

Ratio Calculator Program

This program allows the user to enter the minimum data needed to calculate key financial performance ratios. The program calculates specific ratios and identifies strengths or weaknesses of levels and trends of various ratios.

The Ratio Calculator program allows the user to calculate key financial ratios that measure the financial performance of a farm operation. Information needed to run this program come from an individual's:

- Farm records
- Balance sheet
- Statement of cash flows

The graphic below shows the input page for the program along with navigation buttons.

Data Entry		
Name	Joe and Elise Farmer	
Year	2003	
Tillable acres operated	2001	
Tillable acres owned	200	
Percent gross revenue from livestock (approximate)	0%	
FICO / Beacon Consumer Credit Score	780	
Profitability and Cash Flows		
Gross Revenue (VFP)	\$ 456,249	
Operating Expenses	303,033	
Management Depreciation	43,005	
Interest Expense on Operating Loans	6,058	
Interest Expense on Term Loans	26,003	
Net Non-farm Income	23,153	
Family Living Withdrawals	48,000	
Principal Payments on Term Loans & Capital Leases	34,877	
Income and Social Securities Taxes	32,035	
Cash Rent Payments	43,000	
Balance Sheet Information		
	Beginning of Year	End of Year
Assets		
Total Current Assets	\$ 123,869	\$ 119,116
Machinery & Equipment	402,317	388,665
Land	626,420	647,159
Other Noncurrent Assets	38,000	38,000
Liabilities		
Total Current Liabilities	\$ 191,837	\$ 158,531
Noncurrent Liabilities	375,164	349,775

Resize

Located on the upper right corner of the screen, this button allows the user to enhance the image of the input page to fit the size of the user's computer screen.




Navigating the Program

At the bottom of the input screen are five buttons that direct the user to the different pages of the program. Worksheet tabs at the bottom of the Excel spreadsheet screen also guide the user through the program.

Clear Data for Year	Allows the user to clear all data on the input page for the selected year.
Trend Analysis	Takes the user to a page that conducts trend analysis by looking at the financial ratios for each year that data are entered.
Ratio Calculation Worksheets	Takes the user to worksheets that provide a detailed outline showing the calculations for each financial ratio.
Ratio Calculation Worksheets-Blank	Takes the user to blank worksheets similar to the Ratio Calculation Worksheets.
Benchmark Values	Takes the user to a page containing a summary of key ratio calculations and benchmarks.

Inputs

The Ratio Calculator program allows the user to enter required information on a single input screen:

		Ratio Calculator	
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The input required for this tool is entered in three sections:

Data Entry

Financial information is the fundamental data needed to calculate the various ratios. The user can also enter FICO/Beacon Consumer Credit score. No calculations are based on the FICO score. The program simply provides the user a place to store the number. Hence, supplying this score is optional.

For example, Joe Farmer is providing financial information for 2003. Joe has also entered data for years 2000 to 2002. This information can be viewed by clicking on the year drop-down box and selecting the desired year. The Ratio Calculator program can store up to 10 years of data. To add a year, click on the drop-down box to select the desired year.

Profitability and Cash Flows

The financial information obtained from the user's statement of cash flows is entered in this section. Entries for this section are for the total farm. Thus, for cash rent payments, type in the total amount paid for all cash rent acres for that year.

Balance Sheet Information

The final information required by the program comes from the user's balance sheet for the year evaluated. Both beginning of the year and end of the year information is required.

Once the data are entered, the program provides the user with various forms of analysis of the financial ratios for the farm operation.

Ratio Calculation Worksheets

Liquidity, Solvency and Coverage Worksheet		
for		
Joe and Elise Farmer		
Liquidity		
Current ratio		2003
a. Current assets		= 119,116
b. Current liabilities		= 158,531
c.	Current ratio <i>line a / line b</i>	= 0.75
Working capital		
d.	Working capital <i>line a - line b</i>	\$ (39,415)
Working capital to VFP ratio		
e. Working capital (<i>line c</i>)		\$ (39,415)
f. Value of Farm Production (VFP)		÷ 456,249
g.	Working capital to VFP ratio <i>line e / line f</i>	= (0.09)
Solvency		
Debt to equity ratio		
h. Liabilities		\$ 508,306

The above graphic is a portion of the Ratio Calculation Worksheets produced by the program. This page can be accessed by clicking [Ratio Calculation Worksheets](#) on the input screen.

Print

Allows the user to print the worksheets.

Return

Will take the user back to the input screen of the program.

The purpose of the worksheets is to show the user the ratio calculations allowing a better understanding of the financial factors that impact the performance measures. Thus, if a particular financial ratio exhibits a weakness in the operation, the user can visually understand the components that make up the calculation.

For example, Joe Farmer has a current ratio of 0.75. This figure is a measure of an operation's liquidity – the ability of a business to generate cash to meet financial obligations, transactions, or investment opportunities. A current ratio less than one

signals nonliquidity. The higher the ratio, the better off the farm is to meet financial demands. As the worksheet shows, the current ratio is calculated by dividing current assets by current liabilities. This identifies two strategies for increasing this measure: 1) increase current assets (e.g. cash, savings, inventories, etc.) or 2) decrease current liabilities (e.g. accounts payable, notes payable, interest expense, etc.).

The Ratio Calculator program also provides blank worksheet forms, which can be accessed by clicking [Ratio Calculation Worksheets-Blank](#) on the input screen. Similar to the worksheet

on the previous page, the blank forms can be printed by clicking [Print](#). These blank worksheets provide the user another method for calculating the performance measures for a farm operation. Supply the required information and calculate desired ratios according to the directions.

Benchmark Values

The graphic below shows a one-page summary of key ratio calculations and benchmarks. This is a useful document because it explains the computations used for each ratio, as well as defines the benchmarks for each. The worksheet can be printed by clicking [Print](#) and the user can return to the input screen by clicking [Return](#).

Portion of the Summary Ratios Worksheet

Summary of Key Ratio Calculations and Benchmarks				
Repayment Analysis	Calculation	Green	Yellow	Red
Term Debt and Lease Coverage Ratio	$[(NFIFO^* + \text{Gross Non-Farm Revenue} + \text{Depreciation Expense} + \text{Interest on Term Debts and Capital Leases}) - \text{Income Tax Expense} - \text{Family Living Withdrawals}] / \text{Scheduled Annual Principal and Interest Payments on Term Debt and Capital Leases}$	>150%	110% to 150%	<110%
Debt Payment / Income Ratio	$\text{Scheduled Annual Principal and Interest Payments on Term Debt and Capital Leases} / (NFIFO^* + \text{Gross Non-Farm Revenue} + \text{Depreciation Expense} + \text{Interest on Term Debts and Capital Leases})$	<25%	25% to 50%	>50%
Liquidity Analysis				
Current Ratio	Total Current Farm Assets / Total Current Farm Liabilities	> 1.50	1.00 to 1.50	< 1.00
Working Capital	Total Current Farm Assets - Total Current Farm Liabilities	compare to business expenses, absolute amount depends on scope of operation		
Working Capital/VFP	Working Capital / Value of Farm Production	> 30%	10% to 30%	<10%
Solvency Analysis				
Debt / Asset Ratio (mostly owned)	Total Farm Liabilities / Total Farm Assets	<20%	20% to 60%	>60%
Debt / Asset Ratio (mostly rented/leased)	Total Farm Liabilities / Total Farm Assets	<30%	30% to 70%	>70%

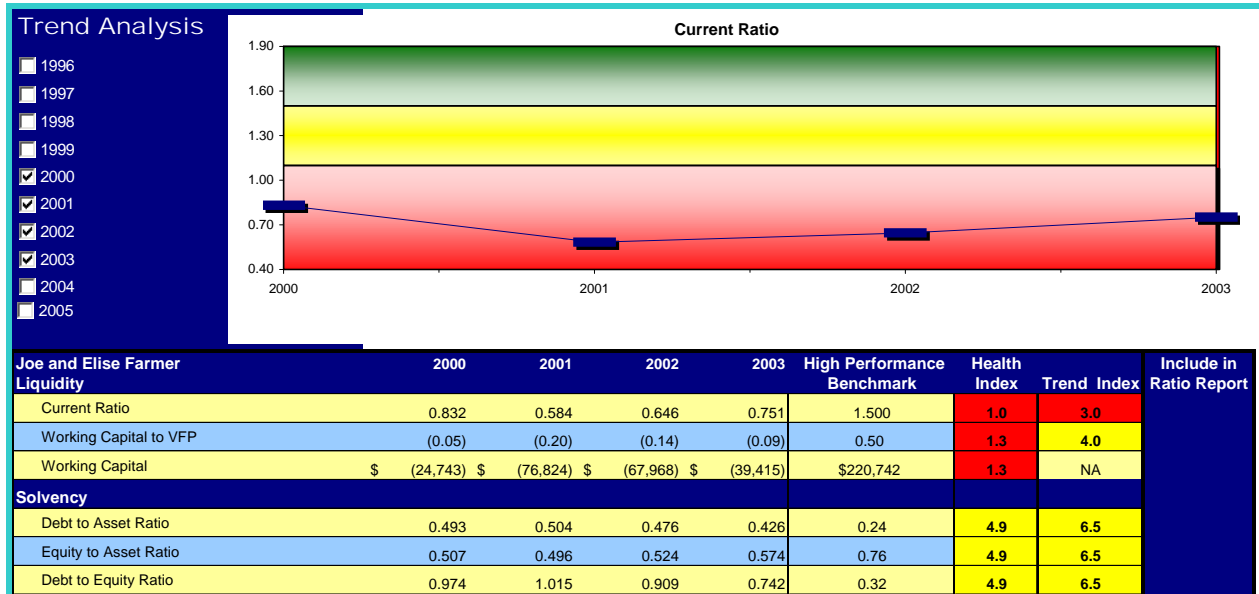
Trend Analysis

The graphic below shows a portion of the Trend Analysis section of the Ratio

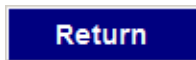
Calculator program. This page can be accessed by clicking



on the input screen.



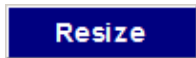
The Trend Analysis page allows the user to see the financial ratios for each year data is entered in the input screen. The ratios for selected years are reported in a table and in a graph as seen above.



Takes the user to the input screen.



Takes the user to the Ratio Report page.



Allows the user to enhance the image of the Trend Analysis page to fit the size of the user's computer screen.

- 2000 This program allows the user to view financial ratios for all years that contain data. The graphic to the left displays years that contain financial information. Select the years desired to be analyzed by clicking on the appropriate boxes causing a checkmark to appear. To remove data for a particular year, click on the appropriate box to remove the checkmark.
- 2001
- 2002
- 2003

TABLE

Calculations are reported in a table similar to the example below. The table lists the financial ratios on the left side and reports the ratio calculations for each year data is entered. Use the scroll bar on the right side of the screen to view the remaining ratios.

Joe and Elise Farmer	2000	2001	2002	2003	High Performance Benchmark	Health Index	Trend Index	Include in Ratio Report
Liquidity								
Current Ratio	0.832	0.584	0.646	0.751	1.500	1.0	3.0	
Working Capital to VFP	(0.05)	(0.20)	(0.14)	(0.09)	0.50	1.3	4.0	
Working Capital	\$ (24,743)	\$ (76,824)	\$ (67,968)	\$ (39,415)	\$220,742	1.3	NA	
Solvency								
Debt to Asset Ratio	0.493	0.504	0.476	0.426	0.24	4.9	6.5	
Equity to Asset Ratio	0.507	0.496	0.524	0.574	0.76	4.9	6.5	
Debt to Equity Ratio	0.974	1.015	0.909	0.742	0.32	4.9	6.5	
Profitability								
Rate of Return on Farm Assets	6.30%	-1.20%	8.33%	5.22%	5.00%	6.8	7.0	
Rate of Return on Farm Equity	5.62%	-9.24%	9.22%	4.61%	10.00%	4.7	7.0	
Earned Net Worth Trend	7.24%	-9.64%	12.88%	3.41%	10.00%	NA	NA	
Operating Profit Margin Ratio	16.11%	-3.79%	20.81%	13.64%	30.00%	4.5	7.0	
Net Farm Income from Operations	\$ 75,759	\$ (9,564)	\$ 103,118	\$ 78,150	\$110,371	5.2	NA	
Repayment Capacity								
Term Debt and Capital Debt Margin	\$ 54,495	\$ (48,576)	\$ 82,383	\$ 29,396	\$45,660	5.4	NA	
Interest Coverage	1.795	-0.352	2.294	1.940	NA	NA	NA	
Term Debt & Capital Lease Coverage Ratio	1.895	0.202	2.353	1.483	1.750	5.4	6.0	
Financial Efficiency								
Asset Turnover	0.391	0.318	0.401	0.383	0.499	6.4	5.5	
Operating Expense Ratio	0.657	0.815	0.610	0.664	0.541	4.1	8.0	

This table further contributes to financial analysis by providing High Performance Benchmarks, a Health Index, a Trend Index, and the option to view desired ratios in a report.

High Performance Benchmark

This column provides the user with high performance standards for each ratio. This information can be used for comparing a user's financial ratios to measures that indicate financial strength. The closer a financial ratio is to its high performance benchmark, the stronger the farm operation is in that financial aspect. Note that surpassing a benchmark in a favorable direction also represents financial strength. For example, in 2003 Joe Farmer's current ratio is .75. The high performance benchmark for this indicator is 1.50. Thus, Joe should try to improve his liquidity by increasing his operation's current ratio to 1.50 or more. Also, Joe's 2003 debt to asset ratio is .43 and the benchmark for this measure is .24. Hence, Joe should try to lower his debt to asset ratio to .24 or less.

Health Index

The health index is a measure that scales the absolute ratio to a score between 0 and 10 with 10 being the strongest value. The health index provides a quick method to identify measures of strength and weakness.

The color of the shaded cell for each measure also represents the level of financial strength. The green shade represents potential strength, the yellow shade indicates caution or a potential problem, and the red shade suggests the measure is in the problem area. In this example, the current ratio for the years Joe Farmer provided data has a Health Index shaded red, implying a problem area.

Trend Index

This indicator evaluates the trend of the financial ratio for the time period evaluated. The color of the shaded cell for each ratio signifies if the measure is progressing in a favorable or unfavorable direction. The value of the trend is scaled from 0 to 10 with 10 being the strongest trend. Combinations of strong a strong Health Index and Strong Trend Index would be most preferable.

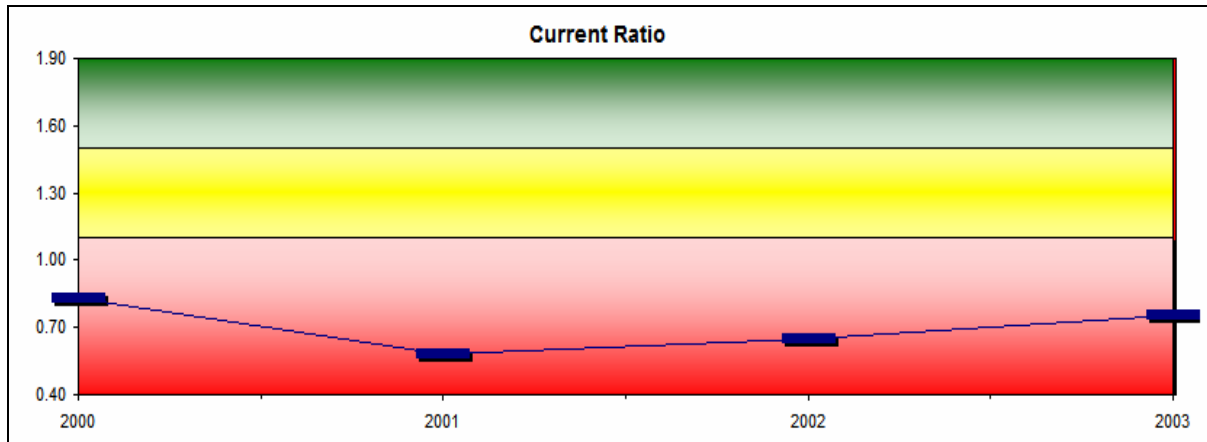
Colors green, yellow, and red are also used and represent the same assessment of performance as explained in the Health Index. In this case, Joe Farmer's Trend Index for his operation's current ratio is shaded red, indicating the trend for this ratio is generally declining over the time period selected.

Include in Ratio Report

To include ratios in the Ratio Report (to be described later) click on the box that is on the same line as the ratio. All values with a checkmark are included in the Ratio Report. To uncheck a value, simply check on the value a second time. This removes the checkmark.

GRAPH

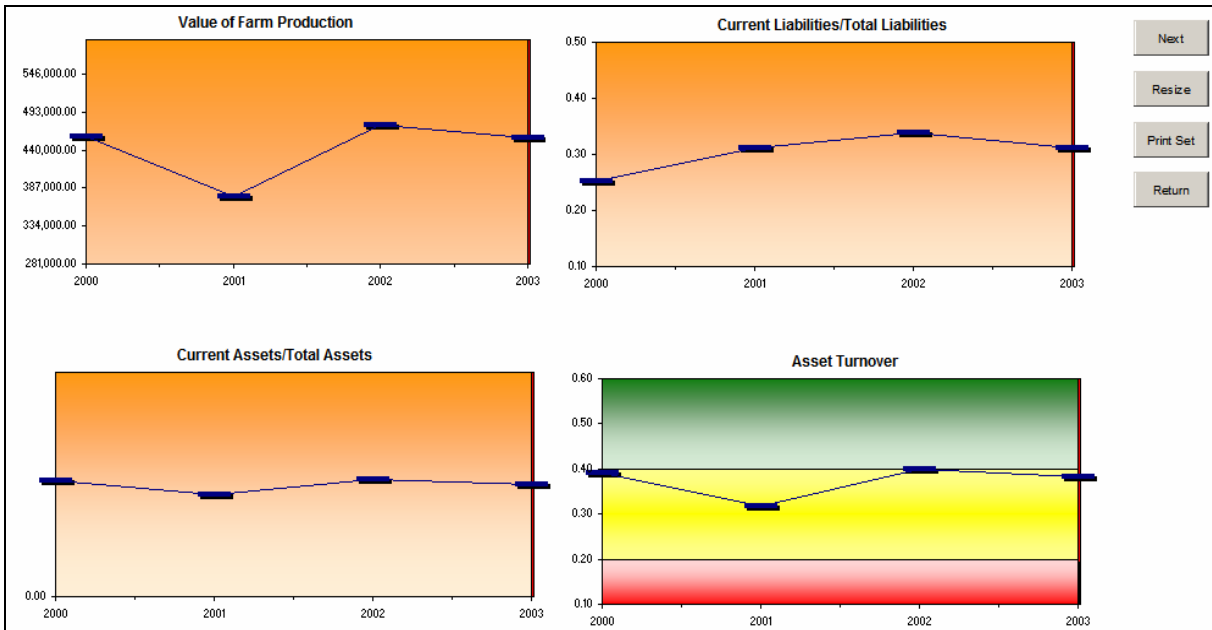
The user's row determines the ratio shown on the graph on the top of the screen. For example, when the user is on the "Current Ratio" line, a graph similar to the one below appears where the vertical axis represents the values of the ratio chosen and the horizontal axis represents the years data is entered. Moving down the spreadsheet



The graph contains a data line and shaded benchmark regions. The data line represents the calculations of the selected ratio for each year data are entered. In addition, the graph is shaded in three color regions (green, yellow, and red) to represent benchmarks for the chosen ratio and provide a visual analysis of the farm operation's level of strength. The green region represents potential strength, the yellow region indicates caution or a potential problem, and the red region suggests the measure is in the problem region

Ratio Report

This report shows the graphs for each financial ratio calculated. These are the same graphs seen in the Trend Analysis section. As seen below, four graphs appear on one page.



The buttons on the right side of the report allow the user to operate this tool.

Next Allows the user to view the remaining graphs, four at a time.

Resize Allows the user to enhance the image of the Ratio Report to fit the size of the user's computer screen.

Print Set Allows the user to print all graphs shown in the Ratio Report. Prints four graphs per page.

Return Takes the user to the Trend Analysis page.