

## OFA Mission Statement

To support and promote floriculture professionals through lifelong learning, career enhancement, and public awareness.

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## OFA Bulletin

May/June 2008  
NUMBER 908

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## Published Bimonthly

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# ofa Forum

## Benchmarking Your Way to Success!

by Charles R. Hall

I have been writing for several months now regarding the recent economic downturn and its impact on greenhouse and nursery firms. Not only has the economy slowed to a crawl, our industry also suffered several shocks due to freeze and drought conditions last year. It would be an understatement to say that times are tight right now. In such economic conditions, it becomes even more imperative to measure, assess, and set into motion various contingency efforts to ensure financial solvency.

*But how do you determine what these contingencies should be?* The answer: By benchmarking your performance relative to your historical financial and operational performance and then comparing your firms' performance to that of other industry firms.

The bottom line is that you get what you inspect. Major score-keeping areas in a greenhouse business include:

- (1) **financial measures** – e.g. return on assets, sales volume, and gross profit; and
- (2) **operational measures** – e.g. production rates, quality, and safety measures. The key is to figure out which metrics (things to be measured) are important and use this information to educate employees about the correlation between these metrics and profit.

Once these key success factors are identified, there are two major types of benchmarking procedures that managers should be doing. First, **internal benchmarking** (benchmarking within a company)

compares your own firm's performance against a previous time period (e.g. previous quarter, this quarter last year, etc.). This is often referred to as time-series benchmarking. Second, **competitive benchmarking** (benchmarking performance or processes with those of competitors) compares your firm's performance against similarly-sized firms in the industry. This is often referred to as cross-sectional benchmarking because you are comparing your firm against a "cross-section" of the industry.

Unlike other manufacturing industries, there are not a lot of cross-sectional benchmark data available for green industry firms, and even fewer specifically pertaining to greenhouse firms. The best way to glean benchmarking information regarding greenhouse **operational measures** is by scanning trade journals, university research reports, attending educational conferences and trade shows, on-site visits to other greenhouse operations (via tours and personal visits), and talking with other greenhouse managers outside your production region (they are usually more apt to share information). Measuring firm-level productivity over time will point to corrective actions to address inefficiencies in production, marketing, and customer service practices.

Table 1 (page 3) offers some suggestions as to the metrics growers may consider in establishing a benchmarking system or adding to their existing system. While the table may seem daunting at first glance, I always advise growers to choose a few (one or two) benchmark metrics each year to incorporate into their system.

Remember: what gets measured gets managed! Concentrate on measuring the right things, then on measuring them efficiently. Focus only on the areas of greatest concern in your business and fix

Handout for the Friday  
10:00 a.m. session:

Are You One Bad Spring  
Away From Bankruptcy?



Table 1. Potential metrics for financial and operational benchmarking.

Financial metrics	Operational metrics
Total annual greenhouse sales	Weeks operated per year (by location)
Total greenhouse debt	Full-time worker equivalents (labor hours/2080)
Sales per sq. ft. of bench space (by location)	Area per full-time worker equivalent (FTE)
Total sq.ft. weeks per year (# weeks x sq.ft.)	SFW per full-time worker equivalent (FTE)
Income statement line items as a % of sales	Gross margin full-time worker equivalent (FTE)
Net income per sq.ft.	Hired labor expenses as a % of sales
Net income per sq.ft. week (SFW)	Net income per full-time worker equivalent (FTE)
Gross margin (sales - cost of goods sold)	Machinery investment per sq.ft.
Net profit margin (net profit/net sales)	Average collection period for accounts payables
Total cost per sq.ft.	Inventory turnover (COGS/average inventory)
Total cost per sq.ft. week (SFW)	Inventory holding period (365/inventory turnover)
Overhead expenses as % of sales	Sales to fixed assets (net sales/fixed assets)
Overhead expenses per sq.ft. week (SFW)	Sales to working capital
Asset turnover (total sales/total assets)	Production rates (# units completed per task)
Return on assets (net profit/total assets)	Quality measures (size, flowering, etc.)
Financial leverage (total assets/net worth)	Safety measures (# days w/o lost-time injury)
Return on equity (net profit/net worth)	Customer turnover
Sales per full-time worker equivalent (FTE)	Average # of complaints per customer
Average sales and profit per customer	Returns and adjustments per customer

those areas. Measuring anything that does not directly affect profitability, performance, or safety only adds burden and takes away from those measures that are truly important.

### Strategic Profit Model

Probably the most common (and obvious) financial goal of greenhouse businesses today is to make a profit. However, to simply refer to “profitability” in general is not enough. There are various measures of profitability, but the two most commonly referred to include return on assets (often called return on investment or ROI) and return on net worth. *Return on Assets* (ROA) looks at the economic viability of the firm whereas *Return on Net Worth* (ROE or Return on Owner Equity) examines the return being generated for the firm’s owners. Both have their own value in analyzing performance. It is important to understand how return on investment is calculated and how it can be improved. ROE is considered the most meaningful way to evaluate overall company profitability

These two primary profitability ratios are influenced by three other performance-related ratios: Profit Margin, Asset Turnover, and Financial Leverage. Each of these represents a different strategy or pathway to improve return on investment. These five ratios can be combined into what is commonly called the Strategic Profit Model (Figure 1), sometimes referred to as the

$$\begin{array}{l}
 \text{Profit margin} \times \text{Asset turnover} = \text{ROA (ROI)} \times \text{Leverage factor} = \text{ROE} \\
 \frac{\text{Net profit}}{\text{Net sales}} \times \frac{\text{Net sales}}{\text{Total assets}} = \frac{\text{Net profit}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Net Worth}} = \frac{\text{Net profit}}{\text{Net worth}}
 \end{array}$$

Figure 1. Strategic Profit Model.

DuPont Model. It is simply a graphical representation of a comprehensive return on investment analysis.

**Profit Margin = Net Profit Before Taxes ÷ Net Sales x 100.**

The first and most important pathway to profitability is profit margin management. For example, a profit margin of 6.9 percent means that for every \$1.00 of sales the company was able to produce 6.9 cents in profit before taxes. Managing profit margin means focusing on sales productivity, gross margin management, and operating expense control.

**Asset Turnover = Net Sales ÷ Total Assets.** Asset turnover reflects the sales the grower produces per dollar invested in assets. For example, a ratio of 1.0 reflects that the grower is generating \$1.00 in sales for every \$1.00 in assets. If a grower’s

Continued on page 4

# Benchmarking Your Way to Success!

Continued from page 3

assets, cash, accounts receivable, inventory, property, equipment, and all other assets can be used as efficiently as possible, then a maximum amount of sales can be generated from a given asset investment.

**Return on Assets = Profit Before Taxes ÷ Total Assets x 100.**

Return on assets (ROA) is the direct result of the first two pathways to profit – profit margin multiplied by asset turnover. This measure of performance is a good indicator of the grower’s ability to survive and prosper. As a rule of thumb, the pre-tax return on assets ratio should at least be equal to (and preferably exceed) the interest rate associated with the cost of capital.

**Financial Leverage = Total Assets ÷ Net Worth.** Financial leverage measures the total dollars of assets per dollar of net worth. This benchmark ratio measures the extent to which the grower uses outside (non-owner) financing. The higher the ratio, the more the grower relies on outside financing. For example, a ratio of 1.5 times suggests that for every \$1.00 in net worth, the grower had \$1.50 in total assets. If for every \$1.50 in total assets the owners put up \$1.00, then outsiders put up the remaining \$0.50.

**Return on Net Worth = Net Profit (before taxes) ÷ Net Worth**

**x 100.** The end result of the strategic profit model is return on net worth (equity). It is seldom possible to generate an adequate rate of return on net worth by emphasizing just one of the previous profitability pathways. Each pathway should be examined carefully for improvement opportunities and then trade-offs made in order to increase overall profitability. An improvement plan should not be based upon any single measure of performance, but be developed with the complete picture in mind.

Greenhouse businesses must earn an adequate return on investment to satisfy the owners’ needs. Table 2 provides some general benchmark guidelines for return on assets and for return on net worth.

## Financial Ratio Benchmarks

Growers, suppliers, bankers, and outside creditors have a wide range of other financial ratio benchmarks at their disposal to measure the overall financial integrity of the greenhouse business. Some of the more common benchmark measure for you to consider include the following:

**Current Ratio = Current Assets ÷ Current Liabilities.** The current ratio measures the margin of safety that management maintains in order to allow for the inevitable unevenness in the flow of funds through the current assets and current liability accounts. A company needs a supply of current funds to be assured of being able to pay its bills when they come due. As a general rule, the current ratio should be 2.0 or higher.

**Quick Ratio = (Cash + Accounts Receivable) ÷ Current Liabilities.**

Quick assets include cash, marketable securities, and current accounts receivable. Presumably, these items can be converted into cash quickly at approximately their stated amounts, unlike inventory which is the principal current asset excluded from this calculation. The quick ratio is, therefore, a measure of the extent to which liquid resources are readily available to meet current obligations. A guideline for the quick ratio is 1.0.

**Debt to Equity = Total Liabilities ÷ Net Worth.** The greater the proportion of its financing that is obtained from owners, the less worry the company has in meeting its fixed obligations. At the same time excessive reliance on owner financing slows the rate at which the grower can grow. The debt to equity ratio shows the balance that management has struck between debt and owners’ equity. A mix of \$1.00 debt to \$1.00 equity is usually considered prudent.

**EBIT to Total Assets = EBIT ÷ Total Assets x 100.** Earnings before interest and taxes (EBIT) to total assets is a return on investment ratio that provides a profit analysis based on earnings, before interest and income taxes. This ratio is best compared with a company’s annual interest rate on borrowed funds. If a grower’s EBIT to total assets ratio is higher than their cost of capital, there is a favorable spread between the two. A spread of at least 2.0 points is desirable.

**Times Interest Earned = (Profit Before Taxes + Interest) ÷ Interest.** The times interest earned ratio measures the number of times profit before interest and taxes will cover total interest payments on debt. The result indicates the level to which income can decline without impairing the company’s ability to meet interest payments on its liabilities. If the ratio falls below 1.0, the grower is not generating enough earnings to cover the interest due on loans. A reasonable target is 6 to 8 times.

Table 2. General benchmark guidelines for return on assets and for return on net worth.

Primary financial objective	Return on assets	Return on equity	Effect on company performance
Minimum	4-5%	8-10%	Minimum long-term return necessary to ensure survival
Target	8-10%	15-20%	Satisfies owners minimum needs, but doesn't provide for growth or offset inflation
Top performance	15-20%	30-40%	Would be representative of the most profitable firms in the industry

**Cash to Current Liabilities = Cash ÷ Current Liabilities x 100.**

This is the most stringent test of the ability of the grower to meet its short-term obligations with existing cash balances. To be truly conservative with cash, this ratio should be in the 10 to 20 percent range.

**Sales to Working Capital = Net Sales ÷ (Current Assets - Current Liabilities).**

This ratio measures the ability of the grower to generate sales without tying up high levels of investment in working capital. A ratio of 1.5, for example, means the grower can generate \$1.50 in sales for every \$1.00 invested in working capital. This ratio can be impacted by changes in any of the three working capital items: improving inventory turnover, reducing accounts receivable collections, or obtaining more favorable accounts payable payment terms.

**Asset Productivity Ratios**

Given the significance of both accounts receivable and inventory in terms of managing cash flows, it is important to measure their productivity. For both of these asset categories the objective is not to minimize their value. Rather, the objective is to utilize both for maximum profitability.

**Average Collection Period = Accounts Receivables ÷**

**(Credit sales ÷ 365 days).** The average collection period can be evaluated against the credit terms of the company. As a rule, the collection period should not exceed 1.3 times the regular payment period. That is, if your company's typical credit terms call for payment in 30 days, then the collection period should be 39 days or less.

**Inventory Turnover = Cost of Goods Sold ÷ Average Inventory.**

Inventory turnover is an indication of the velocity with which merchandise dollars move through the business. If the turnover figure were 2.7, this would mean that the firm sells out the equivalent of its inventory value 2.7 times per year.

**Inventory Holding Period = 365 Days ÷ Inventory Turnover.**

The inventory holding period reflects how many days of inventory are on hand. That is, it shows how long it should take to sell off existing inventory. Business managers and owners must be concerned with a holding period that is longer than necessary due to the high costs of capital tied up in excess inventory. On the other hand, reducing inventory levels too much could result in lost sales if certain products are not available when the customer wants them. The cost of carrying inventory has to be balanced against the profit opportunities lost by not having product in stock ready for sale.

**Sales to Fixed Assets = Net Sales ÷ Net Fixed Assets.** This industry requires a significant investment in fixed assets, particularly equipment. To reach a sufficient level of profitability, these assets must be utilized as efficiently as possible. This ratio provides a basis for comparing fixed asset utilization across different types of operations.

**Summary**

Let me conclude by reinforcing my rule of thumb for benchmarking: If you are not going to take action based on the results of your analysis, then don't bother measuring it. In other words, don't measure what you aren't willing to change. But hopefully, I have challenged you to at least consider additional metrics in which to measure in order to make more informed managerial decisions during these tight economic times.

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# Increase Your Profits Through Benchmark Analysis: Pulling Your Basic Financial Information Together

By Robin G. Brumfield

**H**ow do you, as a producer, make money with shrinking margins, rising costs, and demanding customers? Which crops are making money, and which ones are losing money? More optimistically, you make money on everything, but which crops make the most? Once you know these answers, you can look at ways to increase sales of the profitable crops, or find ways to cut costs on the less profitable ones. You can decide to drop unprofitable crops, or consider new ones.

Profit for any business can be calculated by the simple formula: profit equals number of units sold times the difference between sales price per unit minus total costs per unit. You know how many units of a specific crop you sell at a given price. You also know the profitability of your business from your income tax records at the end of the year. However, most growers produce many crops; thus, the third vital component of the profit equation – the cost of producing an individual unit – is often not known. Determining the profitability for each crop requires knowledge of its production costs. The process of assigning production costs to each crop and subsequently calculating the profit of each crop is called cost accounting.

To make cost accounting easier, I developed a simple cost accounting program distributed by Rutgers University Cooperative Extension. The program enables you to perform cost accounting and to determine the profitability of greenhouse crops. The newest version also calculates costs of crops you produce outdoors as well as greenhouse crops. New features of the New Jersey Cost Accounting Program include calculating the percentages of each overhead cost, information from the balance sheet, and calculation of key ratios. In addition to analyzing your actual costs, you can use the program as a planning tool to analyze the impact of increased energy costs and prices as well as changes in marketing mixes, or other changes you are considering in your business.

The program uses cost information you already have. Much of the data needed is typically found on income statements and balance sheets and the rest is direct cost information for each crop. From these inputs, the program allocates as many costs as possible to individual crops. The remaining unallocated costs are assigned to each crop on a per square-foot-week basis.

The program generates information showing total costs and net returns per unit. It enables you to easily determine the profitability of each crop. From this information, you can determine which crops are winners and losers. This software will also help you to make decisions on pricing, identifying and reducing unprofitable production costs, and increasing sales of profitable crops. You can also perform

the same kind of analysis yourself by hand or by developing your own spreadsheet.

## Overhead and Variable Costs

The costs incurred in the greenhouse business can be grouped into two categories: variable and overhead costs. Variable costs are costs that change with the level of production and can usually be allocated to a particular crop. Examples of variable costs are the costs of petunia seeds and bedding plant flats; both relate specifically to petunia production. They are part of the total costs per unit given in the profitability equation above. Overhead or fixed costs are those costs that are incurred regardless of the level of production and are common to all crops. These costs include depreciation of the greenhouse structure, equipment, and other facilities, and costs such as interest, repairs, insurance, taxes, and salaries of overhead personnel (i.e., the manager, sales people, growers, secretaries, bookkeepers, etc.). The total cost of production is the sum of variable and overhead costs.

**Inputs.** The first step in cost accounting is to enter all of your costs from the input statement. I used figures from a 2003 survey of Northeast greenhouse growers where the average size was 138,759 square feet with sales of \$2.2 million and net returns of \$211,152 or 9.5% (Table 1).

### We need a little more information:

1. What is the selling price of each crop?
2. How many square feet of space does each crop take on the bench?
3. How many pots or flats of each crop do you produce?
4. What percentage of each crop is sold?
5. What are the production (variable) costs for each crop?

Even if you don't know the answer to questions number 5, you can still get a rough idea of production costs for each crop by entering the first four items. Enter any variable costs that you have for a specific crop. The program will subtract the variable costs that you enter from the costs in the income statement. This will leave costs that can't be allocated. These unallocated costs will then be treated as overhead costs.

The figures in Tables 1 are actual results of surveys of Northeast growers; Table 2 is a hypothetical production schedule constructed to match the actual income from the 2003 surveys. The program gives these results on a per crop, per unit, and per square foot basis.

**Results.** We have calculated overhead costs, costs per crop, and costs per unit (flat or pot) (Table 3). Differences in profit pictures exist between cost per square foot-week

and cost per unit. Poinsettias have the largest sales per crop, but are actually the greenhouse crop with the lowest profit per square foot-week. Petunia flats are the most profitable crop per unit and per crop, but geraniums in 4-inch pots are the most profitable crop per square foot-week. Geraniums in 4-inch pots have a lower profit per pot, because they

are sold at the lower price per unit than the marigold flats. However, geraniums in 4-inch pots are the most profitable crop per square foot-week because of more efficient use of space. Returns per square foot-week of bench space may be the most informative way of comparing profitability among crops because of differences in use of space.

**Table 1.** Income statement data from a survey of Northeast Greenhouse Growers in 2003 entered into the Rutgers Greenhouse Cost Accounting program.

Values from Income Statement (Schedule F or C)	2003 Actual \$	% of Sales
<b>Sales</b>	<b>\$2,219,560</b>	<b>100</b>
<b>DIRECTS COSTS</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
Tags	\$ 0	0.0
Sales Commissions	\$ 2,875	0.1
Other	\$ 37,468	1.7
<b>General wages</b>	<b>\$729,233</b>	<b>32.9</b>
<b>Overhead salaries (including benefits)</b>	<b>\$ 2,895</b>	<b>0.1</b>
<b>UTILITIES</b>		
Heating fuel/Machinery fuel	\$ 77,566	3.5
Electricity	\$ 40,352	1.8
Telephone	\$ 5,894	0.3
Water	\$ 464	0.0
<b>OVERHEAD</b>		
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
Dues and subscriptions	\$ 100	0.0
Travel and entertainment	\$ 7,431	0.3
Office expense	\$ 9,589	0.4
Professional fees	\$ 19,444	0.9
Truck expense and equipment rental	\$ 46,954	2.1
Land rental	\$ 2,112	0.1
Contributions	\$ 0	0.0
Bad debts	\$ 0	0.0
Miscellaneous	\$ 87,956	4.1
<b>Total Expenses</b>	<b>\$2,008,104</b>	<b>90.5</b>
<b>Net Returns</b>	<b>\$ 211,152</b>	<b>9.5</b>

Greenhouse area (ft<sup>2</sup>) 138,759. Greenhouse space used for production (%) 82. (e.g., enter 75% as 75, 125% as 125). Weeks in operation (52 if a full year) 40

Continued on page 26

# Increase Your Profits Through Benchmark Analysis: Pulling Your Basic Financial Information Together

Continued from page 25

## Financial Ratios

One method of assessment is financial analysis using financial ratios. Use numbers from your balance sheet and income statement to calculate the ratios. The ratios fall into four categories: profitability, financial efficiency, liquidity, and solvency. Let's look at some ratios based on averages from growers in the Northeast from 2003 data.

## Profitability Ratios

*Profitability* ratios measure ability of the business to earn a good profit and generate a satisfactory return on investment. These ratios are typically a good indicator of management's overall effectiveness.

The *operating (gross) profit margin* is a measure of the operating efficiency of the business. It measures how effectively the business is controlling expenses relative to its value of output. A high profit margin indicates good cost control.

$$\text{Gross Margin} = \text{Total Direct Costs} / \text{Sales} = \$758,609 / \$2,219,256 = 34.2\%$$

Desirable range: 30-40%

The *net profit margin* is the profit per dollar of sales after paying the owner's salary and accounting for opportunity cost of capital invested.

$$\text{Net Profit Margin} = \text{Net Income} / \text{Sales} = \$211,152 / \$2,219,256 = 9.5\%$$

## Common problems with profit margin:

- Wrong pricing system
- Prices have not been increased as costs have increased
- Costs are too high relative to size of business
- Not enough sales for the resources allocated
- High overhead costs
- Wasteful spending on inputs
- Poor production

## If costs are too high:

- Are you over-mechanized?
- Is labor being used efficiently?
- Do you have too much labor?
- Do you have the right type of labor?
- Is there too much labor in slack periods?
- Is there a labor shortage in peak periods?
- What costs are the highest?
- Are these controllable?
- Are the costs necessary?
- Can the same function be done a better way?
- Would mechanization reduce costs?

Every dollar saved by cost control equals a dollar of *profit!*

Table 2. An example of input section 2, which includes information on specific crops, from the Greenhouse Cost Accounting program.

Input section (2)						
Crops						
	Petunia flats	Marigold flats	Geranium flats	Geraniums (4" pots)	Poinsettias (6" pots)	Outdoor Cut Flowers (bunches)
Number of units started	50,000	50,000	50,000	100,000	126,000	26,136
Square feet per unit	1.64	1.64	1.64	0.11	1.00	1 acre
Weeks to grow	8	6	13	6	15	15
Percent sold	0.98	0.98	0.98	0.95	0.95	0.95
Sales price	\$7.93	\$7.00	\$11.73	\$1.20	\$5.00	\$4.00

Table 3. An example from the Greenhouse Cost Accounting program of output information per units and per crop using 2003 Northeast cost.

Crops						
	Petunia flats	Marigold flats	Geranium flats	Geraniums (4" pots)	Poinsettias (6" pots)	Outdoor Cut Flowers
Sales	\$388,570	\$343,000	\$574,770	\$157,700	\$653,562	\$99,317
Profit (loss) per crop	\$69,844	\$50,080	\$54,026	\$14,039	\$64,424	\$19,188
Profit (loss) per unit	\$1.43	\$1.02	\$1.10	\$0.15	\$0.54	\$0.77
Profit (loss) per sq. ft.-week	\$0.11	\$0.10	\$0.05	\$0.21	\$0.03	\$0.03

The *return on assets* (ROA) ratio measures the profit-generating capacity of total assets of the business. It measures the firm's effectiveness in using all of the available total capital – both debt and equity. The ratio keys in on operations – the effectiveness of resources used in generating a profit. The focus is on how well the assets are being used to generate sales.

$Return\ on\ Assets\ (ROA) = Net\ Income / Total\ Assets = \$211,152 / \$1,232,101 = 17.1\%$

Desirable ratio: >10%

A useful way to use ROA is to break it into separate components of profit margin and asset turnover. The Du Pont Company used this method to evaluate its divisions in the early 1900s. The Du Pont analysis breaks ROA into profit margin multiplied by asset turnover.

$ROA = (Profit\ Margin) * (Asset\ turnover) = (Net\ income / Sales) * (Sales / Total\ Assets) = 9.5\% * 1.8 = 17.1\%$

The *profit margin* is an income statement ratio and *asset turnover* is a balance sheet ratio. Improving profitability and/or asset turnover increases return on assets.

### Efficiency ratios

Financial efficiency ratios help you understand why your business is making or losing money. While financial efficiency is related to profitability, it is quite different. The profit margin shows the return or loss for a given year. Financial efficiency seeks to understand the components of sales and determines if an operation is spending excessive amounts on operating expenses, interest, depreciation, etc. Therefore, it is not only important to understand the components that come together to determine profitability, but also to understand why your business is or is not profitable. Financial ratios tell you how well you employ your assets.

The *Asset Turnover Ratio* (Sales/Total Assets) discussed above is one measure of financial efficiency. A high asset turnover ratio demonstrates efficient use of the assets on the balance sheet. Consider selling low return assets or improve their productivity.

Two other efficiency ratios to look at are *operating expense ratio* and *interest expense ratio*.

$Operating\ Expense\ Ratio = (Operating\ Expense - Depreciation) / Sales = (\$393,091 - \$92,642) / \$2,219,256 = 13.5\%$

Desired ratio: less than 65%

The *Operating Expense Ratio* tells you how much you spent for every dollar of sales. Low efficiency (high ratio or percentage) can be a result of low prices, high operating expenses, production problems or a combination of the three. The best major enterprises have consistently high efficiency (low ratio or percentage) over time. To improve the operating expense ratio, increase prices through more effective marketing and/or better control of expenses. It is important to closely monitor major expenses, concentrating on the top four or five expenses.

$Interest\ Expense\ Ratio = Interest\ Expense / Sales = \$8,080 / \$2,219,256 = 0.4\%$

Desired ratio: less than 15%

The *Interest Expense Ratio* shows the percent of sales devoted to interest. Reducing debt and/or negotiating a lower interest rate can improve the interest expense ratio.

### Liquidity Ratios

Liquidity ratios measure the capacity of the business to

meet its short-term liabilities, either by using cash or by converting current assets into cash. Creditors and other lenders favor liquidity ratios that tend to reveal financial strength or weakness.

$The\ Current\ Ratio = Current\ Assets / Current\ Liabilities = \$449,802 / \$242,640 = 1.9$

Desired ratio: greater than 1.5

The *Current Ratio* has long been the primary test for creditworthiness. It measures the ability to satisfy current debts with current assets. The larger the ratio, the greater the protection for short-term creditors. A ratio of less than 1 or a declining trend can signal problems in liquidity.

### Solvency Ratios

Solvency ratios measure the extent to which a business is financed by debt and the ability to meet loan payments. Lenders of long-term funds and equity investors have an interest in solvency ratios.

$The\ Debt\ to\ Asset\ Ratio = Total\ Liabilities / Total\ Assets = \$473,946 / \$1,232,101 = 38.5\%$

Desired ratio: less than 30%

The *Debt-to-Asset Ratio* is a way of evaluating the degree of asset financing creditors provide. It measures the percentage of your total assets to which creditors have claims. A higher ratio indicates greater financial risk and lower borrowing capacity. A ratio of less than 30 percent is considered strong.

These are a few ratios to get you started. When working with ratios, these rules are important:

- 1) Ratio trends calculated consistently over time will provide better information.
- 2) Differing accounting policies, overall business size, and maturity of the business impact ratios.
- 3) Ratios supplement but do not replace sound business judgment. Ratios can be very useful in identifying areas of strengths and weaknesses, but because they are summary level in nature, many facts can be buried if you don't take the analysis further.
- 4) Individual business ratios can be compared to industry statistics and trends.

With fluctuating fuel costs and competitive markets, you need to pay close attention to the bottom line and how changes in costs impact it. The Greenhouse Cost Accounting program will allow you to analyze how your business is doing. It will also allow you to do "what if" planning on paper instead of making bigger, real mistakes in the greenhouse. As shown in this hypothetical example, knowledge of the profitability of each crop can help you to make production and marketing decision to improve your businesses.

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