

Table 9. Average Annual Cash Flow from Operating Activities for 14 Wholesale Greenhouses, 2000 19
Table 10. Average Annual Cash Flow from Operating Activities for 15 Retail Greenhouses, 2000 20
Table 11. Average Financial Ratios of Greenhouse Businesses, by Marketing Channels, 2000 25
Table 12. Average Efficiency Measures for Greenhouse Businesses, by Marketing Channels, 2000 29
Table 13. Greenhouse Business Charts: All Greenhouses, by Quintile, 2000 31
Table 14. Greenhouse Business Charts: 14 Wholesale Greenhouses, by Quintile, 2000 32
Table 15. Greenhouse Business Charts: 15 Retail Greenhouses, by Quintile, 2000 33

LIST OF FIGURES

Figure 1. Size of Greenhouse Operations Surveyed 4
Figure 2. Cost Analysis: Shutdown, Contribution, Breakeven and Profit 7

I. INTRODUCTION

The greenhouse industry is an important sector of New York State agriculture. It produces goods and services which enhance the quality of life in communities (ornamental plants) and increasingly provides goods vital to food consumption (fruits and vegetables). The Census of Agriculture (1999b) shows that New York's greenhouse and nursery crop production industry is the state's second largest sector of agriculture, with production sales valued at $258 million in 1997 (including both under-cover and open-ground production). Total sales revenue from New York greenhouse production alone was estimated to be $207 million during 1997 (Uva, 1999).

While greenhouse production is a growing industry in New York, competition from other states and countries is strong and growing stronger. According to a USDA report (1999a), floriculture and environmental horticulture (including greenhouse, turfgrass and nursery-related crops) is considered the fastest growing segment of agriculture in the U.S., with an annual increase of over $440 million in growers' receipts in the past decade. However, growth in receipts in the Northeastern U.S.[1] and in New York, in particular, have not been as robust over the last decade (Traver, 1998).

To stay competitive, it is essential to develop management and business analysis competency among New York greenhouse businesses. Comprehensive financial data and market analysis for the greenhouse industry are needed to enable managers to evaluate their businesses and make wise business decisions. Currently, this information is unavailable to New York and Northeast greenhouse businesses. The Cornell Greenhouse Business Analysis Program addresses these needs by establishing production and financial benchmark data for the greenhouse industry, providing training to improve record keeping and business analysis skills of greenhouse managers, and using the collected data to analyze factors important to profitability of greenhouse businesses.

Conducting business analysis as demonstrated in this report will help greenhouse managers answer the following questions:

- What is my operation's financial health?
- What is my operation's efficiency?
- How can I improve my profitability?
- How does my business compare with others in the industry?
- How can I set and meet my goals for the next 1, 3 and 5 years?

[1] The "Northeast" includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.

This report features:

- Procedures for greenhouse managers to perform a business analysis and a guide on how to use the results to aid the business decision-making process.
- A summary of financial and marketing information from New York greenhouse businesses according to marketing channels.
- Annual financial and marketing benchmarks for the New York greenhouse industry.
- An analysis of operating efficiency and profitability of New York greenhouse businesses.

II. PROCEDURES

Information Collected and Reported

Information for this report was collected from 29 greenhouse businesses in New York for the 2000 fiscal year. In most cases, the data represented a calendar year period of January to December; however, in a few instances, the record was based on a fiscal year accounting. Businesses participating in the Cornell Greenhouse Business Analysis Program did so voluntarily, so it is not a statistically representative sample of firms, but it is believed to represent firms with above-average management quality (by virtue of their willingness to participate in a management improvement program).

Information required for the business analysis included sales and other income, expenses, assets and liabilities, inventory values, value of leased property, production area, labor hours and number of employees. Information was collected from company accounting records, financial statements, income tax forms, and other production records, then were transcribed to a set of standard worksheets before being entered into a computer spreadsheet for analysis. Managers who participated in this program received an individual report with information similar to that presented here.

Accounting Conventions

A number of accounting conventions were adopted in order to standardize the information collected from different firms and to make consistent comparisons among different groups. For firms with diversified operations (contributed records for two or more industry sectors, i.e. retail florist, nursery, vegetable), overhead costs and asset values were allocated to the greenhouse operation in proportion to product sales. Plant and material inventories, accounts payable and accounts receivable were adjusted on an accrual basis. Plant inventories were valued at market value, based on average actual prices realized, and appropriately discounted for unfinished products. Investments in buildings, site improvements, machinery, and equipment were taken at

book value. Investments in land were generally valued at the original purchase price, which did not reflect the current appreciated value of landholdings for many older businesses. In cases where assets were personally owned by the proprietor and leased exclusively to the company, the book value of these assets was added back to the business, and debts to the proprietor for these assets were included as a business liability. Lease payments received by the proprietor were removed from fixed expenses and converted into debt payments. In some cases, lease payments for land were taken as compensation for management to the owner, so the amount exceeding debt payments was added to the owner's withdrawal.

Concept of Square Foot Weeks

Comparing different sized greenhouse businesses can be tricky. Moreover, greenhouse businesses have different operating seasons during the year, and many do not use all of the available greenhouse space throughout the operating season. Therefore, in order for the results to be comparable among different operations, many analyses in this report are calculated in a per square foot week (SFW) basis.

Square foot week is not only an important concept when allocating indirect variable and fixed costs to greenhouse space for greenhouse businesses with different operating seasons. It is also very important when allocating those costs to greenhouse crops because different crops have different time periods and production cycles, which require different spacing. The following shows how square foot weeks of operation for each greenhouse business is calculated:

- Square Footage of Each Greenhouse * Weeks Used = **SFWs for Each Greenhouse**
- Sum of Utilization SFWs for All Greenhouses = **Total SFWs of the Greenhouse Business**

Participating Business Characteristics

Thirty-one greenhouse businesses throughout New York State participated in the 2000 Greenhouse Business Analysis Program. Among the participating greenhouse businesses, 15 are categorized as wholesale greenhouse businesses (more than 50 percent of total greenhouse receipts are from wholesale transactions), and 16 are categorized as retail greenhouse businesses (more than 50 percent of greenhouse sales are from retail sales). The major crops produced in these greenhouses are: bedding/garden plants (23 greenhouses), potted flowering plants (5 greenhouses), vegetable and herbs (1 greenhouse), propagative materials (1 greenhouse), and cut flowers (1 greenhouse). This is representative of the New York greenhouse industry. According to a 1998 survey of New York greenhouse businesses (Uva, 2000), bedding/garden plants is the major crop produced in New York greenhouses. Eighty-one percent of New York greenhouse operations produced bedding/garden plants in 1997, and generated 51 percent of total industry

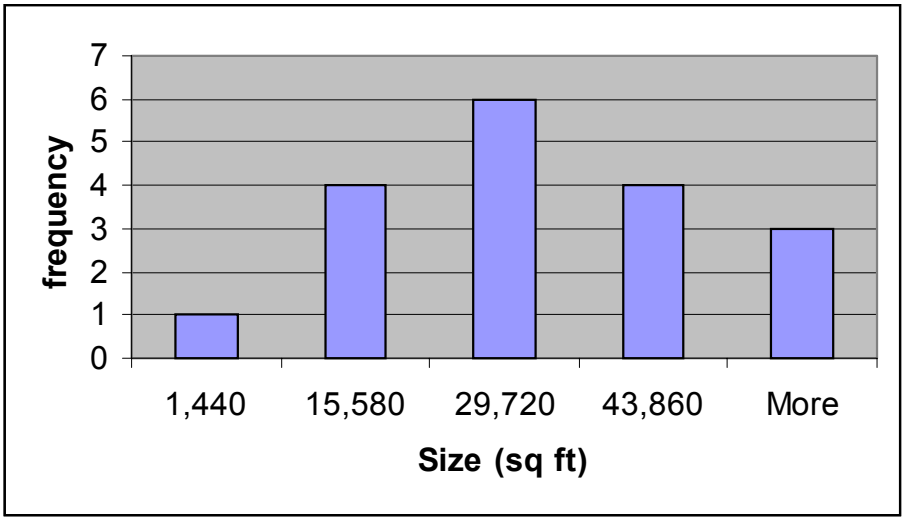
sales. Potted flowering plants was the second largest greenhouse crop produced in New York (42 percent of greenhouse operations) and generated 33 percent of sales in 1997.

Due to the difference in operation, two operations are excluded from the analysis presented in the following sections -- greenhouse-produced vegetable and herb production and greenhouse produced cut flowers. The 29 greenhouses included in the summary had an average greenhouse area of 37,903 ft^2 and average gross sales of $569,625 in 2000 (Table 1). Figure 1 shows variations in size of greenhouse operations represented in the study.

Table 1. Scope of Greenhouse Businesses Surveyed

	Average Size	Average Sales	% Gross Margin
	Ft^2	$	%
All Greenhouses (N=29)	37,903	$ 569,625	24.0%
Wholesale Greenhouses (N=14)	54,715	825,026	26.0%
Retail Greenhouses (N=15)	24,243	362,113	22.4%

Figure 1. Size of Greenhouse Operations Surveyed



III. THE FINANCIAL ANALYSIS PROCESS

The seemingly daunting task of financial analysis can be made easier taken one step at a time. There are four steps to any financial analysis program: keeping good financial records, constructing financial statements, analyzing these financial statements, and benchmarking business performance.

Step 1: Keeping Good Financial Records

Good bookkeeping is the most important step. Good records provide the basis for any financial analysis program. Although it is not essential to the process, a computer can help keep these records accurately and provide reports on a timely basis.

Most agricultural businesses keep their financial records only for the bank and the IRS. We need to take this a step further and keep records that the business can use to manage! For example, properly matching sales of a particular item to its costs of production allows a business to continuously manage its profitability.

Profit is a relatively simple idea, or is it?

1. Profit is the quantity sold multiplied by the margin.

   Profit = Quantity Sold * Margin

2. Margin can be broken down into price minus cost

   Profit = Quantity Sold * (Price – Cost)

3. Cost can be broken down into both variable and fixed costs

   Profit = Quantity * (Price – (Variable Cost + Fixed Cost))

4. Another Term for Variable Cost is Cost of Goods Sold (COGS)

   Profit = Quantity * (Price – (COGS + Fixed Cost))

5. Another Term for Fixed Cost is Overhead Cost

   Profit = Quantity * (Price – (COGS + Overhead Cost))

To monitor the business's profitability, three record keeping tasks must be done:

1. Decide upon a **chart of accounts** that fits your business;

2. Determine **variable** and **fixed costs** of operation; and
3. Separate **variable costs** from **fixed costs** on your chart of accounts.

Chart of Accounts

First, you need to decide upon a chart of accounts that fits your business operation. Table 2 shows the chart of accounts used with the Cornell Greenhouse Business Analysis. The number of accounts is kept to a minimum. In crafting your own chart of accounts, it is suggested that you only break out receipts and expenses that you wish to monitor. Too many accounts may cause confusion and too few may hinder management efforts.

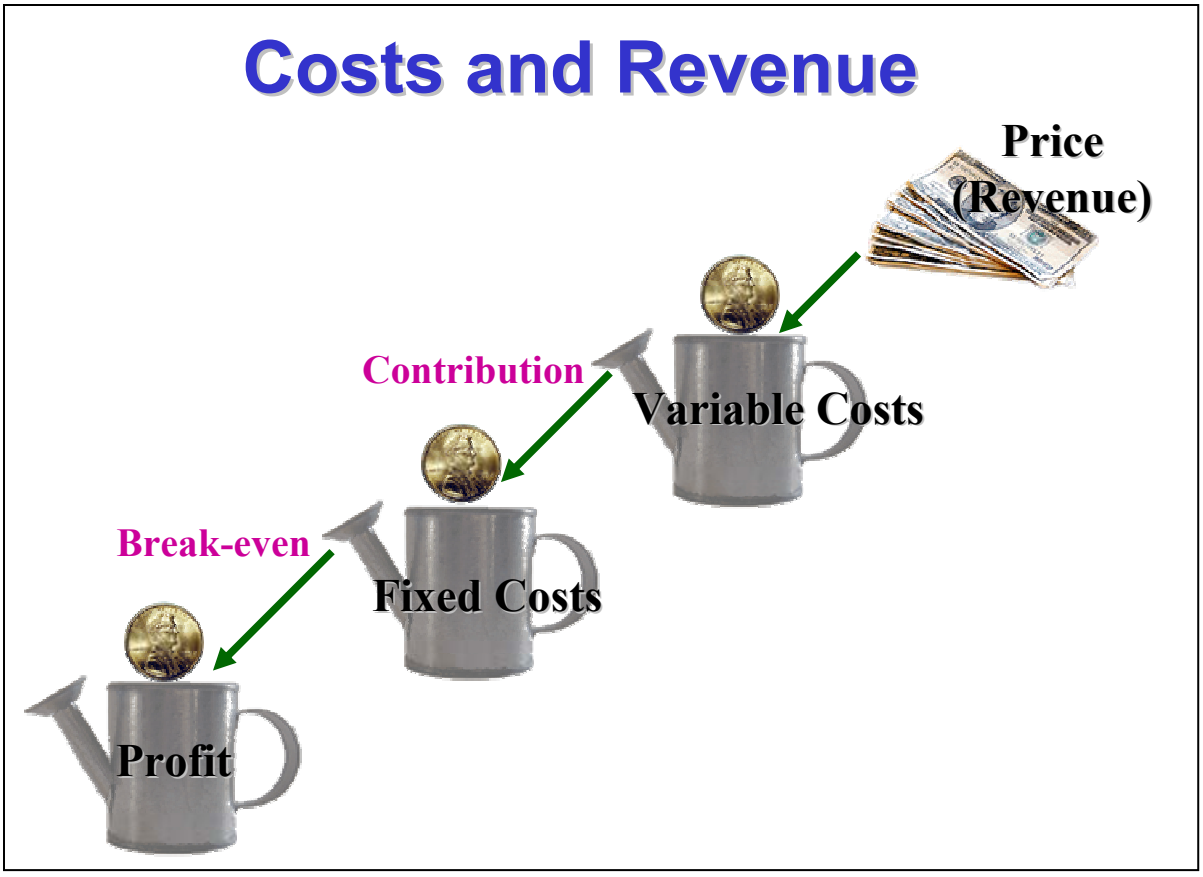
Table 2. Chart of Accounts Used in the Cornell Greenhouse Analysis

CHART OF ACCOUNTS: GREENHOUSE	
Receipts	
Wholesale Sales	
Retail Sales	
Other Income	
Expenses	
Hired Labor	
Seeds & Plants	
Fertilizer and Spray	
Potting Soil	
Packaging Material (including tags)	
Hard Goods (for resale)	
Advertising	
Heating Fuel	
Gas/Diesel	
Electricity	
Water/Sewage	
Telephone	
Trucking/Shipping	
Sales Tax	
Interest	
Depreciation	
Insurance	
Repairs, Building	
Repairs, Equipment/Vehicle	
Property Taxes	
Lease/Rental	
Land Rent	
Office Supplies	
Professional Services	
Miscellaneous	

Cost Breakdown and Analysis

- Variable Costs (Cost of Goods Sold): Cost items that vary proportionately with production volume. Examples include raw materials and hourly labor.
- Fixed Costs (Overhead Cost): Cost items that do not vary with production volume. Some examples are management salary, building rent, interest, and property taxes.
- Shutdown point: When revenues do not cover variable costs of production – cost of goods sold is greater than the selling price.
- Contribution Margin: The difference between selling price and the variable cost per unit – where the selling price exceeds cost of goods sold and starts covering overhead costs.
- Break-even point: Where total revenue equals total cost (variable and fixed).
- Profitability: When revenue exceeds the total cost of operating the business (cost of goods sold & overhead).

Figure 2. Cost Analysis: Shutdown, Contribution, Breakeven, and Profit



Separate Variable Costs from Fixed Costs on the Chart of Accounts

Table 3 shows the chart of accounts after the Variable Costs (Cost of Goods Sold) have been separated from the Fixed Costs (Overhead Costs) in the Cornell Greenhouse Business Analysis program.

Table 3. Chart of Accounts after Separating Variable and Fixed Costs

CHART OF ACCOUNTS: GREENHOUSE	
Income	
Wholesale Sales	
Retail Sales	
Other Income	
Variable Costs	
Hired Labor	
Seeds & Plants	
Fertilizer and Spray	
Potting Soil	
Packaging Material (including tags)	
Hard Goods	
Advertising	-- Vary with production volume
Heating Fuel	
Gas/Diesel	
Electricity	
Water/Sewage	
Telephone	
Trucking/Shipping	
Sales Tax	
Fixed Costs	
Interest	
Depreciation	
Insurance	
Repairs, Equipment/Vehicle	
Repairs, Building	-- Do not vary with production volume
Property Taxes	
Lease/Rental	
Land Rent	
Office Supplies	
Professional Services	
Miscellaneous	

Step 2: Construct Financial Statements

Three basic financial statements are necessary to analyze business performance – the income statement, balance sheet, and statement of cash flow. Constructing these statements can be as tedious as filling out tax forms or as easy as clicking a computer button. Many financial analysis services can help with these statements. These statements are also included in the report for participants in the Cornell Greenhouse Business Analysis project.

The Income Statement

The income statement is a categorized list of accrual incomes and expenses for a specified period of time. The term "accrual" means that adjustments have been made to cash records to better reflect what happened within the specified period of time—what was *actually* used, spent, or sold. For instance:

A. An Accrual Adjustment to Sales

Cash Sales	Change in Accounts Receivable during a Specified Period	Accrual Sales
$100,000	Increased by 10,000 (+ $10,000)	$110,000
$100,000	Decreased by 10,000 (- $10,000)	$90,000

Cash Sales	Change in Inventory Held for Sale during a Specified Period	Accrual Sales
$100,000	Increased by 10,000 (+ $10,000)	$110,000
$100,000	Decreased by 10,000 (- $10,000)	$90,000

B. An Accrual Adjustment to Expenses

Cash Expenses	Change in Inventory/Prepaid Expenses during a Specified Period	Accrual Expenses
$20,000	Increased by 1,000 (+ $1,000)	$21,000
$20,000	Decreased by 1,000 (- $1,000)	$19,000

Cash Expenses	Change in Inventory/Prepaid Expenses during a Specified Period	Accrual Expenses
$20,000	Increased by 1,000 (- $1,000)	$19,000
$20,000	Decreased by 1,000 (+ $1,000)	$21,000

An income statement matches accrual receipts with accrual expenses. Some other items that you would see on an income statement are net income, gross margin, and profit margin.

- Receipts – Cost of Goods Sold = **Gross Margin**
- Receipts – (COGS + Overhead Cost) = **Net Income or Profit Margin**
- (Gross Margin/Selling Price)*100 = **% Gross Margin**
- (Net Income/Selling Price)*100 = **% Net Income** or **% Profit Margin**

Tables 4, 5 and 6 present the average income statements for all greenhouses, wholesale greenhouses and retail greenhouses that participated in the Cornell Greenhouse Business Analysis Program. The top two cost items for New York greenhouse operations are labor and plant materials. Thirty-two percent of greenhouse operating costs, or one-quarter (25.2 percent) of total costs, were due to labor. In general, overhead costs constituted 21 percent of total greenhouse expenses, while wholesale greenhouses had a higher average profit margin (7.8 percent) than retail greenhouses (0.3 percent).

Table 4. Average Income Statement for All Greenhouse Businesses, 2000

	Average Amount ($)[a]	Average $ per square foot[b]	Average $ per square foot week[b]	Average % of sales[b]
Receipts				
Wholesale sales	$ 372,487	$ 6.47	$ 0.154	45.3%
Retail sales	181,510	7.47	0.280	53.9%
Other income	4,040	0.09	0.002	0.8%
Total Accrual income	***558,037***	***14.03***	***0.436***	***100.0%***
Variable Costs				
Labor	176,322	3.87	0.109	24.3%
Seeds and Plants	103,412	2.88	0.095	19.5%
Fertilizer and Spray	7,403	0.18	0.006	1.7%
Potting Soil	16,730	0.47	0.015	4.0%
Packaging Materials	38,140	0.83	0.025	6.8%
Hard Goods	9,479	0.47	0.017	2.8%
Advertising	17,551	0.38	0.012	2.8%
Heating Fuel	26,406	0.67	0.020	5.4%
Gas/Diesel	3,715	0.08	0.002	0.6%
Electricity	8,174	0.23	0.007	1.7%
Water/Sewage	725	0.02	0.001	0.1%
Telephone	3,118	0.09	0.003	0.6%
Trucking/Shipping	7,414	0.15	0.004	1.2%
Sales Tax	6,975	0.47	0.029	4.4%
Total Variable Costs	**425,562**	**10.80**	**0.346**	**76.0%**
Accrual Gross Margin	***132,475***	***3.23***	***0.090***	***24.0%***
Fixed Costs				
Interest	12,509	0.34	0.010	2.8%
Depreciation	21,255	0.56	0.018	4.5%
Insurance	14,070	0.38	0.012	2.9%
Repairs, Equip/Vehicle	11,934	0.26	0.008	1.9%
Repairs, Building	6,110	0.16	0.005	1.1%
Property Taxes	4,521	0.14	0.005	1.3%
Lease/Rental	5,635	0.14	0.003	1.2%
Land Rent	3,571	0.08	0.002	0.5%
Office Supplies	4,049	0.09	0.003	0.6%
Professional Fees	4,041	0.10	0.003	0.6%
Miscellaneous	12,276	0.40	0.016	2.9%
Total Accrual Fixed Expenses	**99,972**	**2.67**	**0.084**	**20.3%**
Total Accrual Expenses	**525,534**	**13.46**	**0.430**	**96.4%**
Accrual Net Income	***$ 32,503***	***$ 0.57***	***$ 0.006***	***3.6%***

[a] The values are weighted averages of all businesses.
[b] Averaged independently and not weighted based on size of businesses.

Table 5. Average Income Statement for 14 Wholesale Greenhouse Businesses[a], 2000

	Average Amount ($)[b]	Average $ per square foot[c]	Average $ per square foot week[c]	Average % of sales[c]
Receipts				
Wholesale sales	$ 791,963	$ 13.01	$ 0.284	91.2%
Retail sales	31,694	0.93	0.019	7.8%
Other income	7,199	0.13	0.003	0.9%
Total Accrual income	***830,856***	***14.1***	***0.305***	***100%***
Variable Costs				
Labor	286,215	4.42	0.094	27.5%
Seeds and Plants	149,025	2.55	0.056	17.6%
Fertilizer and Spray	12,664	0.21	0.004	1.6%
Potting Soil	24,081	0.48	0.011	4.9%
Packaging Materials	70,807	1.17	0.026	9.0%
Hard Goods	3,657	0.08	0.002	0.4%
Advertising	27,874	0.33	0.007	1.9%
Heating Fuel	43,827	0.75	0.016	5.4%
Gas/Diesel	6,034	0.11	0.002	0.8%
Electricity	12,358	0.25	0.005	2.1%
Water/Sewage	1,151	0.02	0.000	0.1%
Telephone	5,194	0.11	0.002	0.7%
Trucking/Shipping	14,003	0.23	0.005	1.9%
Sales Tax	308	0.01	0.000	0.1%
Total Variable Costs	**670,168**	**10.96**	**0.236**	**74.0%**
Accrual Gross Margin	***160,688***	***3.10***	***0.069***	***26.0%***
Fixed Costs				
Interest	18,968	0.36	0.008	2.4%
Depreciation	32,986	0.60	0.014	4.8%
Insurance	20,810	0.37	0.008	2.6%
Repairs, Equip/Vehicle	8,702	0.15	0.003	1.0%
Repairs, Building	4,268	0.09	0.002	2.6%
Property Taxes	23,579	0.37	0.008	0.8%
Lease/Rental	10,179	0.19	0.004	1.2%
Land Rent	7,688	0.15	0.003	0.8%
Office Supplies	5,353	0.08	0.002	0.5%
Professional Fees	6,033	0.11	0.002	0.7%
Miscellaneous	8,332	0.14	0.003	0.9%
Total Accrual Fixed Expenses	**133,928**	**2.39**	**0.051**	**18.2%**
Total Accrual Expenses	**804,096**	**13.35**	**0.287**	**92.2%**
Accrual Net Income	***$ 26,760***	***$ 0.71***	***$ 0.018***	***7.8%***

[a] Businesses with more than 50 percent of greenhouse receipts from wholesale business.

[b] Values are weighted averages of all businesses.

[c] Averaged independently and not weighted based on size of businesses.

Table 6. Average Income Statement for 15 Retail Greenhouse Businesses[a], 2000

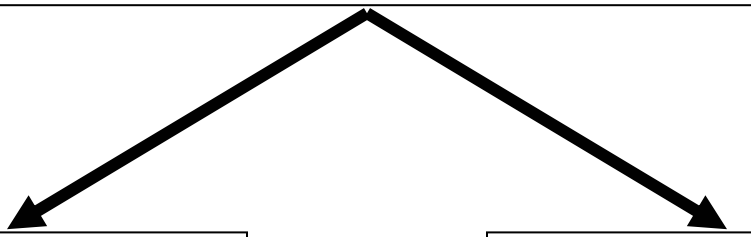
	Average Amount ($)[b]	Average $ per square foot[c]	Average $ per square foot week[c]	Average % of sales[c]
Receipts				
Wholesale sales	$ 31,663	$ 1.16	$ 0.048	8.0%
Retail sales	303,235	12.79	0.492	91.4%
Other income	1,474	0.05	0.001	0.6%
Total Accrual income	***336,372***	***14.00***	***0.551***	***100.0%***
Variable Costs				
Labor	87,033	3.42	0.122	21.8%
Seeds and Plants	66,351	3.15	0.126	21.1%
Fertilizer and Spray	3,129	0.16	0.007	1.8%
Potting Soil	10,757	0.46	0.019	3.2%
Packaging Materials	11,598	0.56	0.024	5.1%
Hard Goods	14,209	0.78	0.030	4.7%
Advertising	9,163	0.43	0.017	3.6%
Heating Fuel	12,252	0.61	0.024	5.4%
Gas/Diesel	1,830	0.07	0.002	0.4%
Electricity	4,774	0.22	0.008	1.4%
Water/Sewage	378	0.02	0.001	0.1%
Telephone	1,431	0.07	0.003	0.5%
Trucking/Shipping	2,060	0.09	0.004	0.6%
Sales Tax	12,391	0.84	0.052	7.9%
Total Variable Costs	**237,357**	**10.86**	**0.356**	**77.6%**
Accrual Gross Margin	***99,014***	***3.13***	***0.159***	***22.4%***
Fixed Costs				
Interest	7,260	0.32	0.012	3.1%
Depreciation	11,724	0.53	0.021	4.3%
Insurance	8,593	0.39	0.015	3.1%
Repairs, Building	2,473	0.17	0.007	1.3%
Repairs, Equip/Vehicle	4,004	0.17	0.006	1.2%
Property Taxes	4,726	0.18	0.007	1.7%
Lease/Rental	1,944	0.10	0.003	1.2%
Land Rent	226	0.02	0.001	0.2%
Office Supplies	2,990	0.10	0.004	0.8%
Professional Fees	2,423	0.10	0.003	0.6%
Miscellaneous	15,481	0.61	0.027	4.5%
Total Accrual Fixed Expenses	**61,845**	**2.69**	**0.106**	**22.1%**
Total Accrual Expenses	**299,202**	**13.55**	**0.462**	**99.7%**
Accrual Net Income	***$ 37,169***	***$ 0.45***	***$ 0.089***	***0.3%***

[a] Businesses with more than 50 percent of greenhouse receipts from retail sales.
[b] Values are weighted averages of all businesses.
[c] Averaged independently and not weighted based on size of businesses.

The Balance Sheet

The balance sheet is a statement of financial position. It reports your business's assets, liabilities and equities at a specified time. The accounting equation is **Assets = Liabilities + Owners' Equity**. See the diagram below:

Assets: The economic resources of a business. These are items such as money, land, buildings, equipment, and other property. The accounting concept used in this report is that the asset value is entered as the price paid to buy it—the **cost value**. Banking establishments tend to use market value to record asset worth on the balance sheet. The **market value** is what the asset would sell for at the time the balance sheet is constructed. The financial statements and reports prepared by the Greenhouse Business Summary record all assets by their cost value.



Liabilities are the claims of creditors against the assets of the business. These are items such as mortgages, equipment loans, credit card debt, and accounts payable. These are persons to whom the business **OWES** money.

+

Owners' Equity are the owners' claims against the assets of the business. This is often calculated as "what is left after the bank is paid". Flipping the accounting equation around, **Owners' Equity = Assets – Liabilities**.

The balance sheet divides assets and liabilities into current, intermediate, and long-term categories. A quick overview of what each means:

- Current Asset: Assets that can be converted to cash during normal operations. Examples include cash, inventory, and accounts receivable.
- Intermediate Asset: Assets than can be liquidated, but would alter the business's ability to operate. Examples include equipment and machinery.
- Long-Term Asset: Assets that cannot be sold without the business being terminated. Examples include land and permanent buildings.

- Current Liability: Debts that are to be repaid within a year's time. Examples include credit card debt, operating loan, and accounts payable.
- Intermediate Liability: Loans with a repayment schedule from 1-10 years. An example includes equipment loans.
- Long Term Liability: Loans with a repayment schedule in excess of 10 years. An example includes mortgages.

The balance sheet is also called "The Statement of Financial Position" because it shows a person what proportion of the assets the bank owns versus how much the owner can claim. Banks use the balance sheet for this reason—they want to make sure that if the business fails, there are enough assets to cover the bank's claims (liabilities). Table 7 shows the average balance sheet for all greenhouses, wholesale greenhouses, and retail greenhouses that participated in the Cornell Greenhouse Business Analysis Program. This will give you an idea of the financial position of greenhouse businesses in New York State.

Table 7. Average Balance Sheet for Greenhouse Businesses, by Marketing Channels, 1999 & 2000

	All Greenhouses (N=29)		Wholesale Greenhouses[a] (N=14)		Retail Greenhouses[b] (N=15)	
	1999	2000	1999	2000	1999	2000
ASSETS						
Current Assets						
Cash/Checking/Savings	$ 44,374	$ 45,944	$ 63,992	$ 63,574	$ 28,435	$ 31,620
Accounts Receivable	45,638	49,066	93,158	98,067	7,028	9,252
Other Stock and Certificates	12,626	11,382	25,805	23,029	1,918	1,918
Wholesale Inventory	39,089	39,572	86,886	87,964	253	253
Retail Inventory	5,958	6,686	3,669	3,669	7,818	9,138
Inventory of Supplies/Materials	15,318	18,686	19,896	20,932	11,599	16,861
Prepaid Expenses	233	130	519	289	-	-
Other Current Assets	6,407	7,883	12,309	15,601	1,612	1,612
Total current assets	***169,643***	***179,348***	***306,234***	***313,126***	***58,663***	***70,654***
Intermediate Assets						
Equipment	64,265	59,582	106,677	98,697	29,804	27,801
Leased Equipment	5,096	868	10,671	1,752	567	150
Farm Credit Stock	1,124	1,083	1,289	1,269	990	931
Total intermediate assets	***70,485***	***61,533***	***118,636***	***101,718***	***31,361***	***28,882***
Long-Term Assets						
Land and Buildings	204,275	201,491	201,371	196,452	206,635	205,585
Leased Structures	1,522	-	2,923	-	383	-
Total long-term assets	***205,797***	***201,491***	***204,294***	***196,452***	***207,018***	***205,585***
Total Assets	**445,925**	**442,372**	***629,165***	***611,296***	**297,043**	**305,121**
LIABILITIES						
Current Liabilities						
Accounts Payable	13,619	11,551	18,237	17,618	9,866	6,622
Operating Loan	26,449	23,620	42,839	35,001	13,131	14,373
Short-Term Debt	16,362	20,134	16,498	20,419	16,652	17,105
Total current liabilities	52,861	51,413	77,575	73,039	31,435	32,822
Intermediate Liabilities						
Intermediate Term	19,978	12,260	26,057	20,523	15,038	5,547
Farm Credit Stock	909	893	782	818	1,002	948
Leased Equipment	1,697	-	3,455	-	409	-
Total intermediate liabilities	***22,584***	***13,153***	30,294	21,341	16,449	6,495
Long-Term Liabilities						
Long-Term Debt	123,555	106,089	162,504	195,494	60,251	65,105
Leased Buildings/Structures	5,684	968	12,611	2,071	605	160
Total-long term liabilities	***106,089***	***123,555***	***162,505***	***195,494***	***60,251***	***65,105***
Total Liabilities	**185,103**	**192,013**	**270,374**	**289,873**	**115,960**	**112,518**
Net Worth (Owners' Equity)	**$260,822**	**$250,359**	**$358,791**	**$321,423**	**$181,083**	**$192,602**

[a] Businesses with more than 50 percent of greenhouse receipts from wholesale business.
[b] Businesses with more than 50 percent of greenhouse receipts from retail sales.

The Statement of Cash Flows

A cash flow statement explains the changes that took place in balance sheet accounts during the year. The statement of cash flow shows the movement of cash within the business and is often used to double-check for accounting mistakes, i.e. cash imbalance. In most businesses, this information is relevant regarding the business's activities — where did they get their money and where did it go? This statement is also called the statement of changes in financial position.

There are three major categories for sources and uses of cash. These are operating activities, investing activities, and financing activities. The Cornell Greenhouse Business Analysis Program adds a fourth activity, which is net cash provided to and from reserves.

- Operating Activities: Cash inflows associated with sales and cash outflows associated with the cost of sales. Also, money transferred to and from the owner of the business would be recorded here.
- Investing Activities: Cash inflows associated with the sale of assets (like land, building, equipment, or stock) and cash outflows associated with capital improvement or purchases (like land, building, equipment, or stock).
- Financing Activities: Cash inflows associated with borrowing money and cash outflows associated with repayment of loans.
- Cash From Reserves: Cash inflow associated with using reserves (checking/savings accounts) and cash outflows associated with taking money out of the business to put into reserves (checking/savings accounts).

The cash flow statement is also used to double-check correctness of our accounting practices. Because the cash flow statement measures changes in accounts, the beginning account balances plus changes *has* to equal the ending account balances. If these do not equal, we have a cash imbalance. Our goal in the Cornell Greenhouse Business Analysis Program is to have a cash imbalance of less than 1% of the total business cash flow.

Table 8 on the next page shows the average cash flow statement for all greenhouses. This will give you an example of the changes in financial positions of greenhouse businesses in New York State.

Table 8. Average Annual Cash Flow from Operating Activities for All Greenhouses, 2000

	Dollars ($)		
Cash Flow From Operating Activities			
Cash Business Receipts	589,532		
Less: Cash Business Expenses	533,405		
Cash Business Income		**56,127**	
Cash Withdrawal by Owner	46,680		
Less: Nonfarm Income	1,933		
Net Cash Withdrawals		**44,747**	
Net Cash Provided From Operations			***11,380***
Cash Flow From Investing Activities			
Sale of Business Assets			
Machinery	426		
Land & Buildings	4,741		
Subtotal		**5,167**	
Less: Capital Purchases			
Machinery	7,294		
Land & Buildings	11,364		
Subtotal		**18,657**	
Net Provided From Investing			***(13,491)***
Cash Flow From Financing Activities			
Cash Inflow From Financing			
Long Term	23,601		
Int. Term	4,222		
Short Term	5,389		
Inc. in Operating Debt	2,678		
Subtotal		**35,890**	
Less: Cash Outflow From Financing			
Principal-Long Term	3,853		
Principal-Int. Term	14,486		
Principal-Short Term	3,562		
Dec. in Operating Debt	5,686		
Subtotal		**27,587**	
Net Provided From Financing			***8,304***
Cash Flow From Reserves			
Beginning Cash/Checking/Savings Accounts		46,733	
Less: Ending Cash/Check/Savings Accounts		47,515	
Net Provided From Reserves			**(782)**
IMBALANCE			**$ 5,411**

Table 9. Average Annual Cash Flow from Operating Activities for 14 Wholesale Greenhouses, 2000[a]

	Dollars ($)		
Cash Flow From Operating Activities			
Cash Farm Receipts	851,154		
Less: Cash Farm Expenses	795,127		
Cash Farm Income		**56,027**	
Personal Withdrawals	49,498		
Less: Nonfarm Income	969		
Net Cash Withdrawals		**48,530**	
Net Provided From Operations			**7,497**
Cash Flow From Investing Activities			
Sale of Assets			
Machinery	885		
Land & Buildings	-		
Subtotal		**885**	
Less: Capital Purchases			
Machinery	11,823		
Land & Buildings	11,331		
Subtotal		**23,154**	
Net Provided From Investing			**(22,270)**
Cash Flow From Financing Activities			
Cash Inflow From Financing			
Long Term	34,634		
Int. Term	7,000		
Short Term	6,154		
Inc. in Operating Debt	3,662		
Subtotal		**51,449**	
Less: Cash Outflow From Financing			
Principal-Long Term	2,991		
Principal-Int. Term	16,635		
Principal-Short Term	2,849		
Dec. in Operating Debt	10,384		
Subtotal		**32,858**	
Net Provided From Financing			**18,591**
Cash Flow From Reserves			
Beginning Cash/Checking/Savings		63,224	
Less: Ending Cash/Check/Savings		61,845	
Net Provided From Reserves			**1,380**
IMBALANCE			**$ 5,199**

[a] Businesses with more than 50 percent of greenhouse receipts from wholesale business.

Table 10. Average Annual Cash Flow from Operating Activities for 15 Retail Greenhouses, 2000 [a]

	Dollars ($)		
Cash Flow From Operating Activities			
Cash Farm Receipts	324,507		
Less: Cash Farm Expenses	271,771		
Cash Farm Income		**52,737**	
Personal Withdrawals	41,126		
Less: Nonfarm Income	2,640		
Net Cash Withdrawals		**38,486**	
Net Provided From Operations			**14,251**
Cash Flow From Investing Activities			
Sale of Assets			
Machinery	-		
Land & Buildings	8,533		
Subtotal		**8,533**	
Less: Capital Purchases			
Machinery	2,882		
Land & Buildings	10,634		
Subtotal		**13,516**	
Net Provided From Investing			**(4,983)**
Cash Flow From Financing Activities			
Cash Inflow From Financing			
Long Term	12,467		
Int. Term	1,533		
Short Term	4,366		
Inc. in Operating Debt	1,647		
Subtotal		**20,013**	
Less: Cash Outflow From Financing			
Principal-Long Term	4,343		
Principal-Int. Term	11,657		
Principal-Short Term	3,943		
Dec. in Operating Debt	1,236		
Subtotal		**21,179**	
Net Provided From Financing			**(1,166)**
Cash Flow From Reserves			
Beginning Cash/Checking/Savings		29,324	
Less: Ending Cash/Check/Savings		31,927	
Net Provided From Reserves			**(2,603)**
IMBALANCE			**$ 5,499**

[a] Businesses with more than 50 percent of greenhouse receipts from retail sales.

Step 3: Financial Statement Analysis & Financial Ratios

After the financial statements have been constructed, it is time to analyze the results in greater detail. While just looking at the financial statements may give you some idea of a business's performance, financial analysis takes it a step further.

Financial Ratios

Financial analysis sheds light on *how well* your business is earning a satisfactory return on investment and maintaining a sound financial position. Financial ratios measure the quantitative aspects of a business such as liquidity, solvency, asset utilization, profitability, and financial condition.

Liquidity: The company's ability to meet its current obligations. These measures focus on the size and relationships between current assets and current liabilities. Below are the measures that are used in the Cornell Greenhouse Business Analysis Program and how these measures are calculated.

Net Working Capital

- Calculated by: Current Assets – Current Liabilities
- What it means: It shows whether a business can cover current liabilities with its current assets.

Current Ratio

- Calculated by: Current Assets ÷ Current Liabilities
- What it means: It reflects the company's ability to satisfy current debts with its current assets.

Solvency: The company's ability to meet loan payments associated with its long- term liabilities. Below are the measures used in the Cornell Greenhouse Business Analysis Program, and how these measures are calculated:

Debt-to-Asset Ratio

- Calculated by: Total Liabilities ÷ Total Assets
- What it means: Indicates how much money the company owes its creditors. The ratio is the percentage of the business's assets to which creditors have claim.

Debt-to-Equity Ratio

- Calculated by: Total Liabilities ÷ Owners' Equity
- What it means: Reveals how much debt capital a company uses in its capital structure (as opposed to owners' capital used in the business).

Asset Utilization: Ratios reflecting the way in which a company uses its assets to obtain revenue and profit.

Accounts Receivable Turnover

- Calculated by: Net Credit Sales ÷ Average Accounts Receivable
- What it means: Tells how well receivables are turned into cash.

Average Collection Period

- Calculated by: 365 days ÷ Accounts Receivable Turnover (above)
- What it means: The length of time it takes to collect receivables. It represents the number of days a receivable is held.

Inventory Turnover

- Calculated by: Cost of Goods Sold ÷ Average Inventory
- What it means: Reveals how many times a year the inventory is turned over.

Average Age of Inventory

- Calculated by: 365 days ÷ Inventory Turnover (above)
- What it means: It explains how many days, on average, an item remains in inventory.

Asset Turnover Ratio

- Calculated by: Net Sales ÷ Average Total Assets
- What it means: Illustrates how efficiently a company employs its assets to obtain sales revenue. The resulting figure for this ratio is how many dollars are generated in sales revenue per dollar invested in assets.

Profitability Ratios: Measures the company's ability to earn a good profit and generate satisfactory returns on investment.

Net Business Income

- Calculated by: Accrual Revenue –Accrual Expenses – Owner's Withdrawal

- What it means: The value of production minus the cost of production and operation. This is the total return generated by the business to compensate the owner and unpaid family labor as well as owners' equity used in the operation of the business.

Gross Margin

- Calculated by: (Accrual Revenue – Accrual Variable Costs) ÷ Accrual Revenue
- What it means: Indicates the average percent margin obtained on goods sold.

Profit Margin

- Calculated by: (Accrual Revenue – Accrual Expenses) ÷ Accrual Revenue
- What it means: Indicates the average percent profit obtained on goods sold.

Return on Equity

- Calculated by: Net Business Income ÷ Average Owners' Equity
- What it means: Reflects the percentage rate of return earned on the owners' investment in the company.

Return on Assets

- Calculated by: Net Business Income ÷ Average Total Assets
- What it means: Reflects the percentage rate of return earned on the owners' and the creditors' investment in the company.

Net Income per Owner/Operator

- Calculated by: Net Business Income ÷ Total Number of Owners
- What it means: The total return split among all the owners of the business.

Financial Condition: Indicators of the company's success in marketing management and operations management.

Gross Sales/Owner

- Calculated by: Total Accrual Revenue ÷ Total Number of Owners
- What it means: Indicates the gross sales per owner.

Term Debt and Capital Lease Coverage Ratio

- Calculated by: (Net Business Income + Depreciation + Interest – Net Owner Withdrawals) ÷ Total Annual Loan and Lease Payments
- What it means: Indicates how many times the company's cash earnings can cover debt and lease payments.

Operating Expense Ratio

- Calculated by: Total Accrual Variable Costs ÷ Total Accrual Revenue
- What it means: The percentage of the sales price, on average, needed to cover the direct costs of producing the product.

Interest Expense Ratio

- Calculated by: Interest Expense ÷ Total Accrual Revenue
- What it means: The percentage of sales that go toward paying interest to the bank.

Overhead Expense Ratio

- Calculated by: Overhead Costs ÷ Total Sales
- What it means: The percentage of the sales price, on average, needed to cover indirect costs of producing and selling the product.

Table 11 presents the average financial ratios of greenhouse businesses in the Cornell Greenhouse Business Analysis program.

Table 11. Average Financial Ratios of Greenhouse Businesses, by Marketing Channels, 2000

Financial Measures	All Greenhouses (N=29)	Wholesale Greenhouses (N=14)	Retail Greenhouses (N=15)
Liquidity/Solvency			
Net Working Capital ($)	$119,151	$227,668	$ 30,980
Current Ratio (no.)	4.0	7.3	1.3
Debt/Asset Ratio (%)	53%	42%	61%
Debt/Equity Ratio (%)	18%	34%	5%
Asset Utilization			
Accounts Receivable Turnover (no./yr.)	12	23	2
Average Collection Period (days)	34	36	32
Average Age of Inventory (days)	66	121	22
Asset Turnover Ratio (%)	1.6	1.8	1.4
Inventory Turnover (no./yr.)	24	7	37
Profitability			
Net Farm Income ($)	$ 41,499	$ 31,283	$ 49,799
Gross Margin (%)	28%	26%	29%
Profit Margin (%)	8%	8%	9%
Return on Equity (%)	23%	15%	30%
Return on Assets (%)	18%	16%	20%
Net Income per Owner/Operator ($)	29,287	24,902	32,849
Labor as % of Sales (%)	24%	27%	21%
Financial Efficiency			
Gross Sales/Owner ($)	$365,462	$486,897	$266,796
Term Debt & Capital Lease Coverage (no.)	10.2	3.2	16.0
Operating Expense Ratio (%)	72%	74%	71%
Interest Expense Ratio (%)	3%	2%	4%
Overhead Expense Ratio (%)	19%	18%	20%

Efficiency Measures

In addition to general financial ratios, there are usually other measures that are helpful within a certain industry. In the Cornell Greenhouse Business Analysis Program, these are termed "Efficiency Measures". These measures are an attempt to benchmark some of the best management practices in the greenhouse industry. These measures are broken down into four categories: production efficiency, cost efficiency, capital efficiency and profitability. Some of these measures overlap or give similar answers to the financial ratios.

Worker Equivalents: One item that has to be clarified is how a full-time worker equivalent is calculated. In order to compare the amount of labor that goes into greenhouse production, we must translate all labor hours, including unpaid family labor, in each greenhouse business to the number of full-time persons working in the greenhouse. If we did not do this, a greenhouse utilizing a lot of part-time workers would look inefficient when that may not be the case. Therefore, we must define how many hours a full-time person works. The Cornell Greenhouse Business Analysis Program defines a full-time greenhouse worker as 55 hours a week or 2760 hours a year. To calculate how many full-time worker equivalents a greenhouse has:

- Number of Worker Equivalents = Total Number of Labor Hours per year ÷ 2760 hours

Production Efficiency: These are indicators of the company's success in greenhouse operations management.

Sales per Worker Equivalent

- Calculated by: Total Accrual Revenue ÷ Number of worker equivalents
- What it means: Indicates the total dollar amount of sales spread over total greenhouse labor – an indirect measure of how well labor is used to generate sales.

Net Income per Worker Equivalent

- Calculated by: Net Income ÷ Number of Worker Equivalents
- What it means: Indicates the dollar amount of net income spread over total greenhouse labor – an indirect measure of how well labor is used to generate net income.

Sales per Square Foot

- Calculated by: Total Sales ÷ Greenhouse Square Feet
- What it means: Indicates the total dollar amount of sales spread out over the total greenhouse space – an indirect measure of how well the greenhouse asset is used to generate sales.

Square Feet per Worker Equivalent

- Calculated by: Greenhouse Square Feet ÷ Number of Worker Equivalents
- What it means: Greenhouse space spreads out over total worker equivalents – an indirect measure of labor efficiency.

Cost Efficiency: These are measures that reflect how well a business controls costs.

Labor as Percent of Sales

- Calculated by: Accrual Labor Cost ÷ Total Sales
- What it means: labor cost is the number one cost to greenhouse producers. Labor cost is highly correlated with net income, so it is included as an indicator of profitability. This is an indirect measure of labor efficiency and cost efficiency.

Operating Expenses as Percent of Sales

* See Operating Expense Ratio

Overhead Cost per Square Foot

- Calculated by: Overhead Cost ÷ Total Greenhouse Square Feet
- What it means: Indicates the overhead cost spread over total greenhouse area – an indirect measure of the greenhouse operation's cost efficiency.

Overhead Cost per Square Foot Week

- Calculated by: Overhead Cost ÷ (Greenhouse Square Feet * Weeks in Operation)
- What it means: Indicates the overhead cost spread out over total greenhouse area. Also taken into account are the weeks the greenhouse is in operation (the more weeks in operation, the less the proportion of overhead per square foot week) – an indirect measure of the greenhouse's operating efficiency.

Total Cost per Square Foot

- Calculated by: Total Cost ÷ Greenhouse Square Feet
- What it means: Indicates total expenses spread out over the total greenhouse area – an indirect measure of the greenhouse operation's cost efficiency.

Total Cost per Square Foot Week

- Calculated by: Overhead Cost ÷ (Greenhouse Square Feet * Weeks in Operation)
- What it means: Indicates total expenses spread out over total greenhouse area. Also taken into account are the weeks the greenhouse is in operation – an indirect measure of the greenhouse's operating efficiency.

Capital Efficiency: Similar to asset utilization ratios, but focuses on how capital intensive an operation is. This may also be a reflection on how much capital cost went into the greenhouse operation.

Total Assets per Square Foot

- Calculated by: Total Assets ÷ Greenhouse Square Feet
- What it means: Indicates total assets spread out over the total greenhouse area -- an indirect measure of how much capital is required for a particular greenhouse business.

Machinery per Square Foot

- Calculated by: Machinery Investment ÷ Greenhouse Square Feet
- What it means: Indicates what proportion of assets are capital machinery investments.

Real Estate per Square Foot

- Calculated by: Real Estate Investment ÷ Greenhouse Square Feet
- What it means: Indicates what proportion of assets are capital real estate investments.

Profitability: Similar to the measures of profitability in the financial ratio section. These measures attempt to show how profitable the greenhouse operation is on a square foot and square foot week basis, which gives greenhouses of different sizes a means of comparison.

Net Income per Owner Hour

- Calculated by: Net Income ÷ Number of Hours Worked by Business Owner(s)
- What it means: Indirect measure of the return to an owner's labor and management.

Net Income per Square Foot

- Calculated by: Net Income ÷ Greenhouse Square Feet
- What it means: A measure of the profit margin on a square foot basis.

Net Income per Square Foot Week

- Calculated by: Net Income ÷ (Greenhouse Square Feet * Weeks in Operation)
- What it means: A measure of the profit margin on a square foot week basis. This adjusts for the different lengths of operating seasons in the greenhouse industry.

Table 12 presents the average efficiency measures of greenhouse businesses in the Cornell Greenhouse Business Analysis program.

Table 12. Average Efficiency Measures for Greenhouse Businesses, by Marketing Channels, 2000

Efficiency Measures	All Greenhouses (N=29)	Wholesale Greenhouses (N=14)	Retail Greenhouses (N=15)
Business Facts			
Greenhouse Size (ft^2)	37,903	54,715	24,244
Weeks Operated Per Year (wks.)	35	46	27
Total Square Foot Weeks (SFW)	1,514,709	2,516,381	700,850
Acres Planted Outside (acres)	8	14	3
Total Annual Sales ($)	569,626	825,026	362,113
Net Income ($)	41,668	31,283	50,105
Production Efficiency			
Sales per Worker Equivalent ($)	84,079	92,977	76,850
Net Income per Worker Equivalent ($)	11,091	9,187	12,638
Sales per Square Foot Greenhouse Area($)	13.92	13.95	13.88
Greenhouse Area per Worker Equivalent (ft^2)	7,460	8,124	6,920
Cost Efficiency			
Labor Cost as % of Sales (%)	24%	27%	21%
Operation Expenses as % of Sales (%)	72%	74%	71%
Overhead Costs per Sq. Ft. ($)	2.55	2.63	2.49
Overhead Costs per Sq. Ft. Wk. ($)	0.08	0.06	0.09
Total Costs per Sq. Ft. ($)	12.93	13.31	12.62
Total Costs per Sq. Ft. Wk. ($)	0.39	0.29	0.48
Financial Summary			
Total Assets (end of year) ($)	435,396	595,736	305,121
Total Liabilities (end of year) ($)	182,863	271,045	111,214
Farm Net Worth (end of year) ($)	252,534	324,690	193,907
Total Debt per Sq. Ft. ($)	5.17	4.48	5.73
Capital Efficiency			
Total Assets per Sq. Ft. ($)	12.80	12.44	13.10
Machinery Investment per Sq. Ft. ($)	1.98	1.99	1.97
Real Estate Investment per Sq. Ft. ($)	6.85	5.55	7.91
Profitability			
Net Income per Owner per Operator hour ($)	16.60	7.08	24.33
Net Income per Sq. Ft.	1.10	0.78	1.36
Net Income per Sq. Ft. Wk.	0.04	0.02	0.06

Step 4: Benchmarking

Greenhouse Business Benchmarks

Business benchmarking for an industry establishes a specific measure of standards for a business to compare its financial position and performance with other similar businesses in the industry. It also allows business analysts to compare one industry to another. Tables 13, 14 and 15 present the greenhouse business charts derived from the Cornell Greenhouse Business Analysis program by marketing channels. The data are divided into quintiles representing the top 20%, second 20%, etc. to the bottom 20% of each measure. This allows individual greenhouse businesses to see where they fall in each performance measure. It should be noted that each column is sorted independently. Therefore, a business that is best in one column may not be best in another. The measures of greenhouse businesses within the top 20% return on assets (ROA) are identified in the charts with an asterisk.

The results of this study show that the most profitable greenhouse businesses are not necessarily the largest greenhouses. The top 20 percent ROA of *wholesale* greenhouses generally had higher annual sales, lower operating costs, higher sales per full-time worker equivalent, lower debt-to-asset ratio, and higher asset turnover ratio. The top 20 percent ROA of *retail* greenhouses generally had average annual sales, low operating and overhead costs, high labor efficiency, no debt, and high asset turnover ratio.

Table 13. Greenhouse Business Charts: All Greenhouses, By Quintile, 2000[a]

	Greenhouse Sq. Ft.	Wks. Operated per Year	Total Sq. Ft. Wks.	Annual Sales ($)	Net Income ($)
Top 20%[b]	58,000	52.0	2,600,000	883,715	116,763
	42,600	41.5	1,560,000	637,957	69,169*
	22,375*	29.4	752,350*	322,469*	22,745
	7,580	22.0*	272,552	99,039	-3,203
Bottom 20%	4,368	10.5	65,424	15,241	-308,585

	Sales / Sq. Ft. ($)	Net Income / Sq. Ft. ($)	Gross Margin (%)	Profit Margin (%)
Top 20%[b]	19.4	2.46*	38%*	24%*
	14.4	2.07	34%	14%
	12.0	0.93	26%	7%
	7.6*	-0.73	10%	-8%
Bottom 20%	2.6	-3.45	-3%	-36%

	Sales / Worker Equip. ($)	GH Sq. Ft. / Work Equip.	Labor Cost as % of Sales	Overhead Cost / Sq. Ft. ($)	Total Costs / Sq. Ft. ($)
Top 20%[b]	115,000	10,878*	17%	1.32	6.78
	91,528	6,346	19%	2.28*	10.28*
	73,674*	4,685	28%*	2.80	16.02
	46,442	3,573	35%	3.73	18.05
Bottom 20%	19,742	2,071	50%	5.70	25.35

	Accounts Receivable Turnover (no.)	Total Debt / Sq. Ft. ($)	Total Assets / Sq. Ft. ($)	Debt/Asset Ratio (%)	Asset Turnover Ratio (no.)
Top 20%[b]	93.3	0.04	21.47	0.8%	2.42
	12.5*	1.18*	13.51*	10.5%*	1.74*
	3.5	5.59	7.69	28.2%	1.14
	0.0	8.57	4.80	60.9%	0.69
Bottom 20%	0.0	24.00	2.20	221.2%	0.10

	Return on Equity (ROE)	Return on Asset (ROA)
Top 20%[b]	45.6%*	38.7%*
	22.8%	19.3%
	11.7%	8.4%
	-3.5%	-7.1%
Bottom 20%	-28.2%	-83%

[a] Each column is sorted independently. Therefore, numbers across the column do not correspond.
[b] The numbers are the minimum of data in this quintile.
* Asterisk is where the average of the top 20% of return-on-asset businesses placed.

Table 14. Greenhouse Business Charts: 14 Wholesale Greenhouses, By Quintile, 2000[a]

	Greenhouse Sq. Ft.	Wks. Operated per Year	Total Sq. Ft. Wks.	Annual Sales ($)	Net Income ($)
Top 20%[b]	68,816	52.0	3,578,432	1,246,903	127,134
↓	58,000	52.0	2,600,000*	834,998*	55,342*
↓	50,000*	48.1*	2,054,000	637,957	22,745
↓	34,567	41.5	1,560,000	322,469	7,948
Bottom 20%	6,350	22.0	588,600	30,240	-188,358

	Sales / Sq. Ft. ($)	Net Income / Sq. Ft. ($)	Gross Margin (%)	Profit Margin (%)
Top 20%[b]	18.28	2.18*	37.0%	19.4%*
↓	14.01	1.27	32.6%*	11.0%
↓	12.00*	0.50	24.1%	3.2%
↓	11.38	0.16	18.9%	1.2%
Bottom 20%	2.55	-2.63	-1.5%	-19.0%

	Sales / Worker Equip. ($)	GH Sq. Ft. / Work Equip.	Labor Cost as % of Sales	Overhead Cost / Sq. Ft. ($)	Total Costs / Sq. Ft. ($)
Top 20%[b]	125,616	12,091	17.2%	1.68	8.93
↓	91,528*	8,025	19.5%	2.35	11.6*
↓	73,674	4,166*	34.9%*	2.89*	16.5
↓	61,403	3,432	41.8%	3.99	18.0
Bottom 20%	44,278	3,359	48.8%	5.34	24.7

	Accounts Receivable Turnover (no.)	Total Debt / Sq. Ft. ($)	Total Assets / Sq. Ft. ($)	Debt/Asset Ratio (%)	Asset Turnover Ratio (no.)
Top 20%[b]	67.6	0.33	21.47	2.0%	2.75
↓	11.0*	0.50*	9.42	8.4%*	2.14*
↓	3.45	3.59	5.93	29.0%	0.92
↓	0	9.82	4.80*	62.5%	0.69
Bottom 20%	0	15.43	3.72	150.3%	0.12

	Return on Equity (ROE)	Return on Asset (ROA)
Top 20%[b]	38.0%*	31.7%*
↓	22.8%	19.3%
↓	3.0%	5.6%
↓	-10.4%	1.1%
Bottom 20%	-28.2%	-11.5%

[a] Each column is sorted independently. Therefore, numbers across the column do not correspond.
[b] The numbers are the minimum of data in this quintile.
* Asterisk is where the average of the top 20% of return-on-asset businesses placed.

Table 15. Greenhouse Business Charts: 15 Retail Greenhouses, By Quintile, 2000[a]

	Greenhouse Sq. Ft.	Wks. Operated per Year	Total Sq. Ft. Wks.	Annual Sales ($)	Net Income ($)
Top 20%[b]	42,000	35.4	1,154,160	616,947	103,225
↓	21,000*	29.4	733,800	397,036	69.169*
	19,600	26.1	511,600*	178,351*	16,831
↓	7,180	15.8*	211,092	73,826	-432
Bottom 20%	4,368	10.5	65,424	25,393	-30,635

	Sales / Sq. Ft. ($)	Net Income / Sq. Ft. ($)	Gross Margin (%)	Profit Margin (%)
Top 20%[b]	19.44	3.53	37.9%*	27.6%*
↓	16.13	2.24*	37.4%	13.4%
	10.48	1.38	25.8%	7.1%
↓	5.28*	-0.73	10.4%	-8.4%
Bottom 20%	3.63	-3.45	3.0%	-35.9%

	Sales / Worker Equip. ($)	GH Sq. Ft. / Work Equip.	Labor Cost as % of Sales	Overhead Cost / Sq. Ft. ($)	Total Costs / Sq. Ft. ($)
Top 20%[b]	113,330	10,233*	15.4%*	1.32*	6.78*
↓	84,907*	5,638	18.6%	1.71	9.45
	63,364	4,685	25.4%	2.80	16.02
↓	40,037	4,297	28.5%	3.63	18.05
Bottom 20%	19,742	2,071	50.0%	5.70	25.35

	Accounts Receivable Turnover (no.)	Total Debt / Sq. Ft. ($)	Total Assets / Sq. Ft. ($)	Debt/Asset Ratio (%)	Asset Turnover Ratio (no.)
Top 20%[b]	2.66	0.00*	19.22	0.0%*	2.18
↓	0*	3.06	13.51	20.7%	1.59*
	0	6.12	10.27	28.2%	1.14
↓	0	6.80	6.86	39.6%	0.86
Bottom 20%	0	24.02	2.20*	310.1%	0.22

	Return on Equity (ROE)	Return on Asset (ROA)
Top 20%[b]	48.2%*	38.7%*
↓	32.1%	18.6%
	13.1%	8.4%
↓	4.6%	-7.1%
Bottom 20%	-24.1%	-83.1%

[a] Each column is sorted independently. Therefore, numbers across the column do not correspond.
[b] The numbers are the minimum of data in this quintile.
* Asterisk is where the average of the top 20% of return-on-asset businesses placed.

IV. Conclusion

Benchmarking is Only Part of the Big Picture

Benchmarks can be external or internal in comparison. Annual financial analysis will establish trends and internal benchmarks for your business. Internal benchmarks help you set goals for your business that you strive to achieve each year and can help you evaluate the impacts of business decisions. External benchmarks (or industry benchmarks) can also help you compare your business to competitive industry standards. The more information you have about how other businesses are doing (especially successful businesses), the more you are able to improve your business performance and become more competitive.

The business summary is designed to help you do several things:

- Compare your greenhouse with competitive standards in the greenhouse industry.
- Compare your business with its previous years' performances.
- Ask yourself why your business performance in any of several areas does or does not differ from last year's performance.
- Ask yourself how your greenhouse's performance differs from industry standards. It's difficult to compare one business with another given all the variables, but it's worth doing because of what you learn.
- Decide how you are going to change your business to make it more competitive.
- Set goals that will help you improve profitability on your farm.
- Track your progress toward these goals (internal comparison).

Setting Goals for Profit

Now that you have calculated the gross margin and profit margin for your business, you are ready to monitor profitability! Profit isn't simply "what you end up with", but something that is planned. Set a goal for profit and measure it throughout the year. As you face more and more price pressures from the market, accurately calculating your costs and closely monitoring your business's financial health will be your first line of defense. This can lead you to shift production and/or marketing efforts to more profitable crops and markets. Knowledge of your costs and business finances can be the power that keeps you competitive in the industry.

References

New York State Dept. of Agriculture and Markets. 2001. "*New York Agricultural Statistics." Albany, New York.*

Traver, T. 1998. *The Greenhouse Industry – Northeast Business Trends.* Special Report. First Pioneer Farm Credit, ACA. Flemington, New Jersey.

Uva, W.L. 1999. *An Analysis of the Economic Dimensions of the New York State Greenhouse Industry.* RB 99-08, Department of Agricultural, Resource, and Managerial Economics, Cornell University, Ithaca, New York 14853.

USDA. 1999a. *Floriculture and Environmental Horticulture – Situation and Outlook Yearbook.* Economic Research Service, U.S. Department of Agriculture, Washington D.C. October 1999.

USDA. 1999b. 1997 *Census of Agriculture*. United States Department of Agriculture, Washington, DC.

OTHER A.E.M. EXTENSION BULLETINS

EB No	Title	Fee (If applicable)	Author(s)
2002-02	The Organic Decision: Transitioning to Organic Dairy Production	($12.00)	Richards, S., S. Bulkley, C. Alexander, J. Degni, W. Knoblauch and D. Demaine
2002-01	Cost of Establishment and Production of Vinifera Grapes in the Finger Lakes Region of New York–2001	($10.00)	White, G.B. and M.E. Pisoni
2001-20	Why Conduct Research and Extension Programs for Small Farms		LaDue, E., and R. D. Smith
2001-19	Market Enhancement Programs Operated in New York's Key Competitor States and Provinces		Bills, N. L. and J. M. Scherer
2001-18	Agriculture-based Economic Development: Trends and Prospects for New York		Bills, N. L.
2001-17	A Compilation of *Smart Marketing* Articles, November 1999 – September 2001	($5.00)	Uva, W.
2001-16	New York Economic Handbook 2002	($7.00)	Extension Staff
2001-15	Income Tax Management and Reporting for Small Businesses and Farms		Cuykendall, C. H. and G. J. Bouchard
2001-14	Dairy Farm Business Summary: Eastern New York Renter Summary, 2000	($12.00)	Knoblauch, W. and L. D. Putnam
2001-13	Intensive Grazing Farms, New York, 2000 Dairy Farm Business Summary	($12.00)	Conneman, G., J. Grace, J. Karszes, S. Richards, E. Staehr, D. Demaine, L. D. Putnam, S. Bulkley, J. Degni, P. Murray, and J. Petzen
2001-12	Central Valleys Region 2000 Dairy Farm Business Summary	($8.00)	LaDue, E. L., Z. Kurdieh, C. Oostveen, A. E. Staehr, C. Z. Radick, J. Hilts, K. Baase, J. Karszes, and L. D. Putnam
2001-11	Northern Hudson Region 2000 Dairy Farm Business Summary	($8.00)	Conneman, G. J., L. D. Putnam, C. S. Wickswat, S. Buxton, D. Maxwell, and J. Karszes

Paper copies are being replaced by electronic Portable Document Files (PDFs). To request PDFs of AEM publications, write to (be sure to include your e-mail address): Publications, Department of Applied Economics and Management, Warren Hall, Cornell University, Ithaca, NY 14853-7801. If a fee is indicated, please include a check or money order made payable to Cornell University for the amount of your purchase. Visit our Web site (*http://aem.cornell.edu/extension-outreach/extensionpub.html*) for a more complete list of recent bulletins.