

An Introduction to Basic Farm Financial Statements: Income Statement

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Introduction

Tennessee agriculture is diverse and includes livestock, poultry, fruit and vegetable, row crop, nursery, forestry and ornamental farms, plus agritourism, value-added and other agricultural related enterprises. Farms vary in size from less than a quarter of an acre to thousands of acres, and the resources and goals for each farm vary. The purpose of this publication is to provide an introduction to farm income statements and demonstrate how income statements can be used by producers to assist agricultural decision makers. Regardless of farm size, enterprises, resources and ownership goals, it is important for decision makers to understand the information in income statements and how to build cash or accrual income statements for their business.

Additionally, this publication will demonstrate how to utilize basic financial ratios to analyze (and potentially improve) a farm's profitability. Accurate recordkeeping and organized financial statements allow producers to measure key financial components of their business, such as profitability, that are vital for the long-term viability of the farm. By tracking key financial indicators, businesses can evaluate progress made over time.

What is an Income Statement?

The income statement is a financial statement summarizing the revenues and expenses of a business and computes the resulting net return (profit or loss) over an accounting period, which is typically one calendar year (January 1 to December 31). Income statements can be generated to estimate income for other time intervals, for example monthly or quarterly. Typically, farm revenue occurs from the sale of livestock, produce, grains or other commodities. Other sources of revenue include payments from agricultural programs, cooperative distributions, crop insurance proceeds, custom hire income and/or value-added services. Common farm expenses are diverse and depend on the enterprises included in the farm operation, but are generally categorized into production expenses, conservation expenses, general and overhead expenses and living expenses. Most producers report farm income and expenses to the Internal Revenue Service (IRS) on a Schedule F 1040 tax form using either the accrual or cash accounting methods for the accounting period (fiscal year).

Cash and Accrual Accounting

The accrual accounting method is recommended when analyzing farm profitability. However, most producers use the cash accounting method to file income taxes. Cash accounting allows farms to balance out price volatility and sales timing to help manage revenue over time. With cash accounting, the producer records revenue when it is received and expenses when they are paid. For example, if a producer stores their soybean crop into the next accounting period, rather than immediately selling the crop, the producer would not receive payment in the same fiscal year as the production expenses were incurred. Using the cash accounting method, the producer would not record the soybeans as revenue until the cash was received from the sale. Accrual accounting recognizes income when it is earned and expenses when they are incurred. In contrast with the previous example, under the accrual accounting system the producer would record the revenue of the soybean in the same accounting period as when expenses were incurred. This is done through accrual adjustments.

While accrual accounting is slightly more complicated to calculate, it provides a more accurate measurement of farm profitability during an accounting period and allows the producer to make more informed decisions. Adjusting cash accounting to accrual accounting systems is discussed later in this publication.

Building an Income Statement

To build an income statement, cash revenue received from operations and cash expenses paid for business operations during the fiscal year (typically January 1 to December 31) is recorded. Gross cash revenue is the total cash received from the sale of crops, livestock and other farm-related income, while gross cash expenses are the cash costs incurred during the accounting period. Net cash farm profit or loss is gross cash revenue minus gross cash expenses. Table 1 is a simple example of a completed cash income statement for an operation growing soybeans and raising cattle.

Table 1. Farm Income Statement — Cash Method

Farm Income Statement - Cash Method

Farm Name: Smith Family Farms

Year: 2019

Farm Revenue - Cash

| | |
|---------------------------|------------------|
| Sale of Crops | \$379,000 |
| Sale of Livestock | \$72,000 |
| Other Farm Income | \$5,000 |
| Gross Cash Revenue | \$456,000 |

Farm Expenses - Cash

| | |
|-------------------------------|------------------|
| Chemicals | \$33,000 |
| Fertilizer & Lime | \$48,000 |
| Fuel, Oil & Filter | \$14,000 |
| Hired Labor | \$45,000 |
| Insurance Expense | \$8,000 |
| Interest Expense | \$17,000 |
| Land Rent | \$50,000 |
| Marketing Expense | \$2,883 |
| Miscellaneous Overhead | \$1,176 |
| Property Taxes | \$5,000 |
| Repairs and Maintenance | \$26,000 |
| Salt & Mineral | \$4,788 |
| Seed | \$37,000 |
| Supplemental Feed | \$18,000 |
| Utilities | \$6,000 |
| Veterinary & Medical Expenses | \$3,155 |
| Total Cash Expenses | \$319,002 |

Net Cash Farm Profit or Loss **\$136,998**

Making Accrual Adjustments

To make accrual adjustments, the producer should begin with their cash income statement and make adjustments using the farm's opening and closing balance sheet (Campbell, et al. 2020). Examples of accrual adjustments include differences in:

- beginning and ending inventories;
- beginning and ending accounts receivable;
- beginning and ending accounts payable;
- beginning and ending prepaid expenses;
- beginning and ending accrued interest;
- beginning and ending unused supplies;
- beginning and ending investment in growing crops; and
- beginning and ending depreciation (Kay, Edwards, and Duffy, 2012).

For example, beginning accounts receivable would be the dollar amount invoiced but not received on January 1 of the accounting year and ending accounts receivable would be the dollar amount invoiced but not received on December 31 of that same year. If accounts receivable were \$1,000 on January 1, but were \$1,500 on December 31, this would increase accrual adjusted income by \$500 ($\$1,500 - \$1,000$).

Accrual adjustments can be made by simply adding or subtracting either the beginning or ending balance of each category from the net cash farm profit or loss. This will result in net accrual adjusted farm income. Because farmers may not sell their entire crop in the same accounting period, this may deflate (or enhance) actual cash net farm income. By making adjustments to the cash income to account for a portion of the crop being stored as inventory (for sale outside of the accounting period when production expenses were incurred), we are more accurately quantifying profitability for the accounting period. Additional examples of accrual adjustments to both income and expenses are shown in Table 2.

Table 2. Net Farm Income Accrual Adjustments

| Net Farm Income Accrual Adjustments | | |
|---|-----------|---------------------|
| Farm Name: Smith Family Farms | | Revenue |
| Year: 2019 | | |
| Gross Cash Revenue | | \$456,000 |
| Accrual Adjustments (Assets) | | Change (+/-) |
| Less: Beginning inventories | -\$50,000 | |
| Add: Ending inventories | \$60,000 | |
| | | +\$10,000 |
| Less: Beginning accounts receivable | -\$22,000 | |
| Add: Ending accounts receivable | \$17,000 | |
| | | -\$5,000 |
| Less: Beginning supplies | -\$1,000 | |
| Add: Ending supplies | \$2,000 | |
| | | +\$1,000 |
| Less: Beginning investment in growing crops | -\$25,000 | |
| Add: Ending investment in growing crops | +\$20,000 | |
| | | -\$5,000 |
| Gross Revenue with Accrual Adjustments | | \$457,000 |
| | | Expense |
| Total Cash Expenses | | \$319,002 |
| Accrual Adjustments (Liabilities) | | Change (+/-) |
| Less: Beginning accounts payable | -\$32,000 | |
| Add: Ending accounts payable | \$35,000 | |
| | | +\$3,000 |
| Less: Beginning accrued interest | -\$3,000 | |
| Add: Ending accrued interest | \$2,000 | |
| | | -\$1,000 |
| Less: Beginning machinery depreciation | -\$60,000 | |
| Add: Ending machinery depreciation | \$72,000 | |
| | | +\$12,000 |
| Less: Beginning building accumulated depreciation | -\$10,000 | |
| Add: Ending building accumulated depreciation | \$18,000 | |
| | | +\$8,000 |
| Total Expenses with Accrual Adjustments | | \$341,002 |
| Net Farm Income From Operations | | \$115,998 |

Evaluating Your Farm's Performance Using Financial Records

After making accrual adjustments, the producer can analyze key financial ratios using information from the income statement and the balance sheet to analyze the farm's profitability and financial efficiency. These financial ratios are discussed below and the formulas for each ratio are located in Appendix B. The ratio formulas and descriptions are as defined by "Fundamentals of Agribusiness Finance" by Ralph W. Battles and Robert C. Thompson, Jr. (2000) unless otherwise cited.

Profitability

The rate of return on farm assets ratio is used to measure profitability relative to farm assets. This ratio uses net farm income from operations, which is used to exclude any items on the income statement that would be considered outside of normal, day-to-day operations, such as a gain or loss on capital assets. The farm interest expense is added back in this formula so that the rate of return can be measured on assets regardless of how they were financed. Average total farm assets are calculated from the balance sheet by adding the assets of the previous and current year and then dividing by two.

In contrast, the rate of return on farm equity ratio is used to measure profitability relative to farm equity, which is the farm owner's investment. Average total farm equity is calculated from the balance sheet by adding the equity of the previous and current year and then dividing by two.

Finally, the operating profit margin ratio shows what percent of gross revenue is earned in the form of pre-interest operating profit. This ratio reflects the farm's ability to generate revenues and control costs.

Financial Efficiency

The asset-turnover ratio measures financial efficiency by showing the farmer how many times per year assets regenerate their dollar value in the form of sales. A higher asset-turnover ratio means that assets are working more efficiently.

The operating-expense, depreciation-expense, interest-expense and net-farm-income-from-operations ratios measure financial efficiency by comparing the named expense or income category to gross revenue in the form of a percentage. A farmer should expect the operating-expense, depreciation-expense and interest-expense ratios to be relatively low, indicating that the expense categories are a small percentage of gross revenue, while the net-farm-income-from-operations ratio should be high. When added together, these four ratios should equal 100 percent because net farm income from operations plus operating expenses plus depreciation expenses plus interest expenses will be equal to gross revenue.

Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) is a formula often used by financial analysts to determine the farmer's ability to repay loans. However, it can overstate cash available because it ignores capital expenditures, which can be large in some operations.

Figure 1 illustrates strong or vulnerable ratios that a producer can compare to his or her own farm financial ratios. The farm financial ratio standards for Figure 1 are as defined by the "Farm Finance Scorecard" written by Becker, Kauppila, Rogers, Parsons, Nordquist, and Craven (2014).

Farm Financial Ratios Standards

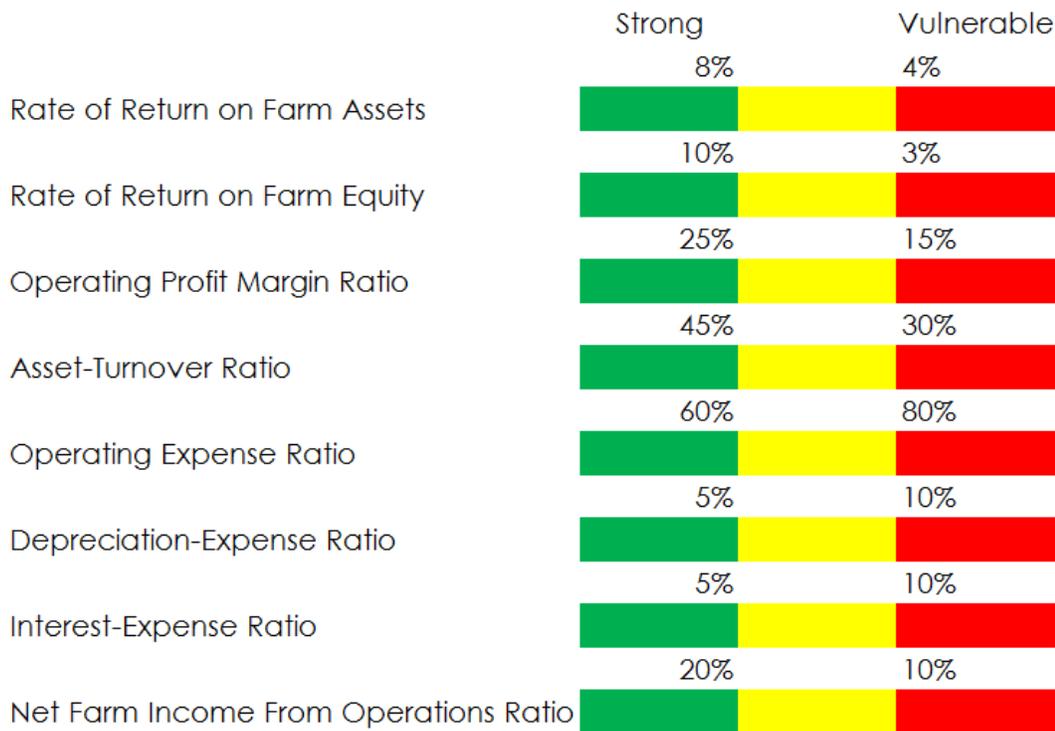


Figure 1. Farm Financial Ratio Standards.

Summary and Conclusions

Learning how to keep accurate farm financial records can benefit the producer in a number of ways. Forming an accurate income statement using the accrual method allows the producer to evaluate his or her farm's financial standing, which is information that can be beneficial when seeking loans or expanding the business. Overall, farm financial analysis can aid the producer in making management decisions that improve the long-term profitability and stability of the farm.

References

- Battles, R. and R. Thompson, Jr. 2000. "Fundamentals of Agribusiness Finance." Iowa State University Press.
- Becker, K., D. Kauppila, G. Rogers, R. Parsons, D. Nordquist, and R. Craven. 2014. "Farm Finance Scorecard." University of Vermont, Center for Farm Financial Management.
- Campbell, V., S. Smith, and C. Boyer. 2020. "An Introduction to Basic Farm Financial Statements: Balance Sheet." University of Tennessee Extension Publication, W 884.
- Department of the Treasury, Internal Revenue Service. 2016. "Farm Management." Seventh Edition. New York: McGraw-Hill. Schedule F (Form 1040).
- Department of the Treasury, Internal Revenue Service. 2016. "Farmer's Tax Guide." Pub. No. 225.
- Department of the Treasury, Internal Revenue Service. 2017. "How to Depreciate Property." Pub. No. 946.
- Kay, R., W. Edwards, and P. Duffy. 2012. "Farm Management." Seventh Edition. New York: McGraw-Hill.

Appendix A:

Terms listed and in-text as defined by Farm Management, 7th Edition by Ronald D. Kay, William M. Edwards and Patricia A. Duffy (2012) unless otherwise cited.

Account payable — An expense that has been incurred but not yet paid.

Account receivable — Income that has been earned but for which no cash payment has been received.

Accounting period — The period over which accounting transactions are summarized.

Accrual accounting — An accounting system that recognizes income when it is earned and expenses when they are incurred.

Accrued expense — An expense that has been incurred, sometimes accumulating over time, but has not been paid.

Accrued liability — A liability that has been incurred but not yet paid, such as accrued interest.

Balance sheet — A financial report summarizing the assets, liabilities and equity of a business at a point in time.

Book value — The original cost of an asset minus the total accumulated depreciation expense taken to date.

Capital asset — An asset expected to last through more than one production cycle that can be used to produce other saleable assets or services.

Capital recovery — The annualized equivalent value of the initial investment cost of a capital asset.

Cash accounting — An accounting system that recognizes income when it is actually received and expenses when they are actually paid.

Depreciation — An annual, noncash expense to recognize the amount by which an asset loses value due to use, age and obsolescence. It also spreads the original cost over the asset's useful life.

Enterprise — An individual crop or type of livestock, such as wheat, dairy or lettuce. A farm's production plan will often consist of several enterprises.

Enterprise Analysis — An analysis of one individual enterprise, in which a portion of the whole-farm income and expenses are allocated to each enterprise.

Expense — Cost incurred in the process of producing revenue. May be cash or noncash.

Feasibility analysis — An analysis of the cash inflows generated by an investment compared to the cash outflows required.

Gross cash expenses — The cash costs incurred in the process of producing revenue.

Gross cash revenues — The total cash received from the sale of crops, livestock and other farm-related income.

Gross revenue/income — The total income, cash and noncash, received from an enterprise or business, before any expenses are paid.

Income Statement — A report that summarizes the income and expenses and computes the resulting profit of a business over a period of time.

Inventory — The physical quantity and financial value of products produced for sale that have not yet been sold. Farm or ranch examples would be grain in storage, or livestock ready for sale, or that could be sold at the time the inventory is taken.

Liquidity — The ability of a business to meet its cash financial obligations as they come due.

Modified Accelerated Cost Recovery System (MACRS) — A system that calculates tax depreciation, as specified by income tax regulations.

Net cash farm profit or loss — Gross cash revenue minus gross cash expenses.

Net farm income — The difference between total revenue and total expenses, including gain or loss on the sale of all capital assets; also the return to owner equity, unpaid labor and management.

Net farm income from operations (NFIFO) — The difference between total revenue and total expenses, not including gain or loss on the sale of certain capital assets.

Prepaid expense — A payment made for an input or service prior to the accounting period in which it will be used.

Profitability — The degree or extent to which the value of the income derived from a set of resources exceeds their cost.

Revenue/income — Economic gain resulting from the production of goods and services, including receipts from the sale of commodities, other cash payments, increases in inventories and accounts receivable.

Salvage value — The market value of a depreciable asset at the time it will be sold or removed from service.

Schedule F 1040 — The form used to report farm income and expenses to the IRS (Schedule F [Form 1040]).

Solvency — The degree to which the liabilities of a business are backed up by assets; the relationship between debt and equity capital.

Statement of cash flows — A summary of the actual cash inflows and cash outflows experienced by a business during an accounting period.

Straight-line depreciation — A depreciation method that results in an equal amount of depreciation for each year of an asset's useful life.

Useful life — The number of years used to fully depreciate a depreciable asset. It may be different than the asset's productive life.

Appendix B:

Farm financial ratio formulas and descriptions are as defined by "Fundamentals of Agribusiness Finance" by Ralph W. Battles and Robert C. Thompson, Jr. (2000) unless otherwise cited.

Rate of Return on Farm Assets:

$$\frac{\text{Net Farm Income From Operations} + \text{Farm Interest Expense} - \text{Owner Withdrawals for Unpaid Labor and Management}}{\text{Average Total Farm Assets}}$$

Rate of Return on Farm Equity:

$$\frac{\text{Net Farm Income From Operations} - \text{Owner Withdrawals for Unpaid Labor and Management}}{\text{Average Total Farm Equity}}$$

Operating Profit Margin Ratio:

$$\frac{\text{Net Farm Income From Operations} + \text{Farm Interest Expense} - \text{Owner Withdrawals for Unpaid Labor and Management}}{\text{Gross Revenues}}$$

Asset-Turnover Ratio:

$$\frac{\text{Gross Revenue}}{\text{Average Total Assets}}$$

Operating-Expense Ratio:

$$\frac{\text{Total Operating Expenses} - \text{Owner Withdrawals for Unpaid Labor and Management}}{\text{Gross Revenue}}$$

Depreciation-Expense Ratio:

$$\frac{\text{Depreciation Expense}}{\text{Gross Revenue}}$$

Interest-Expense Ratio:

$$\frac{\text{Total Farm Interest Expense}}{\text{Gross Revenue}}$$

Net Farm Income From Operations Ratio:

$$\frac{\text{Net Farm Income From Operations}}{\text{Gross Revenue}}$$

Earnings Before Interest, Taxes, Depreciation, and Amortization (Kay, Edwards, Duffy, 2012):

$$\text{Net Farm Income From Operations} + \text{Interest Expense} + \text{Depreciation and Amortization Expense}$$



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