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CHAPTER 4

Financial Recordkeeping

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Chapter 4 Financial Recordkeeping

Financial Statements, Analysis, Labor Management

Chapter 4 Recordkeeping

Farm Financial Analysis, Tax and Labor Management

4.1 Introduction to Farm Financial Recordkeeping

Good financial recordkeeping is a key for long-term farm success and sustainability. Many new farmers realize financial recordkeeping is necessary for providing information needed for filing federal income taxes. However, financial records also provide vital information needed to make farm production and management decisions. Better quality financial information provided during decision making results in better decisions.

Financial register: A place where each business income and expense item may be recorded. A checkbook and/or financial software are the most common forms of a financial register for small farm enterprises.

Balance Sheet: A summary of the farm's property and assets, financial liabilities, and net worth.

Net Worth: Total assets minus total liabilities.

Income Statement: A summary of the income earned, the expenses paid, and the difference (net income) during a *specific period of time*.

Cash Flow Statement: A summary of all the cash inflows and outflows during a specific period of time.

There are two main components in a practical farm business recordkeeping system:

1. Financial register – The financial register is a record of the business revenue and expenses. Many small farms utilize a checkbook and/or financial software as the farm's financial register. Farms with many cash sales – like at farmers markets – should develop a way to track sales details for different products.

2. Financial statements – Financial statements summarize the changes in a farm's financial position. There are three main farm financial statements:

Income Statement – The income statement summarizes the revenue earned, expenses paid and difference between revenue and expenses (net income) during a specific period of time.

Cash Flow Statement – The cash flow statement is a summary of all the cash inflows and outflows during a certain period of time. A cash flow budget, or forecast, is a helpful tool to project how the farm enterprise will cover cash expenses during a future period of time.

Balance Sheet – The balance sheet summarizes the farm's property and assets alongside its financial liabilities. Total assets less total liabilities equals net worth.

Farm owners are encouraged to explore computerized record keeping software for business management. This chapter assumes that a simple paper system, or basic financial software and/or spreadsheet, is used to track financial information.

We now look at how to set up a farm financial recordkeeping system and identify what important records to keep. This will be followed by a discussion of establishing a production recordkeeping system.

How to Set Up a Farm Financial Recordkeeping System

A farm financial recordkeeping system should meet at least two goals:

1. Provide the farm owner with necessary information for filing income tax returns
2. Provide information needed to construct and analyze farm financial statements for making management decisions.

Establishing a farm financial recordkeeping system can be as simple as establishing a separate checking account for farm income and expenses. The checkbook register – whether kept as a written copy or as an electronic ledger – serves as the business's primary financial journal.

Simply keeping a record of income and expenses is not sufficient for income tax purposes. Farm expense receipts, and farm sales invoices, must be retained. As mentioned previously, a system for documenting smaller cash sales – like those made at farmers markets – will need to be developed. The table below indicates how long different kinds of documents should be kept for tax purposes, as of 2014 IRS guidelines.[1]

Sales and purchase receipts	Keep for "3 years from when your tax return was due or filed or within 2 years of the date the tax was paid, whichever is later."
Payroll information Employment taxes	Keep all employment tax records for at least 4 years after the date the tax becomes due or is paid, whichever date is later.
Asset purchases	Keep all records related to property subject to depreciation (buildings, machinery, breeding livestock, etc.) for as long as they are needed for tax purposes. This time period can extend beyond the time you own the property because past property

[1] Farmers Tax Guide. IRS. October 20, 2014. Retrieved at http://www.irs.gov/pub/irs-pdf/p225.pdf.

	depreciation can factor into the tax basis of replacement property.

These are recommendations for tax purposes; an income tax professional can provide more specific direction based on individual situations. The IRS also notes that you may need to keep records even longer for other purposes, such as satisfying documentation requirements from insurance companies and banks or other lenders.

Establish a filing system for financial documents. The system could range from a single divided notebook or folder to a file drawer, or multiple files, depending on the farm size. It is helpful to keep records according to the date.

In addition to meeting tax and legal requirements, a financial recordkeeping system should practically work for the farm business. Investing time and money into a recordkeeping system that works for your farm and office situation will make both tax accounting and farm business analysis easier in the long term.

Case Study 4.1 Setting up a Farm Financial Recordkeeping System

John and Kimberley Smith have already been keeping careful records of financial transactions related to their 45-acre farm in North Carolina. Besides earning rental income from the farmhouse and some of the pasture, they have had property tax and other expenses of owning the property. Now that the Smiths are planning to move to their farm and start a farm business, recordkeeping will become even more important.

With his background in information technology, John found it easy to investigate several computerized farm recordkeeping systems. He decided that the best option for the first couple years of the farm would be to purchase a business upgrade for their personal accounting and tax preparation software. Using a spreadsheet program, he created a simple form that divides farm income and expenses into major enterprise areas (see following page for an example of John's spreadsheet):

John and Kimberley also decide to designate a certain time each week for a farm "business meeting," where they review financial projections and any purchases made. At their first meeting, they decide to purchase a software upgrade for their personal accounting software. Kimberley also decides to ask her CPA friend to recommend a tax preparer familiar with farming.

Case Discussion

John and Kimberley Smith are thinking ahead for their farm financial recordkeeping needs. The simple forms they have set up will be adequate as they start their enterprises. However, with actual farm production yet to occur, they have overlooked

an important aspect of farm recordkeeping: tracking production information along with financial income and expenses.

How can the Smiths start keeping track of production information before they even start producing? One way is for them to keep a time log of the time they spend purchasing and establishing their enterprises. Another way is to select a recordkeeping system that easily allows them to calculate their cost of production per unit of production – like the cost per dozen eggs or pound of beef. Use Worksheet 4.1 to list the categories needed in your farm situation.

The next section will examine the different documents of farm financial analysis.

		Crops		Cattle		Other Livestock/Poultry		Timber	
DATE	Item	+	-	+	-	+	-	+	-

4.2 The Farm Balance Sheet

> **Balance Sheet**: A summary of the farm's property and assets, financial liabilities, and net worth.
>
> **Asset:** An item owned and used in the farm business.
>
> **Liability:** A debt owed by the farm.
>
> **Net Worth (Owner's Equity):** Total assets minus total liabilities.

The balance sheet, also known as the "statement of owner's equity" or "net worth statement," summarizes the farm's assets, liabilities and owner's equity. The balance sheet is based around the "accounting equation," which states that a business's assets equal its liabilities plus owner's equity.

Assets = Liabilities + Owner's Equity

Assets and liabilities may be grouped into two categories: current and fixed, or long-term. The "current" category reflects cash and items that can be turned into cash within a certain period of time. That period of time is usually the business's accounting period – about a month for many businesses, 60 to 90 days for other businesses.

For balance sheet purposes, the farm should estimate the value of livestock, machinery and equipment for what it could be sold for today. For example, a cattle farm could have 200-pounds calves that it intends to take to 500-pounds, when they will be more valuable. But the estimate of the value of the calves in the fixed asset section of the balance sheet will be what they can be sold for today. (Some farm managers will include an "intermediate" asset category to detail inventories of breeding stock and other assets that are intended to be turned into cash at a time beyond the current accounting period.)

Examples of Classes of Assets and Liabilities

	Assets	Liabilities
Current (short-term)	Cash and equivalents Accounts receivable	Accounts payable
Fixed (long-term)	Equipment, machinery Land, buildings	Notes payable on intermediate assets

Analyzing the Balance Sheet

The balance sheet is a snapshot of a farm's financial situation at a certain period in time. Here are some basic formulas and ratios that can be put to use from the balance sheet.

Liquidity refers to a farm's ability to meet all immediate financial obligations. There are two common measures of liquidity, working capital and the current ratio. Working capital tells the amount of cash available to meet the farm's current business obligations. ***Working Capital*** = **Current Assets – Current Liabilities**

Working capital is the amount available after all current bills are paid. For example, the farm may have a large checking account balance at the beginning of spring, but may have accounts payable (bills due) for spring supplies like seed and fertilizer. The working capital is the amount available for the period after bills are paid.

The second liquidity measure, the current ratio, compares current assets to current liabilities. ***Current Ratio*** = **Current Assets ÷ Current Liabilities**
The larger the current ratio, the stronger the farm's liquidity.

Solvency refers to the farm's ability to pay its debts if it sold all its assets today and paid all its liabilities tomorrow. Solvency shows both the amount of financial risk a business has and the business's capacity to borrow.

Important measures of a farm's solvency include:

Debt-to-Equity Ratio = **Total Liabilities ÷ Owner's Equity**
Equity-to-Asset Ratio = **Owner's Equity ÷ Total Assets**

According to guidelines from the Center for Farm Financial Management at the University of Minnesota, a debt-to-equity ratio of 0.43 or less indicates a strong financial position. An equity-to-asset ratio of 0.70 or greater is a generally accepted level of financial strength.

Liquidity: The ability to meet all current financial obligations.

Working Capital = **Current Assets – Current Liabilities (higher is better)**
Current Ratio = **Current Assets ÷ Current Liabilities (higher is better)**

Solvency: The ability to pay off all debts tomorrow if a business sells all its assets today.

Debt-to-Equity Ratio = **Total Liabilities ÷ Owner's Equity (*lower* is better)**
Equity-to-Asset Ratio = **Owner's Equity ÷ Total Assets (*higher* is better)**

Case Study 4.2 The Balance Sheet

John and Kimberley Smith have made one of their farm goals to improve the value of their small farm. To measure their progress toward this goal, the Smiths establish an initial balance sheet reflecting their farm's financial resources.

Smith Acres Farm Balance Sheet
January 1

Current Assets		
Cash in Bank		$ 30,000
Fixed Assets		
Farmland and Improvements (not including residence and three acres)		
Pasture:	20 acres @ $2,500	$ 50,000
Timber:	20 acres @ $1,500	$ 30,000
Barn, coop and well	2 acres @ $4,000	$ 8,000
TOTAL FARM ASSETS		**$118,000**
Current Liabilities		
Accounts Payable – Financial Software		$ 137
Long-Term Liabilities		
Farm Note		$ 10,000
TOTAL LIABILITIES		**$ 10,137**
FARM NET WORTH		**$107,863**

Case Discussion
The Smiths are starting out their farming enterprise in a strong financial position, as measured by their working capital and the ratios discussed above.

Working Capital	(Current Assets – Current Liabilities)	$30,000 - $137 = $29,863
Current Ratio	(Current Assets ÷ Current Liabilities)	$30,000 ÷ $137 = 219
Debt-to-Equity Ratio	(Total Liabilities ÷ Owner's Equity)	$10,000 ÷ $107,863 = 0.093
Equity-to-Asset Ratio	(Owner's Equity ÷ Total Assets)	$107,863 ÷ $118,000 = 0.914

Selecting enterprises with good returns on investment, and avoiding an increase in long-term debt, will help the Smiths maintain a healthy farm balance sheet.

Use the balance sheet template in Worksheet 4.2 to create the financial snapshot of your farm before you begin your new enterprise.

The next section will examine cash flow.

4.3 The Cash Flow Budget

Cash allows the farm business to grow. A cash flow *budget* is a projection of cash flows, which helps a farm operator think through cash income and expenses and measure the likelihood of success for new enterprises. A cash flow *statement* reports when cash revenue came into the business and when cash expenses were paid. Detailed, realistic enterprise budgets are needed to developing a sound cash flow statement. This section will summarize the process for constructing a cash flow budget.

Cash Flow Budget: A projection of all the cash inflows and outflows during a specific period of time.

Cash Flow Statement: A summary of all the cash inflows and outflows during a specific period of time.

Net Cash Flow: Cash inflows minus cash outflows

Cumulative Cash Flow: The accumulated cash flow over a period of time.

Estimate Revenues

The cash flow budget is usually divided by month. Estimating monthly revenues involves understanding the quantity of farm products available for sale each month as well as the price at which they are sold.

When preparing a cash flow budget, it is good strategy to use conservative estimates for prices and quantities, as advised in the enterprise budget process. That way, if prices go up, the projected cash flow situation will improve from the on-paper estimate.

Another important aspect of cash flow budgeting is to project the actual month of cash receipts. Some farm products may be produced on contract, with payments coming after production and delivery of the products. Other farm products might be delivered to a buyer used to purchasing on account, like a grocery or restaurant that pays bills once per month. Projecting the proper time that actual cash is flowing into the business will keep a "cash crunch" from coming.

Example of Estimating Revenues for a Cash Flow Budget
A cow-calf producer estimates the farm will have thirty (30) 400-lb calves to sell each February. Past years have shown that calf sales planned for February are often delayed until March due to weather. It also takes a few days for the check to come from the sale barn. Assuming a net sale price of $2.25 per pound, the lower range of calf prices at the time the farmer is projecting cash flow, how can the farm's cash flow budget reflect probable cash flow from calf sales in February and March?

The total calf sales will be $27,000. The producer could estimate 15 calves sold in February ($13,500) and 15 sold in March ($13,500) and enter these amounts on the cash flow budget. More conservative budgeting could estimate even fewer sales in February.

Estimating Expenses and Cash Flow Analysis
The cash flow budget also projects when cash expenses will occur. Most farm enterprises, especially crops, involve a significant cash outlay at the beginning of a season with a period of time before income is realized. Establishing perennial crops, like tree fruit and berries, may involve spending cash several years before crop revenues.

Developing a cash flow budget can help the farm owner identify when more cash will be needed, to pay expenses, and when cash revenues will start to be generated. Using the cash flow budget or statement, the farm can estimate when it will need to spend cash on hand or borrowed funds. Cash flow is especially important for farms starting new enterprises with large, upfront expenses.

An important point to remember about the cash flow budget is that it is not an estimate of *profitability.* For example, the cash flow budget need not include the expense of the farm owner's labor; however, hired labor expenses will be included.

Case Study 4.3 provides an example of a cash flow projection and analysis for a small farm establishing one acre of strawberries.

Case Study 4.3 Farm Cash Flow

John and Kimberley Smith are planning to raise one acre of strawberries as their first high-value enterprise on their small farm. They have $25,000 available for establishing the strawberries. They construct a cash flow budget (projection found on the next page) to determine what their additional cash needs may be for strawberries.

Case Discussion

Strawberries need to be established in the year before harvest. This cash flow projection includes the cost of the equipment that the Smiths will need to procure before beginning production: tractor, sprayer, mulch lifter, rototiller and irrigation. The projection assumes that they will rent or custom hire equipment needed for primary tillage, cover crop establishment, soil amending/fumigation and planting. The cash flow budget also reflects hired labor for most of the planting and harvest operations.

According to the projected cash flow, the Smiths will exhaust their cash reserves of $25,000 by the second month of production – mainly due to the tractor and equipment purchase. The cumulative cash flow reaches almost -$21,000 in the month before harvest. This means the Smiths would need an additional $21,000 to finance their strawberry production costs if they use their cash to purchase equipment.

This projection does indicate that the strawberry enterprise would yield a positive cash flow, including the initial machinery and equipment cost, after 18,000 pounds of strawberries are sold at the projected yield and price levels. Combined with enterprise budgets that show strawberries to be economically profitable when accounting for all costs, this is a positive sign.

The Smiths now have the financial projections that they need to make the production decision. Financing or renting the capital machinery purchases is a likely possibility. Another possibility is using the equipment purchased to generate additional cash from other enterprises.

Use the enterprise budgets developed in past chapters, combined with Worksheet 4.3, to begin developing a cash flow statement for the first year of your farm enterprise.

The next section will discuss the third key document in farm financial management: the income statement.

Smith Acres Farm: Sample Cash Flow Projection for Strawberries

Cash Flow Projection - Summary	18000	pounds	$1.50	Upick		$2.00	Prepick			
	June	July	Aug-Sept	Oct	Nov	Dec-Jan	Feb	March	April	May
Cash Inflow										
Cash on Hand	$25,000									
Strawberry Upick Sales									$3,240	$7,560
Strawberry Prepick Sales									$8,640	$12,960
Total Cash Inflow	$25,000	$0	$0	$0	$0	$0	$0	$0	$11,880	$20,520
Cash Expenditures										
Capital Purchases	$18,000	$10,000	$2,000	$3,450	$0	$0	$0	$0	$0	$0
Equipment Operations and Rent	$224	$510	$740	$55	$15	$16	$43	$412	$42	$136
Supplies and Materials	$113	$1,367	$4,817	$218	$206	$1,338	$373	$329	$686	$1,994
Hired Labor	$0	$0	$500	$0	$0	$750	$0	$500	$500	$2,000
Total Cash Expenditures	$18,337	$11,878	$8,057	$3,723	$220	$2,104	$416	$1,242	$1,227	$4,130
Net Cash Flow	$6,663	-$11,878	-$8,057	-$3,723	-$220	-$2,104	-$416	-$1,242	$10,653	$16,390
Cumulative Net Cash Flow	**$6,663**	**-$5,214**	**-$13,271**	**-$16,995**	**-$17,215**	**-$19,319**	**-$19,735**	**-$20,977**	**-$10,325**	**$6,065**

Detailed Strawberry Cash Flow Budget

Cash Flow - Strawberries (One Acre)						
	(Marketable Yield =	18,000	pounds, or	3,000	4qt buckets)	
Year One: June to January		**Capital**	**Equipment**	**Materials**	**Labor**	**Cash**
Soil Preparation, Planting, Dormant		**Purchases**	**Costs**	**Costs**	**Costs**	**Costs**
Purchase Tractor, Rototiller, Sprayer		$ 18,000.00				$18,000.00
June: Burndown, Lime, Cover Crop			$223.92	$112.60		$336.52
July: Install Trickle Irrigation, Till cover crop, irrigate, fertilize, fumigate, seed ryegrass in aisles		$ 10,000.00	$510.29	$1,367.43		$11,877.72
August: Purchase mulch lifter		$ 2,000.00				$2,000.00
Sept: Purchase transplants, transplant plugs, irrigate plugs			$739.82	$4,817.43	$500.00	$6,057.25
Oct: Replant, irrigate, disease and insect control			$54.90	$218.30		$273.20
Purchase, Install Overhead Irrigation System		$ 3,450.00				
Nov: Anthracnose spray and deer control			$14.56	$205.93		$220.49
Dec.-Feb: Bed maintenance, dormant spray, floating row covers			$15.50	$1,338.44	$750.00	$2,103.94
FIRST YEAR TOTAL		***$33,450.00***	***$1,558.99***	***$8,060.13***	***$1,250.00***	***$44,319.12***
Year Two: Preharvest						
Feb: Winter maintenance, pest control			$43.13	$373.09		$416.22
Mar: Weed, fertilize, row covers, pesticide, freeze protection, pollination			$412.46	$329.36	$500.00	$1,241.82
April: Freeze protection, pest control, fertilizer			$285.71	277.49		$563.20
TOTAL PRE-HARVEST		***$33,450.00***	***$2,300.29***	***$9,040.07***	***$1,750.00***	$46,540.36
April: Harvest labor, UPick supervision and checkout, irrigation, pest control, fertilizer			$41.74	$685.60	$500.00	$1,227.34
May: Harvest labor, UPick supervision and checkout, irrigation, pest control, fertilizer			$136.13	$1,993.89	$2,000.00	$4,130.02
TOTAL HARVEST			***$177.87***	***$2,679.49***	***$2,500.00***	***$5,357.36***

4.4 The Farm Income Statement

A farm's income statement summarizes the revenue earned, expenses paid and difference between revenue and expenses during a specific period of time. The income statement is sometimes called a "statement of profit and loss," because the difference between revenue and expenses can be called "profit" as well as "net income."

The farm's income statement is not the same as its income tax returns. The income statement reflects economic income and may be broken down into the following major parts:

Sales Revenue
Cash Expenses
Gross Income
Overhead Expenses
Net Farm Income (Before Taxes)

Income Statement: A summary of revenue earned and expenses paid during a specific period of time.

Gross Income: Sales revenue minus cash production expenses.

Overhead Expenses: Expenses that cannot be tied directly to production levels but are necessary for the business to operate. These include administrative and office utilities expense, as well as depreciation expense.

Net Farm Income Before Taxes: Gross income minus overhead expense.

An income statement is also prepared for a specific period of time; that period of time may vary. Comparing income statements from the same period of time during different years provides valuable insight into how the business is doing financially.

We will now look more closely at each part of the income statement.

Sales Revenue and Revenue Adjustments

Sales revenue reflects the amount of money earned from the sale of farm products. The sales revenue line on the income statement includes accounts receivable – product sales for which cash payment may still be due. Accounts receivable may be included as revenue on the income statement because the purpose of the income statement is to measure the returns from production during a specific period of time.

Sales revenue reports the value of the sale of farm products during a specific period of time.

Cash that has not yet been received but is owed the farm from sales during that period of time – "accounts receivable" – is included as part of the income statement's sales revenue section.

Accounts receivable are included because the income statement measures the economic value of production during a period of time, rather than actual cash receipts.

Two main adjustments to revenue are needed on the farm income statement: change in inventory and home used production.

Inventory change is calculated so that the value of farm production is counted in the year that it is produced rather than the year it is actually sold.[2] In addition, changes in market prices can change inventory values. For example, a grain farm could produce corn valued at $3.75 per bushel at harvest. An increase in corn price, to $4.00, would result in an increase in the value of the farm's corn production on the income statement.

Inventory change is calculated as part of the income statement so that the value of the farm's production can be matched with the time period in which it was actually produced.

This allows for a more accurate picture of how profitable the farm was during a given time period. Grain, for example, may not be sold until well after the time period in which grain production expenses were incurred.

Changes in market prices may also affect the value of farm inventory.

This part of the income statement can create confusion if the goal is only to measure *cash* income. Realize that the income statement is generated to reflect the actual value of a farm's production for a certain period of time. That is why **home used production** is also accounted for on the income statement. The value of farm goods produced and used or consumed by the owner is not cash income, but it should be counted in the value of farm goods produced.

[2] "Your Farm Income Statement." William Edwards. Iowa State University Extension Ag Decision Maker. http://www.extension.iastate.edu/agdm/wholefarm/html/c3-25.html

Consider the following simple illustration for a monthly income statement from a farm only selling fresh eggs:

Cash income from Egg Sales	$625.00
Home value of eggs used (5 dozen @$2.50)	12.50
Total income	$632.50

Cash Expenses and Expense Adjustments

The income statement reflects all cash expenses of farm production for the given period. Like revenues, expenses sometimes need to be adjusted to show the actual expenses incurred during a given period. A common adjustment needed is when a farm business prepays expenses or does not use all supplies purchased in a given time period for production in that time period.

Consider the egg farm example again:

Feed Purchased	1,750 lbs @$0.25		$437.50
+ Plus: Feed on hand at beginning of month	(50 lbs @ $0.25)	+	$ 12.50
- Less: Ending feed on Hand	(300 lbs @ $0.25)	-	$ 75.00
Total feed expense			$375

With this adjustment, the income statement shows the actual value of feed used to produce the products sold during a particular time period.

Overhead Expenses

The income statement also includes "overhead" expenses needed to operate the business. These include items like marketing and promotion costs, utilities and rent. Finally, since the income statement is an economic report of income and loss, a depreciation expense is included. This is usually the depreciation expense estimated on the production budget rather than the depreciation amount reported on an income tax return.

The major parts of the income statement are:

Sales Revenue

– Cash Expenses

Gross Income

– Overhead Expenses

Net Farm Income Before Taxes

Income Statement Example

Using our example of a small egg farm, a monthly income statement might look like this:

Cash income from Egg Sales			$625.00	
Home value of eggs used (5 dozen @$2.50)			12.50	
Total income				$632.50
EXPENSES				
Feed Purchased	1,750 lbs @$0.25	$437.50		
Plus: Feed on hand at beginning of month	50 lbs @ $0.25	+$ 12.50		
Less: Ending feed on Hand	300 lbs @ $0.25	-$ 75.00		
Total feed expense			$375	
Other production expenses (feed supplements, bedding, cartons)			-$100	
Overhead Expense (utilities, promotion, depreciation)			-$ 15	
TOTAL EXPENSES				$490.00
NET FARM INCOME			$142.50	

Net Farm Income: The Bottom Line

The bottom line on the income statement is "Net Farm Income." This represents the return the farm has generated before any taxes are paid. Net farm income is the return to the farm owner's labor, management and capital including land.

Using the example above, the net farm income of $142.50 represents the return to the time spent producing and marketing eggs. If the owner-operator spent an average of an hour per day caring for and managing the chickens (30 hours for the month), the average return to her labor is:

$142.50 ÷ 30 = $4.75 per hour.

This is a low hourly return that leaves no room for any return to capital – that is, money the egg-laying enterprise generates to help with the expense of facilities depreciation (repairs and upkeep) or replacing equipment (feeders and waterers).

For long-term farm sustainability, it is very important to understand the enterprise returns to labor, management, and capital. Net farm income represents this value.

Income Statement and Combination Financial Statement Analysis

Net farm income is used in many calculations measuring farm business health. These include profitability measures and ratios, debt repayment capacity and financial efficiency. Some of these calculations involve combining figures from the income statement with the balance sheet.

Measures of Farm Profitability

Rate of return on farm equity reports the rate of return on what is actually owned – the farm's average net worth. The average farm net worth is figured by taking the beginning and ending net worth for the financial period and dividing by two.

Rate of return on farm equity is calculated as:
(Net farm income – Operator labor and management value) ÷ Average farm net worth

One rule of thumb states that farms with strong financial positions will generate a 10% or greater return on farm equity.[3] However, benchmarks may vary according to the type of production and the farm's location.

Rate of return on assets is similar to the rate of return on equity:
(Net farm income + Farm interest expense – Operator labor and management value) ÷ Average farm assets

To calculate rate of return on assets, the cost of asset ownership (interest) is added to net farm income. This is because the assets generated the income that paid for the interest expense. Operator labor and management value are then subtracted from that value, and that amount is divided by the average assets (beginning plus ending assets divided by two).

An 8% return on farm assets has traditionally indicated a strong financial performance. During periods of lower commodity prices and lower interest rates, a 5% return on farm assets is commendable. Like the rate of return on equity, this may vary by enterprise type and location.

Rates of return must be compared to how the farm assets could be otherwise put to use. The farm owner could decide that selling assets and investing the capital into another business or investments that produce similar returns is a more desirable use of capital.

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[3] Center for Farm Financial Management and University of Vermont Extension. "Farm Financial Scorecard."

It must be noted that many farm owners, however, are seeking modest returns from using land and capital that they would own whether or not they are operating the farm business.

Earnings before interest, taxes, depreciation and amortization, is a value that reflects how much the farm business earned before taxes and the costs of asset ownership. This is the money available for debt repayment:

Earnings before Interest, Taxes, Depreciation and Amortization
Net farm income + farm interest expense + depreciation and amortization

Measuring Debt Repayment Capacity

Monitoring debt repayment capacity is important to farms using borrowed capital. The farm should return enough to repay its debt. Those starting a farm business should not take on more farm debt than can be repaid with all sources of funds, both on-farm and off-farm.

Debt repayment capacity adds back the non-cash expense of depreciation to net farm income and off-farm income:

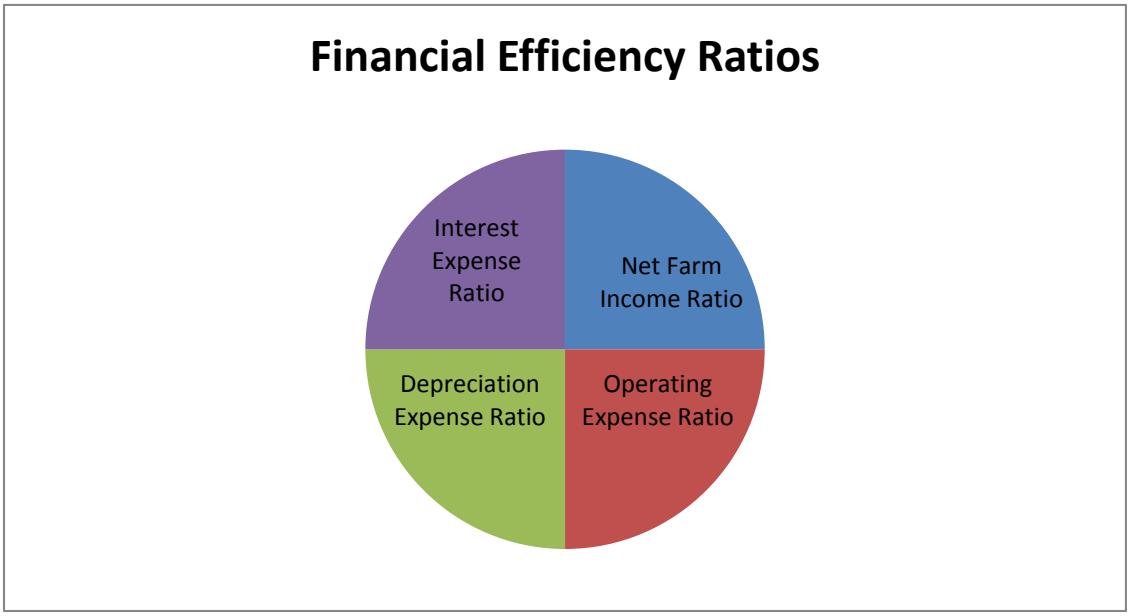
Debt Repayment Capacity =

NET FARM INCOME + Depreciation + Net non-farm income – Family living and income taxes

If the farm has term (operating, or short-term) loans, add the interest paid on these loans to find the total debt repayment capacity.

Financial Efficiency

The gross income, taken from the income statement, is used to calculate four ratios measuring how well a farm is using its financial assets to generate income. The four ratios will add up to total one.



These four ratios are calculated as follows:

Net Farm Income Ratio = Net Farm Income ÷ Gross Farm Income

Operating Expense Ratio = Operating Expenses ÷ Gross Farm Income
(Remember, operating expenses do not include interest or depreciation)

Depreciation Expense Ratio = Depreciation ÷ Gross Farm Income

Interest Expense Ratio = Farm interest ÷ Gross Farm Income

A final measure of farm efficiency is the **asset turnover ratio**:
Value of farm production ÷ Average farm assets

The higher the asset turnover ratio, the more quickly the farm would be able to replace all its assets at the given value of farm production., given the level of income. The lower the asset turnover ratio, the longer it will take the farm to replace assets.

Case Study 4.4 Income Statement and Financial Analysis

After developing detailed enterprise budgets and much planning, John and Kimberley Smith start production at Smith Acres Farm, a 45-acre property that once belonged to John's aunt. They focus on producing strawberries their first year, with one acre in production, with the irrigation capacity and plans to expand to two acres in year two. They also begin a small flock of laying hens, hoping for future egg sales from some of their UPick strawberry customers. The neighbor who had been renting the farm's pasture continues his lease, paying $400 and mowing the 20-acre pasture plot.

The Smiths financed some of their machinery and equipment purchases, opting for a two-year note at 7% interest. They hoped this would free up their cash for additional farm investment in their second production year. Their beginning and ending balance sheet for the year is below, followed by their income statement for the first year of production.

Smith Acres Farm Balance Sheet

	June 30, 2014	June 30, 2015
Current Assets		
Cash in Bank	$ 30,000	$ 27,479
Fixed Assets		
Farmland and Improvements (not including residence and three acres)		
Pasture:	$ 50,000	$ 50,000
Timber:	$ 30,000	$ 30,000

Barn, coop and well	$ 8,000	$ 8,000
Farm Machinery and Equipment	$	$ 30,000
TOTAL FARM ASSETS	**$118,000**	**$145,479**
Current Liabilities		
Accounts Payable	$ 137	$ 573
Long-Term Liabilities		
Equipment Loan		$ 27,479
Farmland Note	$ 10,000	$ 9,000
TOTAL LIABILITIES	**$ 10,137**	**$ 37,052**
FARM NET WORTH	**$107,863**	**$108,427**

Smith Acres Farm Income Statement
June 30, 2014 to June 30, 2015

Cash income		$34,675
Home value of eggs and strawberries used		250
Total income		$34,925
EXPENSES		
Operating Expenses		$21,421
Plus: Feed on hand at beginning of year	100 lbs @ $0.25	$ 25
Less: Ending feed on Hand	300 lbs @ $0.25	$ 75
Egg and strawberry cartons on Hand		$ 125
Adjusted Operating Expense		$21,226
Farm Interest Paid		1,800
Depreciation		4,180
TOTAL EXPENSES		$ 27,206
NET FARM INCOME		$ 7,719
Value of Operator Labor		$ 5,150

The Smiths also had off-farm income during this first year. After their living expenses and taxes, they had about $5,000 in income from off-farm sources that could be available for future investment in the farm or debt repayment.

Case Discussion
Smith Acres Farm generated a net farm income of $7,719 for its first year of operation. While that may seem unimpressive at first glance, financial analysis is needed to determine how the farm is doing. Remember: because the farm is in its first year of operation, we would expect it to be somewhat underperforming.

The balance sheet indicates only a small decline in working capital during the year (Working Capital = Current Assets – Current Liabilities). Even though the farm incurred a $26,000 equipment loan to establish strawberry production, strawberry income was

used to pay down most of this debt. The farm was able to cash flow most of the capital equipment expense for strawberries without using up much of the cash reserves.

Smith Acres Farm improved its net worth from $107,863 to $108,427. However, the improvement came through taking on debt; the debt equity ratio was:

Debt Equity Ratio = Total Liabilities ÷ Net Worth

June 30, 2014	June 30, 2015
10,137/107,863 = 9.4%	37,052/108,427 = 34%

This shows that the improvement in equity came through debt. But since the equipment loan is due at the end of the coming year, this does not present a large concern if the farm's debt repayment capacity is sufficient. Debt repayment capacity is calculated as:

Net Farm Income + Depreciation + Net non-farm income (less living expenses, taxes)

7,719 + 4,180 + 5,000 = $16,899

The Smiths generated more than enough cash to make their $13,000 equipment loan payment. (This also indicates they were prudent in cash flow planning!)

Profitability and Financial Efficiency

How profitable was the farm? This can be calculated by determining the rate of return on assets and rate of return on equity. Recall from earlier in this chapter:

Rate of Return on Equity

(Net farm income – Operator labor and management value) ÷ Average farm net worth

(7,719 - $5,150) ÷ 115,387 = 2.2%

The 1.0% return on equity is less than usually desirable. But what about the return on assets?

Rate of Return on Assets

(Net farm income + Farm interest expense – Operator labor and management value) ÷ Average farm assets

(7,719 + 1,800 - 5,150) ÷ 131,740 = 3.3%

While not a spectacular rate of return on assets, the higher rate of return on assets, as compared to rate of return on equity, shows Smith Acres is putting its borrowed capital

to work appropriately. We would hope to see this ratio improve, in the next year of production, as a consequence of rapidly paying down the equipment loan.

Recall the ratios that measure financial efficiency:

Net Farm Income Ratio = Net Farm Income ÷ Gross Farm Income
= 7,719 ÷ 34,925 22%

Operating Expense Ratio = Operating Expenses ÷ Gross Farm Income
(Remember, operating expenses do not include interest or depreciation)
= 21,226 ÷ 34,925 61%

Depreciation Expense Ratio = Depreciation ÷ Gross Farm Income
4,180 ÷ 34,925 12%

Interest Expense Ratio = Farm interest ÷ Gross Farm Income
1,800 ÷ 34,925 5%

These ratios may be compared with benchmarks for similar farms. The ratios for net farm income, operating expense and interest expense are all at a level regards as strong for most farms. The depreciation expense ratio is a little higher than might be preferred, but this reflects the startup year – as well as the necessary purchase of irrigation equipment, which depreciates more rapidly than tractors and equipment.

4.5 Production Recordkeeping and Labor Management

A farm's financial profitability depends on good farm production - but fantastic production may not necessarily translate to profitability. High expenses can eat into profits, and those expenses include the value of the operator's labor and management time. To compare the profitability of farm enterprises, it is necessary to track and measure all inputs used, including all labor for production and marketing.

Tracking yields and other measures of production output is also essential, especially since similar products may not be sold at the same price. Keeping good track of inputs and yields has another benefit, too. That information allows the farm business manager to calculate the value of each unit of production per hour of labor, land area and capital used to produce those farm goods.

This section will describe good production recordkeeping principles with a focus on the key farm input of labor.

Production Recordkeeping
A good production recordkeeping system will integrate a production journal with production information, similar to how a good farm financial management system integrates a source financial journal (like a checkbook) with profitability measures, like production budgets.

Many farms have found keeping the production journal made simpler by recording tasks with a handheld electronic device. But a notebook – often called a "Crop Journal" or "Livestock Journal" – still works well.

A good production journal will include a place to enter each task performed during producing the farm product, including:

Date of Task
Description of Task
Labor Time, in Hours
Equipment Time (if equipment used)
Other notes

Following are two sample production journal entries for crops and livestock.

Crop Journal

Crop: Tomatoes Location: Field 1, Two 100-ft rows

Date	Task	Labor Time	Eqt Time	Notes
4/3	Chisel plowed	.25	.25	
4/4	Tilled	.25	.25	
4/4	Spread fertilizer	.25		Hand spreader, starter fert.
4/5	Planted	3		Hand planted
	Mulched	2	2	Tractor and wagon

Livestock Journal

Location: Lower Pasture

Date	Task	Labor Time	Eqt Time	Notes
10/1	Filled salt and mineral feeder	.25	.25	Four-wheeler
10/5	Moved cows to Paddock #3	.5	.5	Gate needs fixed
10/7	Chased cows back into #3	1.5	1.0	Gate still needs fixed
10/7	Checked cows, waterer and minerals, fixed gate	1.25	.5	Used four-wheeler and fixed gate
10/14	Moved cows to Paddock #2	.25	.25	
10/16	Hay to cows	.5	.5	

Both crop and livestock production journals will indicate how much labor was used. As seen in the sample livestock journal, good production recordkeeping can also help the farm become more efficient. A gate apparently needed a fairly quick fix on the 5th, and not fixing it immediately resulted in more than an hour needed to herd the cows back into the new pasture two days later. A review of the journal when completing financial analysis can help remind of such events, and help the farm operator improve production practices.

Farm Labor

One of the most valuable aspects of the production journal is keeping track of labor used. Labor is among the farm's vital resources – especially harvest labor for high-value crops. Labor needs for the same products may vary between farms and production situations. Good planning and management of farm laborers will help the new farm enterprise to be successful.

Four types of labor are most common on U.S. farms:

Year-round full-time or part-time employees
Seasonal workers
Guest workers (H-2A Program)
Family labor (Paid and Unpaid)

Finding reliable seasonal help can be difficult. Harvesting some crops may require a degree of skill, and early morning harvest times may not appeal to some potential workers.

Not having adequate labor can result in crops harvested after their peak maturity or desirability. This results in less income to the farm enterprise. For this reason, good labor planning and management is needed. The farm manager also needs to be sure that cash flow is available to pay seasonal workers.

Estimate the Number of Hours Needed

Good projections in the enterprise budget and cash flow budget will help estimate the correct number of labor hours needed. Develop a projection of the labor hours needed, at least on a weekly basis. Labor projections may be fine-tuned based on records of actual labor used later in the season.

Farm managers will need to establish a system of good communication and scheduling with workers to coordinate labor availability based on projections. Labor needs will also change during the season, depending on weather and other variables. Some crops may not be ready for harvest when anticipated; some harvest workers will have more flexible schedules than other workers.

Hire the Right People

Businesses often fact the challenge of a small pool of potential workers. Desptie the possibility of limited access to labor, farm should select employees based upon job applicant strengths. For example, a worker for an on-farm stand or a farmers market

booth needs some level of people skills, like a friendly demeanor or the ability to address customer concerns.

Farms should conduct interviews for potential employees to identify strengths and weaknesses. More information on interviewing potential workers and good hiring practices is available through local small business development offices.

Retain Reliable Workers

Retaining quality employees is a mark of successful businesses. Paying reasonable wages and raising wages or providing bonuses based on experience and performance can help. A policy of employee discounts or free products can also provide incentive, particularly for part-time employees. Providing employees with meals can also help build morale and make working on the farm attractive, especially for part-time workers.

Reliable workers also help improve the farm's efficiency. For example, a worker who is experienced in crop planting or pruning – or a harvest worker who is able to harvest crops faster – is a better value for the wage paid than workers who are unable to produce efficiently.

Understand Potential Employment Tax Liabilities

Hiring employees can create the possibility of additional tax obligations for the farm business. However, there are some exemptions under North Carolina law for temporary farm workers; farms in North Carolina *could* be exempt from *certain* employment taxes. Always check with your employment or income tax professional for any tax related concerns.

Case Study 4.5 Farm Labor Planning and Management

John and Kimberley Smith are planning a UPick and retail strawberry enterprise. They plan to sell about 40% of their 1-acre plot as UPick and sell the other 60% from their farm stand or at a farmers market. Their plan is to have hired workers help with most of the picking for the pre-picked sales while they will do the selling and UPick supervision.

John and Kimberley plan to contribute up to 60 hours per week, between the two of them, during harvest. They think they will also need some planting help. To estimate how much labor they will need to hire, they develop the following labor schedule, by month.

Strawberry Labor Requirements – 18,000 pounds

Month	Task	Total	Owner	Hired
June – Preplant	Tillage, Cover crop	15	15	
July-August	Preplant tillage	10	10	
September	Assemble irrigation, transplant	50	10	40
October	Replant and manage	10	10	
Nov-Dec	Clean, weed beds; remove runners	60	20	40
January	Manage, weed beds	46	16	30
Feb	Pull plants through plastic, remove row covers, etc.	40	15	25
March	Weeding and row cover management	50	25	25
April	Preharvest management	12	12	
April – Wk 3	UPick Supervision and Checkout	12	12	
April – Wk 3	Prepick Harvest	25		25
April – Wk 4	UPick Supervision and Checkout	16	16	
April – Wk 4	Prepick Harvest Labor	35	10	25
May – Wk 1	UPick Supervision and Checkout	20	20	
	Prepick Harvest	60	10	50
May – Wk 2	UPick Supervision and Checkout	25	25	
	Prepick Harvest	45	5	40
May – Wk 3	UPick Supervision and Checkout	20	20	
	Prepick Harvest	35	5	30
May – Wk 4	UPick Supervision and Checkout	12	12	
	Prepick Harvest	35	5	30
	Postharvest and Mgt.	20	20	
TOTALS		653	283	360

Case Study 4.5 Discussion

Determining labor needs can be transferred from a detailed enterprise budget. By putting numbers and dates to their labor requirements for strawberries, John and Kimberley Smith have identified when they will need to hire workers. One surprise for the Smiths is the amount of labor needed to establish and care for the strawberries during the winter months.

Like any other farm, the Smiths will be able to fine-tune their hired labor needs as the farm generates actual production information for strawberries. But having a detailed estimate will help them plan for the cash labor expenses associated with their new enterprise.

Use the labor planning worksheet at the end of this chapter to plan out labor needs for the new farm enterprise that you are considering.

Chapter 4 Summary

Farm recordkeeping involves more than just keeping the financial information necessary for filing income taxes. Keeping good records helps the farm analyze the profitability of different enterprises and plan for future production. A good farm recordkeeping system, which combines financial with production information, is also of value in planning supply and labor needs for future years.

Cash flow planning is very important as it allows the farm to determine periods of cash surplus and periods when cash is needed for expenses. A cash flow budget will help forecast how the new enterprise will impact the farm's cash situation; if financing is being sought for the new enterprise, the farm lender will need to understand the enterprise cash flow to evaluate financing.

The income statement and balance sheet are tools the farm manager uses to evaluate farm financial sustainability. The income statement, which measures profitability, incorporates the value of the operator's labor to provide a truer financial picture during a certain period of time. The balance sheet reflects the overall financial "snapshot" of the farm. Using some basic financial ratios, the farm operator can use figures from both the balance sheet and income statement to evaluate how the farm's financial position is changing.

Labor is a critical resource for farm production. Maintaining good records of the labor used, along with forecasting labor needs for new enterprises, allows the farm operator to not be caught off guard during times of increased labor requirements for a new enterprise.

Good financial recordkeeping using a system suited to both the farm and farm operator is a key component in the success of new farm enterprises.

Chapter 4 References and Resources

"Developing and Implementing Sound Hiring Practices." Suzanne Karberg, Purdue University Cooperative Extension Service.
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"Establishing and Using a Farm Financial Record-Keeping System." Dalton C. Gerloff and Robert W. Holland, Jr. The University of Tennessee Agricultural Extension Service.
http://www.extension.org/pages/11140/establishing-and-using-a-farm-financial-record-keeping-system

"Farm Financial Statements." William Edwards. Iowa State University Extension Ag Decision Maker.
http://www.extension.iastate.edu/agdm/wholefarm/html/c3-56.html

"Farm Finance Scorecard." Center for Farm Financial Management / University of Vermont Extension
http://www.cffm.umn.edu/Publications/pubs/FarmMgtTopics/vermont.pdf

Chapter 4 Take-Home Assignment

Complete the worksheets to develop financial statements and labor availability estimates for your new farm enterprise.

Chapter 4 Terms and Definitions

Financial register – A place where each business income and expense item may be recorded. A checkbook and/or financial software are the most common forms of a financial register for small farm enterprises.

Balance Sheet – A summary of the farm's property and assets, financial liabilities, and net worth.

Net Worth – Total assets minus total liabilities.

Income Statement – A summary of the income earned, the expenses paid, and the difference (net income) during a specific period of time.

Cash Flow Statement – A summary of all the cash inflows and outflows during a specific period of time.

Cash Flow Budget – A projection of all the cash inflows and outflows during a specific period of time.

Net Cash Flow – Cash inflows minus cash outflows

Cumulative Cash Flow – The accumulated cash flow over a period of time.

Income Statement – A summary of revenue earned and expenses paid during a specific period of time.

Gross Income – Sales revenue minus cash production expenses.

Overhead Expenses – Expenses that cannot be tied directly to production levels but are necessary for the business to operate. These include administrative and office utilities expense, as well as depreciation expense.

Net Farm Income Before Taxes – Gross income minus overhead expense.

Worksheet 4.1 Farm Financial Record Book Setup

A farm financial recordkeeping system should be divided by farm enterprise in order to compare and evaluate different enterprises against each other.

List the products that you will be producing on your farm. Then develop a financial journal for your farm, either using a form similar to the example presented in 4.1 or an electronic or printed farm record book.

Worksheet 4.2 Farm Balance Sheet

Use the form below to develop a starting balance sheet for your farm.

Farm Balance Sheet

Date _____

Current Assets	
Cash in Bank	$_____
Accounts Receivable	$_____
Crop and/or Market Animal Inventory	$_____
Fixed Assets	
Farm Machinery and Equipment	$_____
Animals/Breeding Stock	$_____
Buildings	$_____
Land	$_____
TOTAL FARM ASSETS	**$**_____
Current Liabilities	
Accounts Payable	$_____
Long-Term Liabilities	
Notes Payable	$_____
Farm Mortgage	$_____
TOTAL LIABILITIES	**$**_____
FARM NET WORTH	**$**_____

Worksheet 4.3 Cash Flow Projection

Cash Flow Projection - Summary										
	Jan-Feb	March	April	May	June	July	August	Sept	Oct	Nov-Dec
Cash Inflow										
Cash on Hand										
Sales_____										
Sales_____										
Total Cash Inflow										
Cash Expenditures										
Capital Purchases										
Equipment Operations and Rent										
Supplies and Materials										
Hired Labor										
Total Cash Expenditures										
Net Cash Flow										
Cumulative Net Cash Flow										

Worksheet 4.4 Farm Income Statement
_____, 20__ to _____, 20__

Cash income		$_____
Home value of farm products used		$_____
Total income		$_____
EXPENSES		
Operating Expenses	$_____	
Plus: Beginning Inventory operating supplies	$_____	
Less: Ending Inventory operating supplies	$_____	
Adjusted Operating Expense		$_____
Farm Interest Paid		$_____
Depreciation		$_____
TOTAL EXPENSES		$_____
NET FARM INCOME		$_____
Value of Operator Labor		$_____

Worksheet 4.5 Farm Labor Projection

Strawberry Labor Requirements – 18,000 pounds

Month/Week	Task	Total	Owner	Hired
TOTALS				