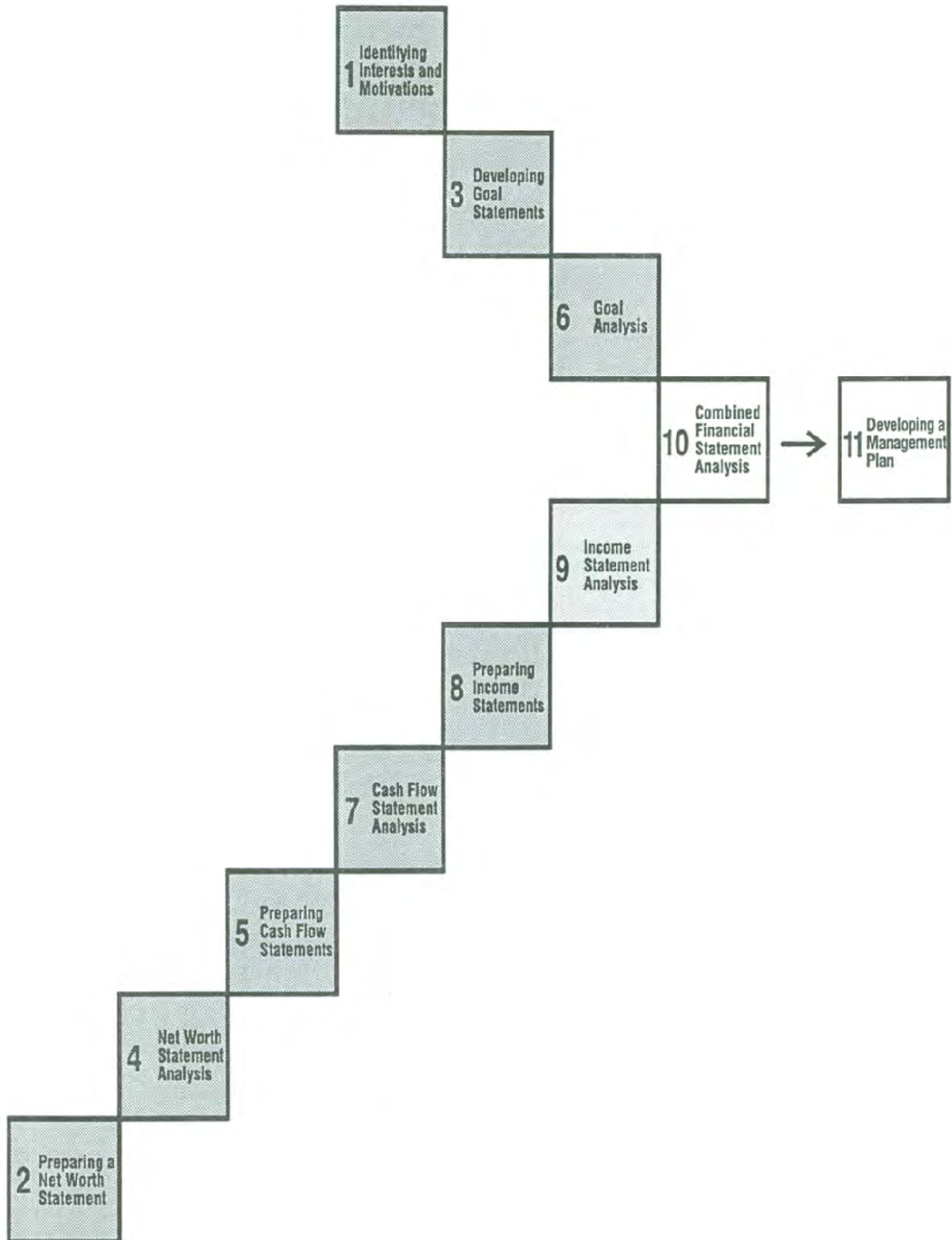




COMPREHENSIVE GUIDE TO FARM FINANCIAL MANAGEMENT

Module 9: Income Statement Analysis

Course Map



Income Statement Analysis

Introduction

Do you know if your farm business is making a profit? Cash Income Statements often present a sense of false security because they do not reflect the real profit produced in a year. Accrued Income Statements provide a “true” measure of business profitability and allow the manager to analyze the operation on a profitability basis. This information can be used to determine the prospects for future expansion for both the farm and the family.

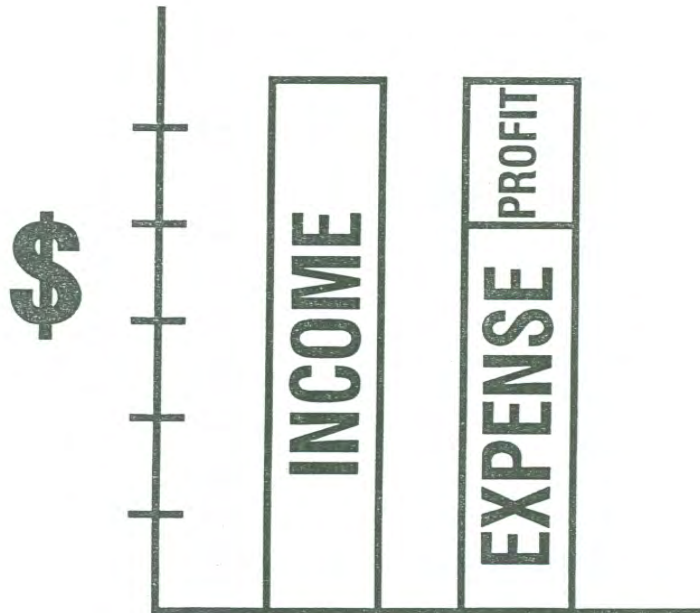
Performance Objectives

Upon completing the material in this module you will be able to:

- identify uses of income statements;
- identify benefits of Accrued Income Statements over Cash Income Statements;
- calculate earning performance measures based on your Accrued Income Statement; and
- determine your capacity for debt servicing.

Profitability - Net Cash Farm Income vs. Accrued Net Farm Income

Income statements are often called Profit and Loss Statements because their primary use is to determine profits (or losses) generated by the business over a period of time. Profitability measures the extent to which a business generates a surplus of revenue over expense from the use of its resources.



Some people (not just farmers) think that because they paid income tax last year or because all their bills are paid and their bank account has a positive balance, that their business is profitable. Are these good measures of profitability? Let's see.

In the previous module you determined that the Shady Bend Farm had a Net Farm Cash Income of \$22,833. However, when examining the Accrued Net Farm Income for the Shady Bend Farm, you find that it is slightly more (\$25,387).

What is the reason for this difference between Net Farm Cash Income and Accrued Net Farm Income? Let's examine the Shady Bend Farm's Accrued Income Statement a little closer.

In the accrued income section the crops inventory had a net decrease of \$4,650 in the year 20X1. You could say that the Shady Bend Farm produced less (in terms of crop production) than it actually sold (as reflected in cash income).

Livestock inventory (market and breeding stock combined) increased by \$25,375 (remember, the Shady Bend Farm made a breeding stock purchase of \$25,000). In this case you could state that the Shady Bend Farm produced more than it sold.

Ending accounts receivable are \$1,000 less than they were at the beginning of the year resulting in a net decrease to Farm Cash Income. As well, \$450 of farm produce was used in the home.

The net effect of these adjustments is that Accrued Farm Income is greater than Farm Cash Income by \$20,175. The increase is due mainly to the increase in value of livestock inventory over the period.

Total Farm Cash Income			\$283,588
+ Ending	Crops Inventory	+ \$26,100	
- Beginning	Crops Inventory	- \$30,750	
+ Ending	Livestock Inventory	+ \$60,250	
- Beginning	Livestock Inventory	- \$34,875	
+ Ending	Accounts Receivable	+ \$9,000	
- Beginning	Accounts Receivable	- \$10,000	
	+ Value of produce used in the home	+ \$450	
Total Adjustments		+ \$20,175	+ \$20,175
ACCRUED FARM INCOME			\$303,763

In the accrued farm expense section the value of ending supplies inventory is less than that of beginning supplies inventory by \$1,063. More supplies were used than were purchased (as reflected in Farm Cash Expense). Therefore, Accrued Farm Expense is increased.

There is a difference (\$250) in the value of beginning and ending accounts payable. The value of beginning accounts payable accrues (matches) to a previous period. Cash payments on these accounts (represented in Farm Cash Expense) does not match with goods produced in this period, while the value of ending accounts payable does. The net effect of these differences is an increase to Farm Cash Expense.

The same theory would hold true for the difference between the values of beginning and ending accrued interest. In this case there is a net decrease to Farm Cash Expense of \$192.

The major adjustment in the accrued farm expense section is a \$16,500 charge for depreciation (don't confuse this with capital cost allowance).

Total Farm Cash Expense			\$260,755
- Ending	Supplies Inventory	- \$2,600	
+ Beginning	Supplies Inventory	+ \$3,663	
+ Ending	Accounts Payable	+ \$4,000	
- Beginning	Accounts Payable	- \$3,750	
+ Ending	Accrued Interest	+ \$3,589	
- Beginning	Accrued Interest	- \$3,781	
+ Depreciation		+ \$16,500	
Total Adjustments		+ \$17,621	+ \$17,621
		ACCRUED FARM EXPENSE	\$278,376

If you examine the beginning and ending Net Worth Statements for the Shady Bend Farm, you find in the intermediate assets section that the fair market value of machinery and equipment was reduced by \$7,000 over the period. In the fixed assets section, you find that the fair market value of buildings was \$9,500 less at the end of the year.

Intermediate		
	Beginning	Ending
Breeding Stock	\$13,875	\$40,250
Machinery and Equipment*	\$71,000	\$64,000
Personal	\$15,000	\$14,000
Stocks & Bonds	\$2,500	\$2,750
Other	\$13,400	\$13,000
Total Intermediate Assets	\$115,775	\$134,000
Fixed		
	Beginning	Ending
Land	\$202,680	\$202,680
Buildings*	\$124,500	\$115,000
RRSPs	_____	
Co-operative Equity	\$2,261	\$2,478
Market Quota	_____	
Personal	_____	
Non-Farm Real Estate	_____	
Total Fixed Assets	\$329,441	\$320,158

***A loss in value over the year.**

While depreciation is a non-cash cost, it is a real cost for the wear and obsolescence of production assets in the production process. Businesses need to generate sufficient income to allow for depreciable asset replacement. If not, the equity of the business (partially represented by the value of depreciable assets) is eroded over time.

Total adjustments in the accrued farm expense section is a net increase to Farm Cash Expense of \$17,621 to produce an Accrued Farm Expense of \$278,376. This figure is due mainly to a charge for depreciation and a decrease in ending value of supplies inventory.

Total Farm Cash Expense			\$260,755
- Ending	Supplies Inventory	- \$2,600	
+ Beginning	Supplies Inventory	+ \$3,663	
+ Ending	Accounts Payable	+ \$4,000	
- Beginning	Accounts Payable	- \$3,750	
+ Ending	Accrued Interest	+ \$3,589	
- Beginning	Accrued Interest	- \$3,781	
+ Depreciation		+\$16,500	
Total Adjustments		+\$17,621	+ \$17,621
ACCRUED FARM EXPENSE			\$278,376*

***The real cost of production.**

We have found that although adjustments in the accrued expense section of the Accrued Income Statement have increased expense, adjustments in the accrued income section have increased income more. That is the reason for the Accrued Net Farm Income of the Shady Bend Farm to be \$2,554 more than its Net Farm Cash Income.

Accrued Income Statement

Name: Shady Bend Farm

Period Covered: Jan. 1 to Dec. 31, 20X1

Total Farm Cash Income		\$283,588
+ Ending	Crops Inventory	+ \$26,100
- Beginning	Crops Inventory	- \$30,750
+ Ending	Livestock Inventory	+ \$60,250
- Beginning	Livestock Inventory	- \$34,875
+ Ending	Accounts Receivable	+ \$9,000
- Beginning	Accounts Receivable	- \$10,000
+ Value of produce used in the home		+ \$450
Total Adjustments		+ \$20,175
ACCRUED FARM INCOME		\$303,763
Total Farm Cash Expense		\$260,755
- Ending	Supplies Inventory	- \$2,600
+ Beginning	Supplies Inventory	+ \$3,663
+ Ending	Accounts Payable	+ \$4,000
- Beginning	Accounts Payable	- \$3,750
+ Ending	Accrued Interest	+ \$3,589
- Beginning	Accrued Interest	- \$3,781
+ Depreciation		+ \$16,500
Total Adjustments		+ \$17,621
ACCRUED FARM EXPENSE		\$278,376
ACCRUED NET FARM INCOME		\$25,387

The lesson to be learned here is that Cash Income Statements are not reliable measures of business profitability. **Accrued Income Statements provide a true measure of business profitability and should be used as the basis for farm business management decisions.**

Uses of the Cash Income Statement

In the previous module you learned that the Cash Income Statement summarizes farm operating income received as cash and farm operating expense paid by cash. You also learned that Net Farm Cash Income is not a reliable measure of business profitability.

Cash Income Statements are often chosen because of their simplicity of preparation and the flexibility that they provide for tax management. However, because inventory changes and depreciation are not accounted for in the Cash Income Statement, Net Farm Cash Income is not a true measure of business profitability. As illustrated previously, high Net Farm Cash Income could result from a reduction of inventories but the farm could actually be losing money. This presents a sense of false security which may cause the farmer to make unwise management decisions.

Cash Income Statements are best used for income tax management. Using them as the basis for other farm management decisions such as production, marketing, expansion, etc. could produce disastrous results. In fact, many management specialists believe that use of the Cash Income Statement in the management process has resulted in many poor farm business management decisions.



The Accrued Income Statement - Identifying Performance

The Accrued Income Statement produces the truest measure of business profitability. It is really a measure of financial productivity of the farm for the accounting period.

When you have determined that your farm made a profit (or a loss) as indicated in your Accrued Income Statement, what do you do with this information? Most likely your first thoughts would focus on the acceptability of the profit level indicated. **As a financial manager, are you satisfied with this level of Accrued Net Farm Income?**

There are several other questions that need to be considered as well:

- Does it meet your expectations?
- How does it compare with similar farms in your area?
- Is there room for improvement?
- Will it be sufficient to meet debt payments?
- Does it provide for family living expenses?
- Will you have funds to re-invest in the farm for growth?
- Will you have funds for the replacement of depreciable assets?
- Will you be able to save funds for retirement?
- Is there a reasonable return for your labour and management?
- Is there a reasonable return for the assets employed on the farm?
- Is there a reasonable return for the equity in the farm?

Profitability - it is what you strive for in the management process. If you are not satisfied with the profitability level (as indicated by Accrued Net Farm Income), review the income and expense sections of your Cash Income Statement and Accrued Income Statement to gain more insight into the returns and costs associated with your business.

Going through a “question process”, consider the following to identify why Accrued Net Farm Income was low:

Was it due to poor production?

- Was poor production due to a management controllable or uncontrollable factor (a mis-application of fertilizer versus a freak frost that reduced yields)?
- Was there adequate production insurance coverage?
- How can production be improved in the future?

Was it due to poor prices?

- Were low prices received due to poor quality of production or poor marketing?
- How can income be increased?

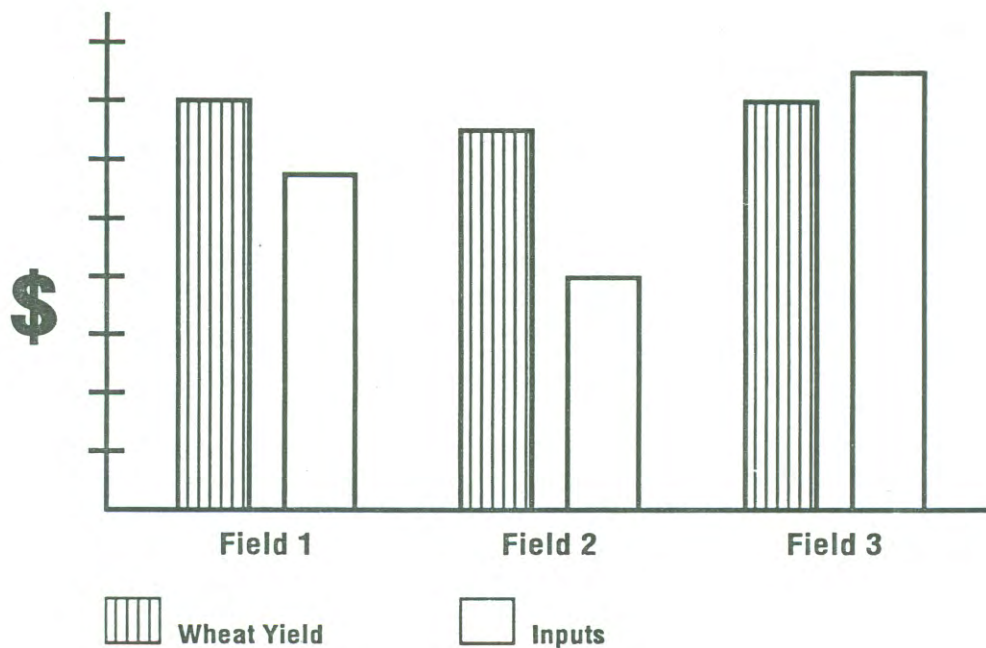
Was it from high production expenses?

- Were expenses normal?
- Was there an abnormally high increase in some areas due to unforeseen events (a major equipment repair)?
- Can production expenditures be reduced without reducing yield?

Look at the overall operation of the business.

- Are you maximizing the use of resources in the production process?
- Are you able to expand or switch to other enterprises to improve profitability?

Strive for maximum economic yield rather than maximum yield. Maximum yields do not necessarily mean maximum profits. The cost of extra inputs to produce extra yield is not always offset by a corresponding increase in income and therefore profitability is reduced. For example, why spray an entire field with a wild oat herbicide when only the low spots are infested? Know your production costs and the income associated with them. Then you can determine the economic threshold of extra inputs.



Earning Performance Measures of the Accrued Income Statement

The Accrued Income Statement does provide the opportunity to mathematically analyze earning performance (profitability) of the business based on the return to capital invested.

In order to carry out this analysis, a charge for the farm's unpaid labour and management (supplied by the operator and his family), is deducted from Accrued Net Farm Income. The resultant figure reflects income earned from investment in farm assets rather than from a combination of labour and investment.

Determining a charge for this unpaid family labour and management is not an exacting process. Some prefer to use an arbitrary figure they deem acceptable, while others will determine what it would cost to hire comparable services. A fair estimation is to use family living costs and that is the method illustrated in this course.



Return to Assets

Businesses invest in assets in order to generate a return. In the module on the preparation of the Net Worth Statement, you identified that both owners (through their equity) and creditors (through liabilities) have financed the business assets. Since term loan interest is already deducted as an expense in the determination of Accrued Net Farm Income, to fairly determine the earnings generated by total business assets (those financed through equity and liabilities), subtract the value of unpaid labour and add the amount of term interest to Accrued Net Farm Income.

Return to Assets = Accrued Net Farm Income — Unpaid Labour + Term Interest

In order to calculate a return to assets three figures are required:

- the value of Accrued Net Farm Income found in the Accrued Income Statement
- a value for unpaid operator and family labour
- the value of term loan interest to be paid this year found in the Intermediate and Long Term Liability Listing

Let's look to the Shady Bend Farm for an example. In Module 8 (page 8-27) you determined the Accrued Net Farm Income for the Shady Bend Farm to be \$25,387. In the liability listing for the Shady Bend Farm (pages 2-47 and 2-48), you find that term interest due in the year 20X1 is \$16,969. Let's also assume that the Shady Bend Farm will make a \$500 interest payment on the breeding stock loan taken out in the second quarter. If family living expense of \$24,000 is used as a charge for unpaid labour, you can determine a return to assets:

$$\begin{aligned} \text{Return to Assets} &= \text{Accrued Net Farm Income} - \text{Unpaid Labour} + \text{Term Interest} \\ \text{Return to Assets} &= \$25,387 - \$24,000 + \$17,469 = \$18,856 \end{aligned}$$

The assets of the Shady Bend Farm returned \$18,856 for their use in the production process.

Percent Return to Assets

To facilitate comparison to other farms of similar nature or to your own farm over a period of years, it is best to express the Return to Assets as a proportional relationship (expressed as a percentage) between the Return to Assets and the value of the beginning assets.

$$\text{Percent Return to Assets} = \frac{\text{Return to Assets} \times 100}{\text{Beginning Assets}}$$

Note that this formula uses the value of beginning assets as the denominator. These were the assets used in the production process to generate a return. It would be erroneous to use the value of ending assets because it reflects depreciation of assets used in the production process. The value of beginning assets (those used in the production process) is found in the Net Worth Statement (page 2-49). The Percent Return to Assets for the Shady Bend Farm is:

$$\text{Percent Return to Assets} = \frac{\text{Return to Assets} \times 100}{\text{Beginning Assets}} = \frac{\$18,856 \times 100}{\$514,354} = 3.7\%$$

The production assets of the Shady Bend Farm generated a return of 3.7% in the production process.

Exercise 21

Determine the Return to Assets and the Percent Return to Assets for the Blakes. Assume that their family living cost of \$25,859 is a reasonable estimate for unpaid labour.

Compare your answers with those given on page 9-35.

Return to Assets =

Percent Return to Assets =

Return to Equity

A Return to Equity for investment in business assets can also be calculated. Since Accrued Net Farm Income includes an interest charge for liabilities (assets financed by others), a Return to Equity (assets financed by the owner) can be calculated directly by subtracting unpaid labour from Accrued Net Farm Income.

$$\text{Return to Equity} = \text{Accrued Net Farm Income} - \text{Unpaid Labour}$$

In order to calculate a return to equity two figures are required:

- the value of Accrued Net Farm Income found in the Accrued Income Statement
- a value for unpaid operator and family labour

Return to Equity for the Shady Bend Farm (using family living expenses as an estimate for unpaid labour) would be:

$$\text{Return to Equity} = \$25,387 - \$24,000 = \$1,387$$

This is an absolute measure which does not allow for comparison between similar farms or within the Shady Bend Farm over a period of years. It is however, required to calculate a ratio between it and the value of the owner's beginning equity.

Percent Return to Equity

Return to Equity can be calculated as a relative measure (a ratio) by determining the proportional relationship between it and the value of the owner's beginning equity as found in the beginning Net Worth Statement (see page 2-49).

$$\text{Percent Return to Equity} = \frac{\text{Return to Equity} \times 100}{\text{Beginning Equity}}$$

Remember, use the value of beginning equity. It was used in the production process. Ending equity is that which remained after production was completed.

Let's determine the Percent Return to Equity for the Shady Bend Farm.

$$\text{Percent Return to Equity} = \frac{\text{Return to Equity} \times 100}{\text{Beginning Equity}} = \frac{\$1,387}{\$318,927} \times 100 = .4\%$$

The Shady Bend Farm generated a .4% return on its equity in business assets in the year 20X1. This ratio can be calculated every year to provide a method to measure the change in earning performance of owner's equity over time.

Historically, the Percent Return to Assets and Equity for farming operations has been very low. This acceptance of this relatively low return can be explained by two major factors. First and foremost, much investment in agriculture (and other businesses) is made on a speculative basis. Managers are willing to accept a low return on investment if there are prospects of an appreciation of asset values. In agriculture this would primarily take the form of an increase in land values. Second, while we have instructed you to prepare a Net Worth Statement based on current fair market values of your assets, that value may be substantially less than the amount of cash you actually committed to purchasing those assets. There could be an appreciation in the value of your land if you purchased it some time ago. Third, farming operations have traditionally passed down through the generations with little or no cash required for the transfer of title of the assets.

Exercise 22

Determine the Return to Equity and the Percent Return to Equity for the Blakes. Assume that their family living cost of \$25,859 is a reasonable estimate for unpaid labour.

Compare your answers with those given on page 9-36.

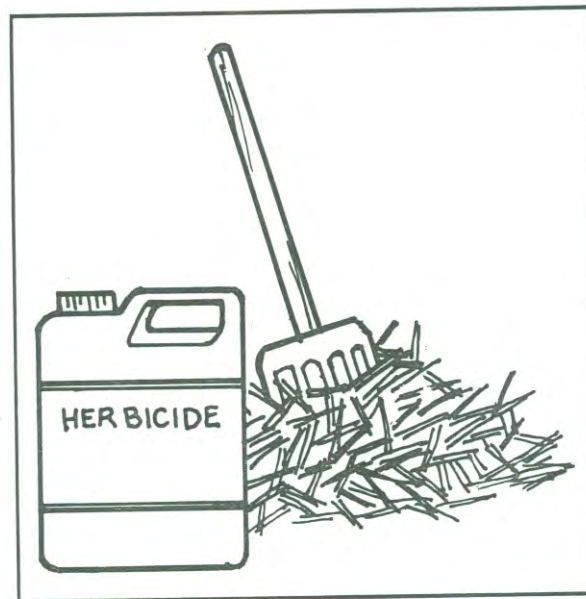
Return to Equity =

Percent Return to Equity =

Other Earning Performance Measures

The Accrued Income Statement can also be used to analyze returns and costs of production on a per unit of production basis (per acre, per head, etc.). For example, you can determine the gross value of crop produced per acre and then compare it to industry standards for similar farms in your area. Similarly, production costs can be calculated on a per unit basis and be compared not only with similar farms but also against previous costs for your own farm.

If the operation being analyzed is a mixed farm (as is the case with our examples here), or if you wish to analyze costs and returns within an enterprise, there needs to be an allocation of income and expense among the areas being studied. This process, called enterprise analysis, is not dealt with in this course. If you wish to learn more about enterprise analysis, contact your Regional Farm Business Management Specialist.



Exercise 23

Determine a Return to Assets, Percent Return to Assets, Return to Equity and a Percent Return to Equity for your operation using the worksheet found at the end of this module.

When you have prepared your figures, you may wish to attach the worksheet to the Farm Business Planner directly.

Debt Service Capacity

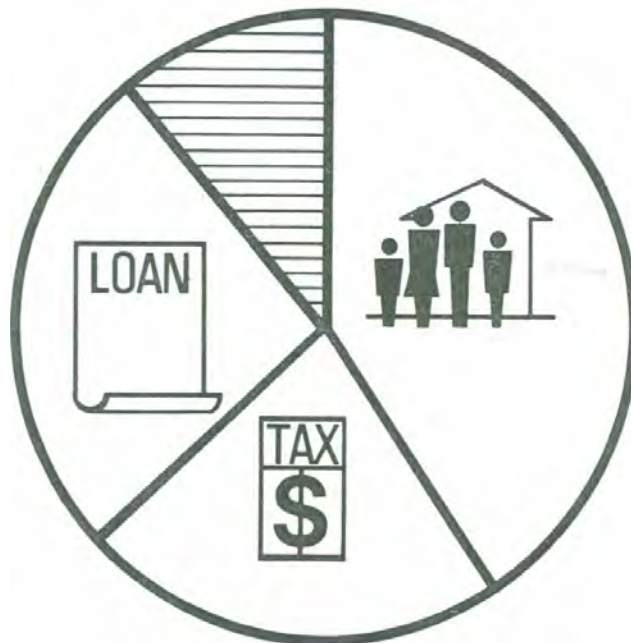
Income statements indicate a measure of profitability, but what are profits used for?

People may work for others or have their own businesses to earn income for their use in maintaining a desired lifestyle for themselves and their families and also to achieve their future family and business goals. Farmers are no different.

Claims on profits most often follow a hierarchical structure. Profits are allocated in absolute order to the fulfillment of the highest need or priority before funds are allocated to those needs below it, such as:

1. Family living costs
2. Income tax
3. Debt repayment

Any funds remaining after satisfying these first three priorities are available for either re-investment in the farm business to replace depreciable assets or for expansion or savings.



Ability to meet the first two priority claims on profits and still have funds remaining for scheduled debt payments is measured as Debt Service (repayment) Capacity. Debt Service Capacity measures the ability of the business to repay all debt from both farm and non-farm income. Debt Service Capacity is determined by a Debt Service Capacity Worksheet.

Debt Service Capacity Worksheet

Name: Shady Bend Farm

Period Covered: Jan. 1 to Dec. 31, 20X1

ACCRUED FARM INCOME		\$303,763
+	Net non-farm income	+ \$12,000
TOTAL INCOME AVAILABLE FROM ALL SOURCES		\$315,763
ACCRUED FARM EXPENSE		\$278,376
-	Amount borrowed for breeding stock	- \$10,000
-	Depreciation	- \$16,500
-	Intermediate interest	- \$495
-	Long term interest	-\$16,474
-	New term loan interest	- \$500
+	Family living allowance	+ \$24,000
+	Income tax (farm only)	+ \$9,000
TOTAL NON-DEBT REQUIREMENTS		\$267,407
AMOUNT AVAILABLE TO SERVICE DEBT		\$48,356
Debt Requirements		
+	Intermediate principal and interest	\$3,495
+	Long term principal and interest	\$22,590
+	New term loan principal and interest	\$1,500
TOTAL DEBT REQUIREMENTS		\$27,585
MARGIN FOR GROWTH		\$20,771

A Debt Service Capacity Worksheet lists all sources of income available to the manager, lists all the claims on that income and determines if there is an excess of available income over those claims. These funds are available for savings or re-investment in the business.

Determining Income Available to Service Debt

Often non-farm income earned by one or more family members makes a substantial contribution towards meeting the various financial claims by the farm and the farm family. Therefore net non-farm income (income after deductions) is added to Accrued Net Farm Income. This determines total income available from all sources.

ACCRUED FARM INCOME		\$303,763*
+ Net non-farm income	+ \$12,000**	
TOTAL INCOME AVAILABLE FROM ALL SOURCES		\$315,763***
ACCRUED FARM EXPENSE		\$278,376
- Amount borrowed for breeding stock	-\$10,000	
- Depreciation	- \$16,500	
- Intermediate interest	- \$495	
- Long term interest	-\$16,474	
- New term loan interest	- \$500	
+ Family living allowance	+ \$24,000	
+ Income tax (farm only)	+ \$9,000	
TOTAL NON-DEBT REQUIREMENTS		\$267,407

***Found in Accrued Income Statement**

****After tax earnings**

*****Income available to meet claims of farm expense, family living, income tax and debt repayment**

Determining Non-Debt Requirements

Funds borrowed for the purchase of breeding stock also represent a source of income available to service debt. The purchase of the breeding stock is included in the determination of Accrued Net Farm Income as an expense. However, breeding stock is a productive asset with a useful life of more than one year (much like a tractor). Funds borrowed for the purchase would not be included on the income side of the income statement and therefore they are available for debt servicing.

Since you are determining cash funds available to meet claims, add the value of depreciation (already included as a part of Accrued Net Farm Income calculation) as a source of income available to meet financial claims of the farm and family. Although depreciation is a very real cost, it is a non-cash cost that can represent a substantial amount of cash available for debt servicing.

ACCRUED FARM INCOME		\$303,763
+ Net non-farm income	+ \$12,000	
TOTAL INCOME AVAILABLE FROM ALL SOURCES		\$315,763
ACCRUED FARM EXPENSE		\$278,376*
- Amount borrowed for breeding stock	- \$10,000**	
- Depreciation	- \$16,500**	
- Intermediate interest	- \$495	
- Long term interest	-\$16,474	
- New term loan interest	- \$500	
+ Family living allowance	+ \$24,000	
+ Income tax (farm only)	+ \$9,000	
TOTAL NON-DEBT REQUIREMENTS		\$267,407

***Found in Accrued Income Statement**

****Funds available to meet claims of farm expense, family living, income tax and debt repayment**

Total debt requirement is calculated as the sum of principal and interest payments on term loans scheduled to be made in the period in question. Therefore, term loan interest (already included in the calculation of Accrued Farm Expense) is added to the amount available to service debt.

If you recognize the hierarchical order of the financial claims and remember our objective of determining funds available to service debt (principal and interest) after meeting those claims, it follows that family living costs and income tax are subtracted from our running total of funds available to service debt.

ACCRUED FARM INCOME		\$303,763
+ Net non-farm income	+ \$12,000	
TOTAL INCOME AVAILABLE FROM ALL SOURCES		\$315,763
ACCRUED FARM EXPENSE		\$278,376
- Amount borrowed for breeding stock	-\$10,000	
- Depreciation	- \$16,500	
- Intermediate interest	- \$495*	
- Long term interest	-\$16,474*	
- New term loan interest	- \$500*	
+ Family living allowance	+\$24,000*	
+ Income tax (farm only)	+ \$9,000*	
TOTAL NON-DEBT REQUIREMENTS		\$267,407**

***Adjustments to determine non-debt requirements**

****Funding required for accrued farm expense (less amount borrowed for breeding stock purchases, depreciation and term loan interest) plus family living allowance and farm income tax**

Determining a Margin for Growth

Total debt requirement is subtracted from the amount available to service debt to determine a Margin for Growth. This indicates the amount of money left over after satisfying all financial claims (farm and family) for re-investment in the farm business or savings for a time in the future (retirement, education, etc.).

AMOUNT AVAILABLE TO SERVICE DEBT	\$48,356*
Debt Requirements	
+ Intermediate principal and interest	\$3,495**
+ Long term principal and interest	\$22,590**
+ New term loan principal and interest	\$1,500**
TOTAL DEBT REQUIREMENTS	\$27,585
MARGIN FOR GROWTH	\$20,771***

***Funding available to meet debt requirements after meeting farm expenses (adjusted for breeding stock loans, depreciation and term loan interest), family living costs and farm income tax**

****Principal and interest payments required for all farm term debt**

*****Funding available for replacing depreciable assets, farm growth and expansion or savings**

Let's look at the Debt Service Capacity of the Shady Bend Farm. The information required to complete the worksheet will be found in the liability listing, the Cash Income Statement and the Accrued Income Statement. Review these statements in previous modules to determine the values required.

Values for net non-farm income, family living allowance and farm income tax should be found in a separate area of the general ledger or other record keeping system. For this example, estimate that net non - farm income is \$12,000, family living expense is \$24,000 and farm income tax is \$9,000.

ACCRUED FARM INCOME		\$303,763
+ Net non-farm income	+ \$12,000	
TOTAL INCOME AVAILABLE FROM ALL SOURCES		\$315,763
ACCRUED FARM EXPENSE		\$278,376
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+ Family living allowance	+ \$24,000	
+ Income tax (farm only)	+ \$9,000	
TOTAL NON-DEBT REQUIREMENTS		\$267,407
AMOUNT AVAILABLE TO SERVICE DEBT		\$48,356
Debt Requirements		
+ Intermediate principal and interest	\$3,495	
+ Long term principal and interest	\$22,590	
+ New term loan principal and interest	\$1,500	
TOTAL DEBT REQUIREMENTS		\$27,585
MARGIN FOR GROWTH		\$20,771

The Shady Bend Farm has \$20,771 as a Margin for Growth. This is the amount of funds available for re-investment in the business by way of replacing depreciable assets or expanding the business or an amount available for savings.

Exercise 24

Determine the Debt Service Capacity for the Blakes. Use information from their liability listings, Cash Income Statement and Accrued Income Statement that you prepared in previous exercises. Assume that their net non-farm income is \$16,000, family living cost is \$25,859 and farm income tax is \$9,774. Also assume that Diane and John are purchasing some land from George and Hazel for \$100,000 under an Agreement for Sale over 20 years at 0% interest with annual payments. The first payment is due on December 31, 20X1.

Compare your answers with those given on page 37.

Debt Service Capacity Worksheet

Name: _____ Period Covered: _____

ACCRUED FARM INCOME _____	
+ Net non-farm income	_____
TOTAL INCOME AVAILABLE FROM ALL SOURCES _____	
ACCRUED FARM EXPENSE _____	
- Amount borrowed for breeding stock	_____
- Depreciation	_____
- Intermediate interest	_____
- Long term interest	_____
- New term loan interest	_____
+ Family living allowance	_____
+ Income tax (farm only)	_____
TOTAL NON-DEBT REQUIREMENTS _____	
AMOUNT AVAILABLE TO SERVICE DEBT _____	
Debt Requirements	
+ Intermediate principal and interest	_____
+ Long term principal and interest	_____
+ New term loan principal and interest	_____
TOTAL DEBT REQUIREMENTS _____	
MARGIN FOR GROWTH _____	

Debt Service Capacity Considerations

Shortages of Debt Service Capacity indicate the need for serious scrutiny of the business by the manager to improve the situation. If not dealt with promptly, Debt Service Capacity shortages have a compounding effect and can place the entire operation in a precarious financial position. Here again, the “question process” serves as a good analytical tool.

- How can profits be increased?
- How can income be increased?
- How can expense be reduced?
- How can family living expense be reduced?
- Can non-farm income be increased?
- Can farm income tax be reduced?
- Can loans be restructured to reduce interest costs?
- Can loans be extended over a longer period of time to reduce yearly principal payments?

Use caution when analyzing the Margin for Growth. First, it is a projection calculated on an accrual basis. The farm may have sufficient cash sales to meet the claims of family living, income tax and debt repayment. However, if a shortage of Debt Service Capacity continues, the operation will be forced to either draw on cash reserves or sell off assets.

Second, remember that depreciation was added to create available cash for Debt Service Capacity. The Margin for Growth needs to be of a sufficient magnitude to allow for replacement of machinery, equipment and buildings. Agriculture has often gone through cycles that force farmers to “live off depreciation” but at some point depreciable assets need to be replaced and a continuance of this practice will severely erode equity built up in the business.

Exercise 25

Determine the Debt Service Capacity for your operation by completing page 27 of the Farm Business Planner.

Summary

In this module you identified that the Accrued Income Statement, not the Cash Income Statement, provides the truest measure of business profitability. Therefore, it is the income statement of preference when making management decisions for the farm other than those related to income tax management.

The Accrued Income Statement allows for an analysis of relative earning performance through the percent return to assets and equity ratios. Although the absolute measure of Accrued Net Farm Income is not useful for comparing between similar farms, it is essential in the determination of Debt Service Capacity.

The Accrued Income Statement also allows for calculation of income and expense on a per unit basis. This is useful for comparison between similar farms and within the same farm over a period of years.

Analyze income statements over a period of years. Establish trends for your operation. If they appear headed in the wrong direction - take corrective action.

Use caution when analyzing your income statements. Ensure that your mathematical calculations are correct and that you fully understand the theory behind the interpretation of the ratios or per unit values created. When evaluating these performance indicators against industry guidelines remember that acceptable ratios vary with the nature of the farm business and the relative production and marketing risks associated with it.

Don't make farm business management decisions based solely on the earning performance indicators created from income statement analysis. In the last financial instruction module, you will examine how all financial statements presented in this course interact. You'll learn to combine each analysis to make better farm management decisions for your farm.



Module 9 Exercise Answers

Exercise 21

Return to Assets = Accrued Net Farm Income - Unpaid Labour + Term Interest

Return to Assets = \$40,910 - \$25,859 + \$7,285 = \$22,336

Percentage Return to Assets = $\frac{\text{Return to Assets}}{\text{Beginning Assets}} \times 100 = \frac{\$22,336}{\$248,150} = 9\%$

Exercise 22

Return to Equity = Accrued Net Farm Income - Unpaid Labour = \$40,910 - \$25,859 = \$15,051

Percent Return to Equity = $\frac{\text{Return to Equity}}{\text{Beginning Equity}} \times 100 = \frac{\$15,051}{\$141,644} = 10.6\%$

Exercise 24

Debt Service Capacity Worksheet

Name: John and Diane Blake **Period Covered:** Jan. 1 to Dec. 31, 20X1

ACCRUED FARM INCOME		\$75,911
+ Net non-farm income		+ \$16,000
TOTAL INCOME AVAILABLE FROM ALL SOURCES		\$91,911
ACCRUED FARM EXPENSE		\$35,001
- Amount borrowed for breeding stock	_____	
- Depreciation	- \$4,400	
- Intermediate interest	- \$5,525	
- Long term interest	-\$1,750	
- New term loan interest	_____	
+ Family living allowance	+ \$25,859	
+ Income tax (farm only)	+ \$9,774	
TOTAL NON-DEBT REQUIREMENTS		\$58,959
AMOUNT AVAILABLE TO SERVICE DEBT		\$32,952
Debt Requirements		
+ Intermediate principal and interest		\$12,036
+ Long term principal and interest		\$6,750
+ New term loan principal and interest		\$5,000
TOTAL DEBT REQUIREMENTS		\$23,786
MARGIN FOR GROWTH		\$9,666

Earning Performance Measures

Name: _____

Date: _____

Return to Assets = Accrued Net Farm Income – Unpaid Labour + Term Interest

Return to Assets =

Percent Return to Assets = $\frac{\text{Return to Assets}}{\text{Beginning Assets}} \times 100$

Percent Return to Assets =

Return to Equity = Accrued Net Farm Income – Unpaid Labour

Return to Equity =

Percent Return to Equity = $\frac{\text{Return to Equity}}{\text{Beginning Equity}} \times 100$

Percent Return to Equity =