



## Interpreting Farm Financial Ratios

*Amanda Blocker, Gregg Ibendahl, and John Anderson*

### **Introduction**

Financial ratios can be used to analyze a cotton farmer's operation over time or compare the operation to another similar operation. However, financial ratios are not answers to why a business is doing good or bad. Rather, financial ratios help in pointing out areas to examine and in asking the right questions about the business.

Through the use of ratios, cotton farmers can see specific areas in their operation that need to be adjusted. Many times a farm's operations may appear to be going well, but there may be an area that could be improved or may be causing other parts of the operation to not perform as expected (i.e., good yields, high prices, and rising land values can all mask potential problems on the farm). Calculating these ratios, the farmer can find the exact area of operations that needs improvement. This analysis can be conducted several ways.

One way is by looking at the ratio and using the accounting guidelines to determine if it is reasonable (see the table at the end of this publication). Another way is to use benchmarking systems to determine if the ratio is good or not. Benchmarking allows a farmer to compare his or her farm operation to the past or to compare his or her operation to other similar farms in the same year. The problem with these is that not every farm is the same and sometimes what is considered a good ratio for some, might be a bad ratio for others, and vice versa. Also, benchmarking only shows relative comparisons, not if the ratio is actually good or not. A good benchmarking system should be tailored to the specific farming operation. The best analysis includes examining the accounting guidelines as well as both a historical and similar farm benchmark.

One accounting guideline method is by using a system of colors to show when a ratio is good, when it's bad and when its average. This is basically a stoplight graph with three ranges for each ratio. By using this system, a farmer can establish a constant way of deciding how to improve

certain ratios, or if a certain investment would be wise for the farming operation.

### **Interpretation**

There are two types of benchmarking that can be used. The historical benchmarks are based on a farm's own history of financial records. Historical benchmarking should use book value numbers from the balance sheet when calculating the ratios. Using book values takes inflation out of the picture to get a true picture of historical performance. For example, land prices usually rise each year and if market value numbers were used then this land appreciation could make the business look artificially good. The use of book value numbers prevents this from happening.

With historical benchmarks, farmers should look for improvements in return on equity and return on assets. Also, the use of debt should decrease through time so all the solvency ratios as well as the interest expense ratio should be improving. An expanding farm might be an exception to these guidelines though.

The other type of benchmarking is to compare the farm to similar farms in the same area. This benchmarking uses market value numbers from the balance sheet. The farms being compared should be from the same year. Now, the use of market value numbers is required because the farms need to be at the same time-frame for comparison.

With cross-sectional benchmarking, the goal is to see how similar farms are doing. An ratio greatly out-of-line is cause for concern. Generally, lower than average solvency ratios and higher than average profitability are good.

Interpretation is not an exact science. There is no definite measure of how well the farm is performing based on ratios. Ratios can be used to see areas that need improvement, and see trends in the farm's operations. The following sections are suggestions in how to interpret the ratios from each major category using the accounting guidelines at the back.

### ***Liquidity***

Liquidity is a measure of how well a farm can pay its debt (the portion due within one year) and other expenses in the coming year. The ratios that measure liquidity are current ratio and working capital. These two ratios can help determine if there is enough cash to cover upcoming expenses.

The current ratio shows how well current liabilities can be covered if all the current assets were liquidated. This comparison is as a ratio. As the ratio increases, the liquidity of the farm increases. The farmer doesn't want too high a ratio though, as this indicates that not enough of the assets are going into investments that are drawing a high return. Generally a ratio of two or higher is considered good, as shown in the accounting guidelines. A ratio of one is the minimum accepted level.

Working capital is simply a way to see how much of the current assets would be left over if all of them were sold and used to pay off all current liabilities. This is like the current ratio in that the farmer wants a positive number, but not too high a number as this indicates the assets not being used properly to generate revenue. Working capital is a dollar measure and is thus difficult to compare to other farms unless the other farm is exactly the same as the first farm. Working capital is best used as a historical benchmark from the same farm.

The liquidity ratios have some limitations because they are only calculated at a given point in time. Thus, the ratio may vary in-between time. Also, the ratio is based on a year and it does not provide any indication about the ability to meet next month's bills. The biggest limitation though is the lack of accounting for unused lines of credit. Available credit can over-ride any liquidity issues. Alternatively, if no credit is available, then the liquidity ratios may understate a liquidity problem.

### ***Solvency***

Solvency is a measure of how well a farm can pay off all its debt if all assets were liquidated and used to pay all debt. Solvency basically shows how much of the farm business is owned by the farmer and how much is owned by the bank.

Solvency is measured by debt/asset ratio, equity/asset ratio, and debt/equity ratio. All three ratios are mathematically equivalent so only one of the ratios need to be used.

Debt/asset ratio can be difficult to interpret. High debt ratios can be good for certain farms if the owner has an off farm job to support his living expenses. Also, begin-

ning farmers will have higher debt/asset ratios than older farmers. High debt ratios simply mean more of the farm's assets are leveraged and that lenders have a larger stake in the business.

The debt/asset ratio shows the percentage of the farm operation owned by the lender. A desirable ratio varies between different farming operations and age of the farmer. Also, the method of farmland control will affect this ratio. The use of leases to control farmland will help avoid the use of debt capital to control farmland. This ratio is generally good when its below 30%. Ratios up to 70% may be fine in some situations. Generally, lenders are more cautious if debt/asset ratios rise above 50%. The value placed on farmland can make a big difference in the value of this ratio.

### ***Profitability***

Profitability measures the amount of profit a farm generates through its operations. It shows how well the farm uses its assets and equity to generate revenues and create a profit from those revenues.

Return on assets measures the productivity of all farm assets including debt capital. Interest expense is added back to the calculation so that farms with different financial structures can be compared. In other words, the use of debt capital is not penalized in this calculation. It's generally good when over 5%.

ROA is low when compared to other investments as it does not include land appreciation in the calculation. Given that a large percentage of farm returns are in increasing land values, ROA will naturally be low. This does not mean that farms are a bad investment, just that the ratio does not recognize this appreciation.

Rate of return on equity measures the productivity of farm equity. Thus interest expense is part of the calculation. This ratio more fully reflects the return available to outside investments. Although this ratio is still not fully accounting for land appreciation, it is not as bad as ROA as only equity is being included. This ratio should be over 10%. While a high ROE is good, it could indicate a business that has too little equity. In other words, if mostly debt capital is used to finance the business, then any profit will greatly magnify the return to equity.

Operating profit margin shows the net income from farm generated revenue. This number will vary from farm to farm based on its size of operations, but is generally good when over 35%. Operating profit margin should be examined together with asset turnover.

Net income is just net income and is really not a ratio. This number also varies and should be compared over time to previous year's net income, or to net income figures of farms of similar size and operations. However, because it is a number, comparisons to other farms are difficult unless the other farm is an exact match.

### ***Repayment Capacity***

Repayment capacity is a measure of how well the farmer can repay term debt using farm and non-farm income. Repayment capacity is measured by term debt and capital lease coverage ratio, and capital replacement and term debt repayment margin.

Term debt and capital lease coverage is a ratio that shows the funds available for payments as a percentage of the principal and interest payments. This ratio is best when over 135%, and the higher the margin is, the more easily the farmer is able to pay off the debt.

Capital replacement and term debt repayment margin is similar to the previous ratio except it is in dollars. Instead of dividing, the principal and interest payments are subtracted

### ***Financial Efficiency***

Financial efficiency measures how well the farm uses assets to generate revenues, and how effective they are at cost control. Financial efficiency is measured by five ratios: asset turnover ratio, operating expense ratio, depreciation expense ratio, interest expense ratio, and net farm income from operations ratio. The last four of these ratios must add up to 100% as these are the four parts of value of farm production.

Asset turnover ratio measures how well the farm is using assets to generate revenue. This ratio is good when over 40%. This ratio multiplied by operating profit margin basically give net farm income. Thus, farmers have two ways to increase net income: improve operating profit margin (i.e., increase the net of gross revenue) or improve asset turnover (i.e., increase how efficiently assets are used).

Operating expense ratio gives a percentage of how much of revenues go to fund operating expenses. Lower expense ratios are better but this ratio depends somewhat on the age of equipment. Thus a farmer with older equipment might have a higher than normal ratio. Usually a ratio below 60% is considered good.

Depreciation expense ratio shows the cost of capital in the farm, if the ratio is calculated properly. However this ratio is difficult to calculate exactly due to varying methods in depreciation, and market value versus cost of the equip-

ment being depreciated. This ratio should be below 10%. This ratio and the operating expense ratio tie together. A high depreciation expense ratio usually means new equipment and thus the operating expense ratio should be lower. By contrast, low depreciation means older equipment and therefore operating expenses might be higher.

Interest expense is a measure of the interest being paid by the farm. This ratio should be watched over time, and should be decreasing. This of course will change should the farm take out another loan or purchase more capital, and will make the ratio go up. After this initial rising in the ratio, it should start to decrease again. Typically this ratio should be below 10%. The interest expense ratio is a very critical ratio as it tells if a farm has too much debt. The 10% rule basically says that \$1 out of every \$10 produced on the farm is going to cover interest expense. Anything higher than this and most farms run into trouble.

Net farm income from operations is a measure of how much of the gross profit is left after the expenses have been paid. This ratio is good when it's above 20%.

### ***Downsides***

Relying on ratios alone can have many downsides to it. Ratios are only as reliable as the numbers used to calculate them. If the numbers are not calculated correctly, or the correct numbers used in the ratio calculation, then the ratio will not be correct. Thus, an accurate set of financial statements is critical.

There are other factors affecting the ratios as well. Age of the farmer and the type of farm can all affect the optimal ratio. For example, younger farmers will have more debt which will make their operations look worse than an older farmer. Farmers with multiple enterprises will tend to have better liquidity.

Comparisons to other farms can be tricky unless the other farm is exactly the same. Location, farm enterprises, and size can all affect the ratio comparison. This is in addition to farmer age.

### ***Conclusion***

Ratios can be a very beneficial part of an effective management plan. By calculating ratios and monitoring them, the farmer can see where his or her operations can be improved, and make wise decisions on how to best improve those areas. With careful calculation and monitoring, ratios can help transform the way a farm operates and increase its operating efficiency, which will generate more income for the farmer in the long run.

**Table 1. Suggested Guidelines for Farm Financial Ratios**

---

**Liquidity**

Current Ratio		2.0		1.0	
Working Capital		???		???	

**Solvency**

Debt/Asset Ratio		30%		60%	
Equity/Asset Ratio		70%		40%	
Debt/Equity Ratio		43%		150%	

**Profitability**

Net Income		???		???	
Rate of Return on Assets		5%		1%	
Rate of Return on Equity		10%		5%	
Operating Profit Margin		35%		20%	

**Repayment Capacity**

Term-Debt Ratio		135%		110%	
Capital-replacement Ratio		???		???	

**Financial Efficiency**

Asset Turnover Ratio		40%		20%	
Operating Expense Ratio		60%		80%	
Depreciation Expense Ratio		10%		20%	
Interest Expense Ratio		10%		20%	
Net Income Ratio		20%		10%	

Note: Working capital, Capital replacement margin, and Net income are three ratios that are calculated in dollars. Thus, desired levels are totally dependent upon farm size.