

chapter two

# **ASSESSING YOUR FARM'S RISK-BEARING CAPACITY: THE FOUNDATION OF EFFECTIVE RISK MANAGEMENT**

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## Instructor Guidelines

The objective of this chapter, *Assessing Your Farm's Risk-Bearing Capacity: The Foundation of Effective Risk Management*, is to provide agricultural producers with the practical analytical tools and standards they can use to measure how financially vulnerable their farm or ranch business is to the many sources of risk. Once this assessment is completed, the producer can determine which marketing, crop insurance, or other risk management tools to use. It is only after making these assessments that a meaningful risk management plan can be developed.

This chapter starts with a discussion of farm financial risk and why it may not all be bad. The chapter outlines the four basic tasks of effective risk management and demonstrates, using the financial statements from the Case Farm presented later in this curriculum, how to determine the risk bearing capacity of the farm. The step by step process presented in this chapter provides a practical guide that can be used by any producer to assess their own firm's risk bearing capacity given that they have the financial statements that are available to every farm with an adequate set of financial records.

Preparation for using this chapter should include a thorough review of the *Chapter 8: Case Farm*. That chapter contains a complete set of financial records for a PNW small grains operation. Information from the Case Farms Chapter is used in the examples in this chapter as well as for the other chapters in this curriculum.

The balance sheet is explained in some detail because of all the information it contains about the health of the farm business and the financial changes over time experienced by the farm business. Clear examples of how to use income statements with the balance sheet in business planning are explained.

The basic measures of financial strength—liquidity, solvency, profitability, repayment capacity, and financial efficiency—are developed in some detail with explanations on how to interpret and use the information provided by these ratios. These measures of financial health are very powerful tools for the individual farm business manager. These measures of financial health can be used to determine the present financial health of the farm business. They are used to develop the business plan including which risk management tools are required and at what level to apply them for future business success. Charting them over time presents an excellent trend analysis of the farm business. The process of calculating these measures is clearly presented and is not difficult to learn or master. Each can be calculated

using the information provided in the commonly used set of farm financial records. Industry standards are provided so that the individual farm operator has some basis for comparison in how the firm is doing.

### **How to Use this Chapter**

The information in this Chapter is covered on the power point presentation, *Assessing Your Farm's Risk Bearing Capacity: The Foundation of Effective Risk Management* which is included on the CD-ROM. The power point presentation integrates information from the Cost of Production chapter and the Managing Your Farm's Financial Risk chapter so does not follow the outline of this chapter directly. It can be presented in about an hour although there is sufficient information here to provide material for several sessions. This chapter can also be used as a stand alone curriculum, using the information provided here to provide a workshop outline, create overheads, participant exercises, and take home materials. It would provide a foundation for a more in depth course in which producers as home work, substituted their own financial information for the Case Farm statements.

## Introduction

### **Agricultural production is a high risk business and it's getting riskier.**

1. Nature (time, weather, disease, pests, etc.)
2. More volatile weather patterns
3. Highly competitive (price takers, not price setters)
4. Globalization of markets
5. 1996 Farm Act
  - A. Producer Reactions
    - Enthusiastic about greater flexibility.*
    - 🔗 More flexibility in crop selection.
    - Recognition of shift in selected risks and risk management responsibilities from federal government to individual producers.*
    - 🔗 Transition payments do not vary with market prices.
    - 🔗 Lower price supports.
    - 🔗 More restrictive disaster payments.

### **More risk—so what?**

1. Definition
  - A. Volatility of future financial performance.
  - B. Possibility of suffering financial harm.
    - Chance of economic loss.*
    - Chance of failing to cover cash obligations.*
    - Chance of bankruptcy.*
2. Risk is not a dirty four-letter word!

In our economic system: land earns rent, labor earns wages, management earns a salary, capital earns interest, and **assuming risk earns profit!** Without risk in agriculture there would be no chance of profit.
3. More risk—the good, bad, and ugly
  - A. Good
    - More flexibility and more opportunity to increase profit.*
  - B. Bad
    - Most of us avoid risk as more risk adds stress.*
    - Risk management involves time, effort, and dollars.*
  - C. Ugly
    - Some will assume it's business as usual.*
    - Will not prepare to deal with added risk.*
    - Will have difficulty competing in twenty-first century.*

### **Objectives of this chapter/discussion**

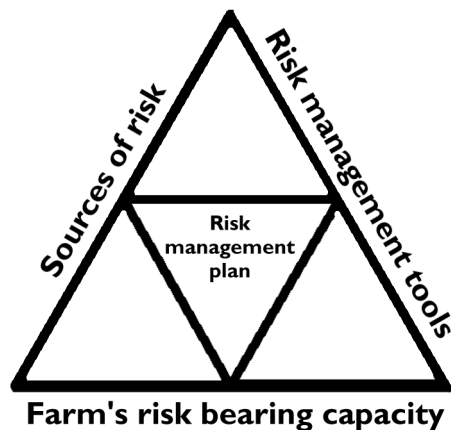
1. Outline four basic tasks of effective risk management.
2. Demonstrate how to determine risk bearing capacity through use of:
  - A. Financial statements
  - B. Financial analysis
  - C. Enterprise budget
  - D. Whole farm cash flow budget (most of material)
3. Identify sources of farm risk.
4. Note risk management tools and strategies.
5. Use Case Farm to illustrate concepts.

### **Basic risk management tasks**

1. Returns from effective risk management should increase in years ahead.
2. Effective risk management involves four basic tasks.
  - A. Analyzing your farm's risk bearing capacity.
  - B. Identifying and prioritizing your sources of risk.
  - C. Familiarizing yourself with risk management tools and strategies.
  - D. Selecting and implementing a risk management plan.
3. Tasks can be represented by a triangle. (Figure 1)
  - A. Each task is equally important.
  - B. Ineffectiveness in a particular task causes triangle to collapse, i.e., risk management plan fails.

**Figure 1. Risk Management Framework.**

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## Task 1: Analyzing your farm's risk bearing capacity

Risk bearing capacity = Financial survivability in a period of adversity

Analyzing implies understanding the impact of adversity on the farm's:

- 🔧 Liquidity
- 🔧 Solvency
- 🔧 Profitability
- 🔧 Repayment capacity
- 🔧 Financial efficiency

**Table 1. An Example.**

Item	Elmer Equity	Lyle Leverage
Land	\$ 650,000	\$ 650,000
Machinery	+ 150,000	+ 150,000
Total Assets	\$ 800,000	\$ 800,000
Liabilities	- 80,000	- 560,000
Net Worth	\$ 720,000	\$ 240,000
Debt/Asset ratio	0.10:1	0.70:1
Cash required	\$ 150,000	\$ 225,000
Gross receipts	250,000	250,000
Cash req./Gross rec.	0.60:1	0.90:1

### Questions

1. Which of these two farms has the greatest risk bearing capacity?
2. Consider the impact of a 10% drop in gross receipts due to lower yields and/or prices
  - 🔧 Lyle's cash margin is gone.
  - 🔧 Elmer enjoys a \$75,000 cash margin.
3. What happens if gross receipts drop by 36%? (close to actual decrease in wheat prices during 1996-97 and 1997-98).
  - 🔧 Lyle has a \$65,000 cash deficit and must sacrifice 27% of net worth.
  - 🔧 Elmer still has a \$10,000 surplus.
4. Who has the weakest risk bearing capacity and should be more concerned about risk management?

### Analysis Tools Include

- 🔧 Financial records
- 🔧 Financial statements
  - Balance sheet*
  - Income statement*



- Statement of owner equity*
  - Statement of cash flows*
- 🔗 Financial analysis
  - Liquidity*
  - Solvency*
  - Profitability*
  - Repayment capacity*
  - Financial efficiency*
- 🔗 Enterprise budget
- 🔗 Whole farm cash flow projection

### **Meet Profit Farms**

Profit Farms is

- 🔗 1,500-acre dryland grain operation.
- 🔗 Operated by Max and Marlene Profit.
- 🔗 Sole proprietorship, calendar year, cash tax reporting.
- 🔗 1,200 acres owned and 300 acres leased on a 1/3-landowner, 2/3-operator agreement.
- 🔗 Rotation is summer fallow—winter wheat—spring barley.
- 🔗 Winter wheat yields have ranged between 37 and 82 bushels per acre over the past 10 years and averaged 62 bushels.
- 🔗 Barley yields have varied between .75 and 2.1 tons per acre and averaged 1.25 tons over the past 10 years.
- 🔗 Financial statements and analysis include:
  - Balance sheet for 12/31/X1*
  - Balance sheet and supporting schedules for 12/31/X2*
  - Income statement and supporting schedules for X2*
  - Statement of owner equity for X2*
  - Statement of cash flows for X2*
  - Financial analysis summary for X2*
  - Projected wheat and barley enterprise budgets*
  - Whole farm cash flow projection for X3*

### **USING FINANCIAL STATEMENTS TO LOOK BACK**

#### **Balance sheet**

The starting point in determining risk bearing capacity.

- 🔗 Shows assets, liabilities, and net worth on a particular date (financial “snapshot”).
- 🔗 Should be prepared at least one time annually at end of accounting period.
- 🔗 Format (Farm Financial Standards Council Recommendations).

**Table 2. Profit Farms Balance Sheet<sup>a</sup> 12/31/X1.**

ASSETS			LIABILITIES		
	Cost	Market			
<i>Current assets</i>			<i>Current liabilities</i>		
Cash & checking	\$9,610	\$9,610	Accounts payable		\$2,570
Savings	15,325	15,325	Notes due 12 months		31,136
Marketable securities	1,250	2,000	Current portion term debt		24,027
Accounts Receivable	0	0	Accrued interest:		
Inventories:			Account payment & notes due 1 year		913
Wheat (15,000 bu. @ \$3.25)	48,750	48,750	Noncurrent debt		6,401
Barley (150 tons @ \$85)	12,750	12,750	Accrued property taxes		1,944
Supplies	1,027	1,027	Accrued income & social security tax		4,394
Prepaid expenses	1,120	1,120	Deferred tax—current		38,134
Investment in growing crop	41,515	41,515			
<b>Total current assets</b>	<b>\$131,347</b>	<b>\$132,097</b>	<b>Total current liabilities</b>		<b>\$109,519</b>
<i>Noncurrent assets</i>			<i>Noncurrent liabilities</i>		
Machinery & equipment	\$155,278	\$213,500	Noncurrent portion term debt		249,532
Coop. investment	7,500	7,500	<b>Total noncurrent liabilities</b>		<b>\$249,532</b>
Real estate	622,000	937,500		<b>Cost</b>	<b>Market</b>
<b>Total noncurrent assets</b>	<b>\$784,778</b>	<b>\$1,158,500</b>	Total current & noncurrent liabilities	\$359,051	\$359,051
<b>Total business assets</b>	<b>\$916,125</b>	<b>\$1,290,597</b>	Deferred tax noncurrent assets	XXX	59,340
Personal assets	XXX	\$65,112	<b>Total business liabilities</b>	<b>\$359,051</b>	<b>\$418,391</b>
			Personal liabilities	XXX	6,851
			<b>TOTAL LIABILITIES</b>	<b>\$359,051</b>	<b>\$425,242</b>
			<b>OWNER EQUITY</b>		
			Retained earnings	\$557,074	\$557,074
			Contributed capital	0	0
			Personal net worth	XXX	58,261
			Valuation equity	XXX	315,132
			<b>TOTAL OWNER EQUITY</b>	<b>\$557,074</b>	<b>\$930,467</b>
<b>TOTAL ASSETS</b>	<b>\$916,125</b>	<b>\$1,355,709</b>	<b>TOTAL LIABILITIES &amp; OWNER EQUITY</b>		<b>\$916,125</b>
					<b>\$1,355,709</b>

<sup>a</sup> This balance sheet reflects combined business and personal assets and liabilities.

### Format key points

- 🔗 Combined business and personal.
- 🔗 Prepared on last day of accounting period, 12/31/X1.
- 🔗 Assets and liabilities listed in order of decreasing liquidity.
- 🔗 Current vs. non-current assets and liabilities.
- 🔗 Cost and market columns.





**Table 4. Profit Farm Balance Sheet Supporting Schedules 12/31/12.**

**Schedule 1: Machinery and Equipment**

Item	Description	Cost or basis	Accum. deprec.	Adjusted cost	Market value
Wheel tractor	310 hp used	\$50,000	\$21,440	\$28,560	\$30,000
Chisel	30'	20,000	11,400	8,600	10,000
Field cultivator	40'	24,000	5,968	18,032	18,000
Harrow	80'	12,000	12,000	0	1,500
Rodweeders (2)	50	20,000	20,000	0	5,000
Sprayer	55'	7,000	7,000	0	2,500
Drill	40'	28,000	28,000	0	8,500
Combine	25' used	130,000	91,307	38,693	60,000
Grain trucks (3)	used	39,000	28,250	10,750	15,000
Service truck	used	4,500	4,500	0	1,000
Pick-up	3/4 ton	20,000	3,000	17,000	17,000
Tools	—	15,000	15,000	0	10,000
<b>Total</b>	<b>XXX</b>	<b>\$369,500</b>	<b>\$247,865</b>	<b>\$121,635</b>	<b>\$178,500</b>

**Schedule 2: Real Estate and Improvements**

Description	Acres	Cost or basis	Accum. deprec.	Adjusted cost	Market value
Home place					
Land	825	\$330,000	—	\$330,000	\$618,750
Residence	—	50,000	—	50,000	—
Service bldgs.	—	35,000	\$35,000	0	—
Grain bins	—	40,000	25,000	15,000	—
Peterson place	375	225,000	—	225,000	318,750
<b>Total</b>	<b>1,200</b>	<b>\$680,000</b>	<b>\$60,000</b>	<b>\$620,000</b>	<b>\$937,500</b>

**Schedule 3: Noncurrent Liabilities**

To whom	Original date balance	Purpose &/or security	Interest rate(%)	Payment date	Current principal	Accrued interest	Portion of principal	
							Due in 12 mo.	Due beyond 12 mo.
<i>Nonreal estate term debt</i>								
Farmers Bank	3/10/X-4	Chisel	8.75	3/10	\$6,763	\$480	\$3,240	\$3,523
Farmers Bank	2/26/X-2	Cultivator	10.00	2/26	13,124	1,107	3,964	9,160
Farmers Bank	10/18/X-4	Combine	8.75	10/18	62,578	1,110	13,734	48,844
GMAC	12/15/X-1	Pick-up	9.50	12/15	12,518	52	2,717	9,801
<b>Total</b>					<b>\$94,983</b>	<b>\$2,749</b>	<b>\$23,655</b>	<b>\$71,328</b>
<i>Real estate debt</i>								
Farm credit	10/15/X-8	Peterson	8.75	10/15	\$154,575	\$2,853	\$2,537	\$152,038
<b>Total noncurrent liabilities</b>					<b>\$249,558</b>	<b>\$5,602</b>	<b>\$26,192</b>	<b>\$223,366</b>

**Table 4. Profit Farm Balance Sheet Supporting Schedules 12/31/12. continued**

Schedule 4: Deferred Taxes

	<u>Market</u>	<u>Cost</u>	<u>Difference</u>
<b>Section One: Current Portion of Deferred Taxes</b>			
Deferred income items			
Marketable securities	\$2,210	\$1,250	\$960
Accounts receivable	9,000	0	9,000
Stored wheat	17,570	0	17,570
Stored barley	4,350	0	4,350
Supplies	1,365	0	1,365
Prepaid expenses	1,256	0	1,256
Investment in growing crops	42,760	0	42,760
<b>Total deferred income</b>	<b>XXX</b>	<b>XXX</b>	<b>\$77,261</b>
Deferred expense items			
Accounts payable			3,291
Accrued interest			6,542
Accrued property taxes			1,944
<b>Total deferred expenses</b>			<b>\$11,777</b>
Net taxable income on current portion			\$65,484
Estimated deferred income & social security tax on current portion			\$26,694
<b>Section Two: Noncurrent Portion of Deferred Taxes</b>			
Machinery & equipment	\$178,500	\$121,635	\$56,865
Real estate	937,500	620,000	317,500
<b>Total deferred income</b>	<b>XXX</b>	<b>XXX</b>	<b>\$374,365</b>
Less deductions/exclusions (house)			-100,000
Net taxable income on noncurrent portion			\$274,365
Estimated deferred tax on noncurrent portion			\$59,422

A balance sheet can be used to determine owner equity.

**Owner equity calculations**

Retained earnings: The amount of net income that has not been withdrawn by the owner(s) or paid out as dividends to stock holders.

Know:

$$TA = TL + NW \text{ or } NW = TA - TL$$

so, to calculate networth

Cost basis:

$$NW = \$888,778 \text{ TA} - \$340,262 \text{ TL}$$

$$= \$548,516 \text{ All retained earnings (don't know contributed capital)}$$

TA = Total Assets

TL = Total Liabilities

NW = Net Worth

**Valuation equity:** The portion of total owner equity on a market value basis that has come from an increase in the value of assets above their original cost or adjusted cost.

Market

$$\begin{aligned}
 \text{NW} &= \$1,332,867 \text{ TA} - \$407,883 \text{ TL} \\
 &= \$924,984 \text{ Total Equity} \\
 &\quad - \$548,516 \text{ Retained earnings} \\
 &\quad - 60,565 \text{ Personal net worth} \\
 &= \$315,903 \text{ Valuation equity}
 \end{aligned}$$

**Valuation equity may also be computed as follows:**

$$\begin{aligned}
 &\$1,264,103 && \text{Total business assets, market} \\
 - &888,778 && \text{Total business assets, cost} \\
 - &59,422 && \text{Deferred tax on non-current assets} \\
 = &\$315,903 && \text{Valuation equity}
 \end{aligned}$$

**Table 5. Interpretation of Balance Sheet.**

	<b>Cost</b>	<b>Market</b>
Total assets	\$888,778	\$1,332,867
Financed by:		
Debt	\$340,262	\$ 407,883
Equity	\$548,516	\$ 924,984
	(earned)	(what's left if sold out and paid off creditors)

Balance sheet reflects outcome of all previous decisions and transactions.

*EXAMPLE Sell \$10,000 wheat, pay \$2,000 current debt and put \$8,000 in checking account. Impact on balance sheet?*

**Table 6. Impact on Balance Sheet.**

<b>Assets</b>		<b>Liabilities</b>	
Current		Current	
\$10,000	↓	\$2,000	↓
	Wheat		Accounts Payable
\$8,000	↑		
	Checking		
\$2,000	↓	\$2,000	↓
	Current		Current
	NW = A - L		
	Δ NW = ΔA - ΔL		
	Δ NW = \$2,000 - \$2,000		
	= 0		

Δ = change

## Income Statement

- Shows net income for the accounting period.

$$\begin{array}{r} \text{Revenues} \\ - \text{Expenses} \\ \hline = \text{Net Income} \end{array}$$

- Simple in design but difficult in practice.

*What constitutes revenues?*

*What constitutes expenses?*

*Net measured on a cash or accrual basis?*

## Cash Versus Accrual Income Statement

### Cash

- Revenues are recognized only when cash is received.
- Expenses are recognized only when payments are made for inputs.

### Accrual

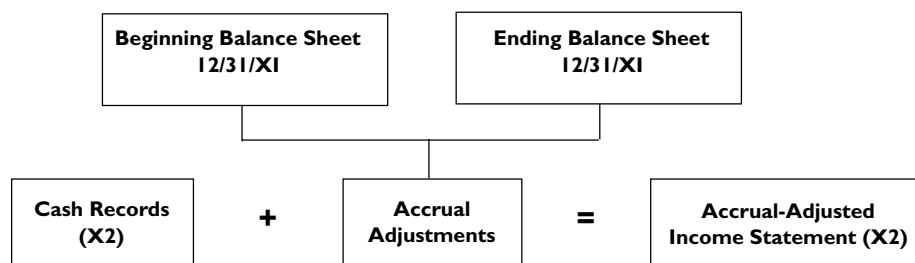
- Revenues are recognized when commodities or services are produced (e.g. when grain is harvested).
- Expenses are recognized when inputs are used—not when they are paid for.
- Insures matching of revenues and expenses during accounting period.

## Cash Basis Income Statement Can Be Misleading

Cash approach can:

- Understate net income when:
  - Producing commodities not yet sold for cash.*
  - Paying for inputs used in a different accounting period.*
- Overstate net income when:
  - Receiving cash for commodities not produced in current accounting period.*
  - Using inputs paid for in a different accounting period.*

**Figure 2. The Accrual Process.**



**Table 7. Profit Farm Income Statement Year Ending 12/31/12.**

<b>REVENUES</b>		
Cash grain sales	\$190,812	
Inventory change (Schedule 5)	<u>-39,580</u>	\$151,232
Change in accounts receivable (Schedule 5)		9,000
Government payments:AMTA		<u>21,135</u>
Gross revenue		\$181,367
<b>EXPENSES</b>		
Cash operating expenses (Schedule 6)	\$95,644	
Accrual adjustments: Unused assets (Schedule 7)	-1,719	
Unpaid items (Schedule7)	721	
Depreciation: Machinery	33,643	
Buildings & improvements	<u>2,000</u>	
Total Operating Expenses		\$130,289
Interest: Cash	\$27,139	
Change in accrued interest (Schedule 8)	<u>-772</u>	26,367
Net farm income from operations		\$24,711
Gain/loss sale of farm capital assets		<u>3,500</u>
<b>NET FARM INCOME</b>		<b>\$28,211</b>
Nonfarm income		
Wages	\$15,780	
Interest & dividends	<u>770</u>	
Total nonfarm income		<u>16,550</u>
<b>NET INCOME, BEFORE TAXES</b>		<b>\$44,761</b>
Income & social security taxes, cash	\$4,394	
Change in accrued tax & deferred tax (Schedule 9)	<u>+4,329</u>	-8,723
<b>NET INCOME, AFTER TAXES</b>		<b>\$36,038</b>

**Table 8. Income Statement Supporting Schedules Year Ending 12/31/12.****Schedule 5: Revenue Accrual Adjustments**

Item	Beginning balance sheet	Ending balance sheet	Difference
Stored crops			
Winter wheat	-\$48,750	+\$17,570	-\$31,180
Barley	-12,750	+4,350	-8,400
Total			-\$39,580
Accounts receivable	-0	+\$9,000	+\$9,000

**Schedule 6: Cash Operating Expenses**

Item	\$
Chemicals	\$10,185
Crop insurance	2,325
Fertilizer	31,329
Fuel and lubrication	10,205
Hired labor	5,000
Insurance (property and liability)	2,012
Miscellaneous	10,120
Repairs	3,888
Seed	5,150
Taxes, personal and real estate	15,430
<b>Total</b>	<b>\$95,644</b>

**Schedule 7: Expense Accrual Adjustments**

Item	Beginning balance sheet	Ending balance sheet	Difference
<i>Unused assets</i>			
Supplies	+ \$1,027	- \$1,365	-\$338
Prepaid expenses	+ 1,120	-1,256	-136
Investment in growing crops	+ 41,515	-42,760	-1,245
Net accrual adjustment–unused assets			-\$1,719
<i>Unpaid items</i>			
Accounts payable	-2,570	+ 3,291	+ 721
Accrued property and employer taxes	-1,944	+ 1,944	0
Net accrual adjustment-unpaid items			+ \$721

**Table 8. Income Statement Supporting Schedules Year Ending 12/31/12. continued**

**Schedule 8: Change in Accrued Interest Payable**

Item	Beginning balance sheet	Ending balance sheet	Difference
Accrued interest on accounts payable and notes due in 1 year	-\$913	+\$940	+\$27
Accrued interest on non-current debt	-6,401	+5,602	-799
Total change in accrued interest payable			-\$772

**Schedule 9: Change in Accrued Taxes**

Item	Beginning balance sheet	Ending balance sheet	Difference
Accrued income and social security tax	-\$4,394	+\$20,163	+\$15,769
Deferred tax—current portion	-38,134	+26,694	-11,440
Change in accrued & deferred taxes			+\$4,329

**Table 9. Net Farm Income for Max and Marlene Profit Year Ending 12/31/12 (Cash Basis).**

	\$
<b>Cash receipts</b>	
Cash grain sales	190,812
Government payments	21,135
Gain sale of farm capital assets	3,500
Total receipts	215,447
<b>Cash expenses</b>	
Cash operating expenses	95,644
Interest	27,139
Total cash expenses	122,783
Depreciation	35,643
Total expenses	158,426
<b>Net farm income (cash basis)</b>	<b>57,021</b>
<b>Net farm income (accrual-adjusted)</b>	<b>28,211</b>

Cash basis overstates true (accrual) income by 102%



**Table 10. Accrual Adjustments Made Easy! Effects of Changes in Balance Sheet on Income Statement.**

<b>Balance Sheet Change</b>	←	<b>Income Statement Change</b>
1. Increase Assets		Increase Revenues or Decrease Expenses
<i>Good</i>		<i>Good</i>
2. Increase Liabilities		Increase Expenses or Decrease Revenues
<i>Bad</i>		<i>Bad</i>

**Exercise 1. Accrual Adjustments—Impact of Balance Sheet Changes on Income Statement.**

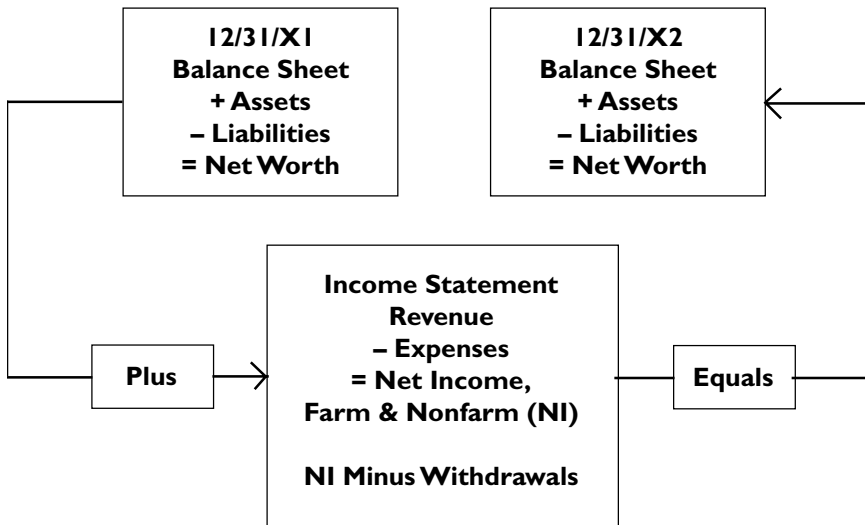
<b>Balance Sheet Item</b>	<b>Asset or Liability</b>	<b>Balance Sheet</b>		<b>Income Statement Impact</b>	
		<b>Bg.</b>	<b>End</b>	<b>Revenue Impact</b>	
		\$	\$	\$	<i>Increase or Decrease?</i>
Wheat in Storage	_____	25,000	10,000	\$	_____
Feed on Hand	_____	2,500	3,500	\$	_____
Accounts Receivable	_____	10,000	8,000	\$	_____
Feeder Livestock	_____	50,000	35,000	\$	_____
				<b>Expense Impact</b>	
Accounts Payable	_____	7,500	7,000	\$	_____
Accrued Prop. Taxes	_____	4,200	4,800	\$	_____
Accrued Interest	_____	15,500	14,200	\$	_____
Prepaid Expenses	_____	5,000	2,000	\$	_____
Invest. in Growing Crop	_____	35,000	40,000	\$	_____
Supplies	_____	3,000	5,000	\$	_____

### Statement of Owner Equity

A crucial link between the balance sheet and the income statement.

- 🔧 Serves as a final check on accuracy of numbers reported.
- 🔧 Identifies sources of change in owner equity.

**Figure 3. Relationship of Balance Sheet (Cost Basis) and Income Statement.**



### Sources of Change in Owner Equity

- 🔧 Due to retained income (= NI – WD)
- 🔧 Due to contributed capital
- 🔧 Due to personal net worth
- 🔧 Due to evaluation equity

Using information developed from the Balance Sheet and the Income Statement a statement of Owner Equity can be developed using Form I. Table 11 goes through the calculations.

**Form I. Statement of Owner Equity, Year Ending 12/31/XX (an Overview).**

	Cost	Market
Total owner equity, beginning balance sheet	_____	_____
+/- Change in retained earnings/contributed capital	_____	_____
+/- Change in personal net worth	_____	_____
+/- Change in valuation equity	_____	_____
= Total owner equity, ending balance sheet (computed)	_____	_____
Total owner equity, ending balance sheet (reported)	_____	_____

**Table 11. Statement of Owner Equity Year Ending 12/31/12.**

	Cost	Market
TOTAL OWNER EQUITY, BEGINNING BALANCE SHEET	\$557,074	\$930,467
<i>Change in retained earnings &amp; contributed capital</i>		
Net income after taxes	+ \$36,038	
Owner withdrawals	-44,596	
Additions of capital <sup>a</sup>	0	
Distributions of capital, dividends, gifts	0	
Total change in retained earnings & contributed capital	-8,558	-8,558
<i>Change in personal net worth</i>		
Personal net worth, ending balance sheet	\$60,565	
Personal net worth, beginning balance sheet	-58,261	
Total change in personal net worth	XXX	+ 2,304
<i>Change in valuation equity</i>		
Valuation equity, ending balance sheet	+ \$315,903	
Valuation equity, beginning balance sheet	-315,132	
Total change in valuation equity	XXX	771
TOTAL OWNER EQUITY, ENDING BALANCE SHEET (Computed)	\$548,516	\$924,984
TOTAL OWNER EQUITY, ENDING BALANCE SHEET (Reported)	\$548,516	\$924,984

<sup>a</sup>Gifts, inheritance, personal investments in business.

### Profit Farms—Summary

- Good
  - Statements reconciled*
  - Personal net worth improved*
  - Valuation equity increased*
- Bad
  - Retained earnings were negative*
  - Cost and market net worth decreased*

## Residual approach to determining withdrawals

🔧 When separate checking accounts or family living records are not available to determine withdrawals, work the statement of owner equity from both ends.

### **Example 1. Residual Approach to Determining Withdrawals.**

---

Begin with your net worth (cost basis)	\$557,074
Add your net income	+36,038
Add capital contributions	+0
Subtract capital distributions	-0
Subtract your ending networth (cost basis)	-548,516
The result is the residual withdrawals	\$44,596

---

Caution: Any errors in accounting are captured as a withdrawal amount. Residual withdrawal is merely an estimate.

### **Exercise 2. Relationship Between Beginning NW, NI, WD, and End NW Assuming Cost Basis Balance Sheets and No Capital Contributions/Distributions.**

---

	Situation 1 (\$)	Situation 2 (\$)	Situation 3 (\$)	Situation 4 (\$)
Beginning NW	200,000	250,000	300,000	—
NI	50,000	40,000	—	50,000
WD <sup>a</sup>	—	35,000	40,000	35,000
End NW	225,000	—	290,000	350,000

---

<sup>a</sup>WD = Beginning NW + NI – End NW.

## Statement of Cash Flows

Summarizes cash flows over the accounting period by three areas:

- 🔧 Operating Activities  
Cash flows from producing commodities and services that determine net income.
- 🔧 Investing Activities  
Cash flows from the purchase and sale of farm assets.
- 🔧 Financing Activities  
Cash flows from borrowing and repaying loans, capital and distributions/contributions.

Reconciles change in cash position during accounting period.

**Example 2. Statement of Cash Flows, Year Ending 12/31/XX (an Overview).**

Cash flows from operating activities	\$\$
<i>Production of commodities and provision of services that determine net income</i>	
Cash flows from investing activities	\$\$
<i>Purchase and sale of farm assets</i>	
Cash flows from financing activities	\$\$
<i>Loan proceeds and repayment, equity investments and returns</i>	
Net change in cash	\$\$
Change in cash reported on balance sheets	\$\$

**Table 12. Statement of Cash Flows, Year Ending 12/31/XX2.**

<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>		
Cash received from farm operations	\$211,947	
Cash received from nonfarm activities	16,550	
Cash paid for operating expenses	-95,644	
Cash paid for interest	-27,139	
Cash paid for income & social security taxes	-4,394	
Cash withdrawals for <b>\$42,596</b> family living & <b>\$2,000</b> investment in personal assets	-44,596	
Net cash provided by operating activities		+ \$56,724
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>		
Cash received from sales of		
Machinery & equipment	\$3,500	
Real estate & buildings	0	
Marketable securities	0	
Cash paid to purchase		
Machinery & equipment	0	
Real estate & buildings	0	
Marketable securities	0	
Net cash provided by investing activities		+ \$3,500
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>		
Proceeds from operating loans	\$63,215	
Proceeds from term debt financing	0	
Cash received from capital contributions, gifts, inheritance	0	
Principal payments on term debt	-24,027	
Principal payments on operating debt	-62,255	
Cash distributions from dividends, capital, gifts	0	
Net cash provided by financing activities		-\$23,067
<b>NET INCREASE IN CASH</b>		<b>\$37,157</b>
Cash/cash equivalents reported on balance sheet, beginning year	\$24,935	
Cash/cash equivalents reported on balance sheet, ending year	\$62,092	
Change in cash/cash equivalents on balance sheet		\$37,157

### Statement of cash flows summary for Max and Marlene Profit

- A major improvement in liquidity (\$37,157).
- Sufficient cash from operating activities to cover personal withdrawals.
- Sufficient cash from operating activities (\$56,724) to cover principal on term debt (\$24,027).
- Disinvested (rather than invested) in depreciable capital assets (machinery) (\$+3,500).

### Analysis of Task 1: Analyzing your Farm's Risk Bearing Capacity

Financial Strength Should Focus on 5 Areas and "Top 10" Measures.

#### A. Liquidity

1. Working capital
2. Current ratio

#### B. Solvency

1. Net worth
2. Debt/asset ratio

#### C. Profitability

1. Net farm income
2. Return on assets
3. Return on equity

#### D. Repayment Capacity

1. Term debt coverage ratio
2. Capital replacement and term debt repayment margin

#### E. Financial Efficiency

1. Operating expense ratio

### Analysis is Enhanced with Several Comparisons

- Business performance relative to industry guidelines (or producer goals).
- Current business performance relative to past business performance (trend analysis).
- Current business performance relative to budgeted business performance.



### What Is Your Farm's Liquidity Position?

Liquidity = Ability of farm to meet cash obligations as they come due without disrupting the business.

Focus is on short run.

#### A. Measures of liquidity

1. Working capital = Current assets – Current liabilities

*Profit Farms*

$$= \$140,603 - \$116,896$$

$$= \$23,707$$

2. Current ratio = Current assets ÷ Current liabilities

*Profit Farms*

$$= \$140,603 \div \$116,896$$

$$= 1.20:1$$

*Industry standards for current ratio*

1.5 – 2.0 green

1.1 – 1.5 yellow

Less than 1.1 red

### What Is Your Farm's Solvency Position?

Solvency = Ability to liquidate assets and pay off all creditors.

#### B. Measures of solvency

1. Net worth = Total assets - Total liabilities

*Profit Farms (market)*

$$= \$1,332,867 - \$407,883$$

$$= \$924,984$$

2. Debt-to-asset ratio = Total farm liabilities ÷ Total farm assets

*Profit Farms (market)*

$$= \$399,684 \div \$1,264,103$$

$$= 0.32:1 \text{ (or 32\%)}$$

*Industry standards for debt-to-asset ratio*

Under 30% green

30% – 70% yellow

Over 70% red

### What Is Your Farm's Profitability Performance?

Profitability = Returns to various farm resources, including unpaid labor and management, equity capital, and total capital.

#### C. Measures of profitability

1. Net farm income = Returns to operator and family labor, management, and equity capital

$$\textit{Profit Farms} = \$28,211 \text{ (see income statement)}$$

2. Rate of return on total farm assets

$$= \frac{\text{NFI} + \text{Interest on debt} - \text{Unpaid L \& M}}{\text{Average total farm assets}} \times 100$$

*Profit Farms example*

$$= \frac{\$28,211 + \$26,367 - \$37,696}{\$1,277,350} \times 100$$

$$= 1.3\%$$

*Industry standards for rate of return on farm assets*

Over 5%	green
0 - 5%	yellow
Under 0	red

3. Rate of return on farm equity

$$= \frac{\text{NFI} - \text{Unpaid L \& M}}{\text{Average farm net worth}} \times 100$$

*Profit Farms example*

$$= \frac{\$28,211 - \$37,696}{\$898,312} \times 100$$

$$= -1.1\%$$

*Industry standards for rate of return on farm equity*

Over 15%	green
5 - 15%	yellow
Under 5%	red

## What Is Your Farm's Ability to Repay Term Debt?

D. Repayment Capacity

I. Term Debt Coverage Ratio (%)

### **Example 3. Term Debt Coverage Ratio.**

---

Net Farm Income	\$28,211
+ Gross Non-Farm Income	+16,550
+ Depreciation & Interest on Term Debt	+58,798
= Earnings available for Personal Withdrawals, Taxes, Principal and Interest Payments, & New Investment	=103,559
- Personal Withdrawals & Taxes	-53,319
= Capacity for Principal & Interest Payments & New Investments	=50,240
÷ Scheduled Principal & Interest Payments	÷47,182
= Term Debt Coverage Ratio	=1.065:1 or 106.5%

*Industry standard for term debt coverage ratio*

Over 150%	green
110-150%	yellow
Less than 110%	red





## 2.Capital replacement and term debt repayment margin

### **Example 4. Capital Replacement and Term Debt Repayment Margin.**

---

Net Farm Income	\$28,211
+ Non-farm Income	16,550
+ Depreciation	35,643
– Income and Social Security Tax	–8,723
– Personal Withdrawals	–44,596
= Capital Replacement & Term Debt Repayment Capacity	=27,085
– Principal Payments on Term Debt	–24,027
= Capital Replacement and Term Debt Repayment Margin	\$3,058

### **How Much Can Revenues Drop Before Term Debt Repayment Margin is Gone?**

$$= \frac{\text{Term debt repayment margin}}{\text{Gross revenue}} \times 100$$

$$\begin{aligned} & \textit{Profit Farms example} \\ & = \frac{\$3,058}{\$181,367} \times 100 = 1.7\% \end{aligned}$$

### **How Much Can Expenses Increase Before Term Debt Repayment Margin is Gone?**

$$= \frac{\text{Term debt repayment margin}}{\text{Total farm expenses}} \times 100$$

$$\begin{aligned} & \textit{Profit Farms example} \\ & = \frac{\$3,058}{\$156,656} \times 100 = 2.0\% \end{aligned}$$

### **What Is Your Farm's Financial Efficiency?**

E. Financial Efficiency

I. Operating expense ratio

### **Example 5. Operating Expense Ratio.**

---

Total Operating Expenses	\$130,289
– Depreciation	
–	35,643
÷ Gross farm revenues	÷ 181,367
= Operating expenditures	= 0.522:1 or 52.2%

Industry standards for current operating expense ratio

Less than 0.65:1	green
0.65:1– 0.80:1	yellow
Over 0.80:1	red

**Table 14. Trend Analysis, Year Ending 12/31/X2 [Market Values].**

Item	Year ending			
	12/31/X1	12/31/X2	12/31/X3	12/31/X4
<b>LIQUIDITY</b>				
1. Working capital	\$22,578	\$23,707	_____	_____
2. Current ratio	1.21:1	1.20:1	_____	_____
<b>SOLVENCY</b>				
3. Net worth	\$930,467	\$924,984	_____	_____
4. Debt/asset ratio	0.32 : 1	0.32:1	_____	_____
<b>PROFITABILITY</b>				
5. Net farm income	\$34,912	\$28,211	_____	_____
6. Return on assets (%)	1.6	1.3	_____	_____
7. Return on equity (%)	- 0.7	- 1.1	_____	_____
<b>REPAYMENT CAPACITY</b>				
8. Term debt coverage ratio	1.21:1	1.06:1	_____	_____
9. Capital replacement and Term debt & repayment margin	\$9,029	\$3,058	_____	_____
<b>FINANCIAL EFFICIENCY</b>				
10. Operating expense ratio	0.50:1	0.52:1	_____	_____

### Summary of risk bearing capacity analysis for Profit Farms

- 🚫 Liquidity (cash flow) is weak (yellow)
- 🚫 Solvency, OK (yellow)
- 🚫 Repayment capacity is very weak (red)
- 🚫 Cost control is strong (green)
- 🚫 Basic problem is depressed profitability (yellow/red).  
If doesn't improve, will soon lead to difficult cash flow problems.
- 🚫 Risk bearing capacity is weak due to low profitability, vulnerable cash flow, and considerable debt.

Effective risk management is very important to Profit Farms.

### Analyzing your farm and risk bearing capacity—looking ahead

- A. Develop projected enterprise budgets
  1. Estimate enterprise costs and yields.
  2. Understand implications of various pricing opportunities relative to cost recovery earnings, and cash flow.

3. Contributes to more informed, focused, and disciplined marketing and risk taking.
  4. See “What Is Your Cost of Production?” for more details.
- B. Develop projected whole farm cash flow budget

**Form 2. Projected Whole Farm Cash Flow Budget.**

	<b>Total Yr X3</b>	<b>Jan</b>	<b>Dec</b>
Cash Inflows	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
Cash Outflows	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
Financial Summary			
Money to Borrow	_____	_____	_____
Loan Payments	_____	_____	_____
Loan Balances	_____	_____	_____

1. Determine commodity yields and prices required to cover whole farm cash obligations.
2. Analyze vulnerability of cash flow to downside risks.
  - Lower yields*
  - Lower commodity prices*
  - Higher costs/expenditures*
3. Contributes to more informed, focused, and disciplined marketing and risk taking.
4. See *Chapter 4: What Is Your Cost of Production?* for more details.

**Task 2: Analyzing your farm’s sources of risk**

**Leading Candidates**

1. Production—variability in commodity yield and quality.
2. Market and price—variability in commodity and input prices.
3. Financial—variability in returns to equity and in cash flow due to financing arrangements.
4. Technology—risk of adopting new technology too late or too early.
5. Casualty loss risk—risk of losing assets due to fire, wind, theft, flood, vandalism, etc.

6. Social and legal—risk associated with changes in government programs, tax laws, environmental agenda, property rights, etc.
7. Human—changes in availability of labor and management.

**Important to prioritize these sources of risk.**

1. Vary from farm to farm and over time.
2. Provide direction in selecting sound risk management strategies.

**Task 3: Familiarizing yourself with risk management tools and strategies**

**Production risks**

1. Choose enterprises with more stable yields (quantity and quality)
2. Crop insurance (fire and hail, multi-peril, revenue)
3. Enterprise diversification
4. Geographical diversification
5. Drought/disease/pest resistant varieties/rotations
6. Pesticides
7. Excess machine capacity
8. Keep resource reserves

**Market risks**

1. Averaging sales
2. Cash forward contract (commodities and inputs)
3. Hedging on the futures market
4. Options on futures
5. CCC loan
6. Enterprise diversification
7. Crop revenue insurance
8. Choose enterprises with low risk of changing commodity prices
9. Review outlook information
10. Hire professional help

**Financial risks**

1. Less debt/leverage
2. Higher credit reserves
3. Higher liquid reserves
4. Fixed interest rates on term loans
5. Longer term loan repayment periods
6. Substitute crop-share or variable cash rent for fixed cash rent
7. Longer term leases

**Technology risks**

1. Keep informed about new developments
2. Periodically analyze the economics of new technology
3. Rent machinery

**Casualty loss risks**

1. Use property insurance

**Social and legal risks**

1. Keep informed
2. Develop long-range plans and reevaluate frequently
3. Participate in public policy making
4. Liability insurance

**Human Risks**

1. Health/disability insurance
2. Life insurance
3. Backup management
4. Improve family and business communications
5. Estate planning

**Task 4: Select and implement risk management plan**

- A. Final task in risk management process
- B. Producers who:
  1. Understand risk bearing capacity of business;
  2. Have identified and prioritized sources, of risk; and
  3. Have analyzed the costs and benefits of various risk management tools and strategies for controlling major threats; are in a good position to implement an appropriate risk management plan!

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## Appendix: Exercise in Financial Statement Preparation and Analysis

### Situation

Assume that Les Profit, a farmer, has the cost basis balance sheet for 12/31/X1 shown in Table A.1. In addition, assume that the information in Table A.2 indicates what transpired during the year following the 12/31/X1 balance sheet (i.e., YrX2.) Keep in mind that not all of this information will necessarily be relevant to the assignment.

### Assignments

Please use the information in Tables A-1 and A-2 along with Forms A-1 through A-4 to do the following:

1. Prepare a balance sheet for Les Profit for 12/31/X2 on a **cost basis**.
2. Prepare a YrX2 **accrual-adjusted** income statement.
3. Reconcile the change in net worth between 12/31/X1 and 12/31/X2 with a statement of owner equity.
4. Calculate the following measures of financial position and performance for YrX2. Use the cost basis figures from the balance sheet and the financial analysis for the calculations.
  - A. Liquidity
    1. Current ratio
    2. Working capital
  - B. Solvency
    1. Debt/asset ratio
  - C. Profitability
    1. Rate of return on assets
    2. Rate of return on net worth
  - D. Repayment capacity
    1. Term debt coverage ratio
5. Should Les be pleased with the financial performance of the business in YrX2? Why?

**Table A-1. Les Profit Exercise. Assume Les Profit had the Following Balance Sheet 12/31/X1, on a Cost Basis.**

ASSETS		LIABILITIES	
<i>Current assets</i>		<i>Current liabilities</i>	
Cash	\$15,000	Feed & fertilizer accounts payable	\$5,000
Crops on hand	30,000	Notes payable	12,000
Feeder cattle for sale	25,000	Accrued interest	10,000
<b>Total current assets</b>	<b>\$70,000</b>	Accrued real estate taxes	5,000
<i>Noncurrent assets</i>		Accrued income tax and social security tax	
8,000	Machinery	\$150,000	Current portion of
principal-term debt:			
Land	500,000	Machinery loans	6,000
<b>Total noncurrent assets</b>	<b>\$650,000</b>	Real estate loan	2,000
<b>TOTAL ASSETS</b>	<b>\$720,000</b>	<b>Total current liabilities</b>	<b>\$48,000</b>
		<i>Noncurrent liabilities</i>	
		Machinery loans	19,000
		Real estate loan	222,000
		<b>Total noncurrent liabilities</b>	<b>241,000</b>
		<b>TOTAL LIABILITIES</b>	<b>\$289,000</b>
		<b>NETWORTH</b>	<b>\$431,000</b>
		<b>TOTAL NETWORTH &amp; LIABILITIES</b>	<b>\$720,000</b>

**Table A-2. Transactions during YrX2.**

1. Crop sales	\$130,000
2. Feeder cattle sales	23,000
3. Crop inventory on 12/31/X2	28,000
4. Feeder cattle inventory on 12/31/X2	30,000
5. Feeder cattle purchases during the year	7,000
6. Cash operating expenses	62,000
7. Interest payments: \$18,000 on land loan, \$2,500 machinery loans and \$3,000 operating loan	23,500
8. Miscellaneous farm income	2,200
9. Depreciation (on equipment owned as of 1/1/X2)	21,000
10. Cash purchase of drill during the year (The drill depreciated to \$22,000 during the year. This \$3,000 depreciation is not included in the \$21,000 shown in No. 9 above.)	25,000
11. Accrued interest (\$8,000) and real estate taxes (\$4,000) as of 12/31/X2	12,000
12. Principal payments (made on an annual basis)	
Machinery loan	6,000
Land loan	2,000
13. Value of land increased by 2% (on a market basis) and cost was unchanged from 12/31/X2	—
14. Income tax and social security tax payments on YrX1 income	10,000
15. Net nonfarm income (interest, dividends)	2,500
16. Feed and fertilizer accounts payable as of 12/31/X2	2,000
17. Notes payable within 12 months as of 12/31/X2	12,000
18. Family living expenditures during YrX2	32,000
19. Estimated income tax and social security tax for YrX2	11,000
20. Cash on hand as of 12/31/X2	5,200





**Form A-1. Balance Sheet 12/31/X2.**

<b>ASSETS</b>		<b>LIABILITIES</b>	
<i>Current assets</i>		<i>Current liabilities</i>	
Cash on hand	\$ _____	Feed & fertilizer accounts payable	\$ _____
Crops on hand	_____	Notes payable (within 12 mos.)	_____
Feeder cattle for sale	_____	Accrued items:	
<b>Total current assets</b>	<b>\$ _____</b>	Interest	_____
<i>Noncurrent assets</i>		Real estate taxes	_____
Machinery	_____	Income and social security taxes	_____
Land	_____	Current portion of principal-term debt:	
<b>Total noncurrent assets</b>	<b>\$ _____</b>	Machinery loan	_____
<b>TOTAL ASSETS</b>	<b>\$ _____</b>	Real estate loan	_____
		<b>Total current liabilities</b>	<b>\$ _____</b>
		<i>Noncurrent liabilities</i>	
		Machinery loans	_____
		Real estate loan	_____
		<b>Total noncurrent liabilities</b>	_____
		<b>TOTAL LIABILITIES</b>	_____
		<b>NETWORTH</b>	_____
		<b>TOTAL NETWORTH &amp; LIABILITIES</b>	<b>\$ _____</b>

**Form A-2. Income Statement for Year Ending 12/31/X2.**

<i>Revenue</i>			
Crop sales-cash	\$ _____		_____
Crop inventory change	_____		_____
Total crop		\$ _____	
Cattle sales-cash	_____		_____
Cattle inventory change	_____		_____
Total cattle		\$ _____	
Miscellaneous income, farm			_____
<b>Gross Revenue</b>		<b>\$ _____</b>	
Less feeder cattle purchased		\$ _____	
<b>Value of Farm Production</b>		<b>\$ _____</b>	
<i>Expenses</i>			
Cash operating expenses	\$ _____		
Expense adjustment:			
Real estate taxes	_____		
Accounts payable (feed & fertilizer)	_____		
Depreciation	_____		
Total operating expenses		\$ _____	
Interest expense			_____
<b>Net Farm Income</b>		<b>\$ _____</b>	
<i>Non-Farm</i>			
Interest and dividends	\$ _____		
<b>Net Non-farm Income</b>			_____
Net income before taxes			_____
Provision for income and social security tax			_____
<b>NET INCOME</b>		<b>\$ _____</b>	

**Form A-3. Reconciliation of Net Worth Change—YrX2.**

---

Beginning net worth (12/31/X1)           \$ \_\_\_\_\_  
+ Net income, YrX2                           \_\_\_\_\_   
– Family living expenses, YrX2           \_\_\_\_\_   
= Ending net worth (12/31/X2)       = \$ \_\_\_\_\_

**Form A-4. Financial Analysis for Year Ending YrX2.**

---

**A. Liquidity**

1. Current ratio

2. Working capital

**B. Solvency**

1. Debt/asset ratio

**C. Profitability**

1. Rate of return on assets

2. Rate of return on equity

**D. Repayment Capacity**

1. Term debt coverage ratio



## Exercise Answers

1. Prepare a balance sheet for Les Profit for 12/31/X2 on a cost basis.

### **Accrual adjustments: Impact of balance sheet changes on income statement.**

Balance Sheet Item	Asset or Liability	Balance Sheet Bg.	Balance Sheet End	Income Statement Impact	
				Revenue Impact	
		\$	\$	Increase or	Decrease?
Wheat in Storage	A	25,000	10,000	\$ 15,000	D
Feed on Hand	A	2,500	3,500	\$ 1,000	I
Accounts Receivable	A	10,000	8,000	\$ 2,000	D
Feeder Livestock	A	50,000	35,000	\$ 15,000	D
				Expense Impact	
Accounts Payable	L	7,500	7,000	\$ 500	D
Accrued Prop. Taxes	L	4,200	4,800	\$ 600	I
Accrued Interest	L	15,500	14,200	\$ 1,300	D
Prepaid Expenses	A	5,000	2,000	\$ 3,000	I
Invest. in Growing Crop	A	35,000	40,000	\$ 5,000	D
Supplies	A	3,000	5,000	\$ 2,000	D

### **Relationship between Bg NW, NI, WD, and end NW assuming cost basis balance sheets and no capital contributions/distributions.**

	Situation 1	Situation 2	Situation 3	Situation 4
<b>Bg NW</b>	\$200,000	\$250,000	\$300,000	\$335,000
<b>NI</b>	50,000	40,000	30,000	50,000
<b>WD<sup>a</sup></b>	25,000	35,000	40,000	35,000
<b>End NW</b>	225,000	255,000	290,000	350,000

<sup>a</sup>WD = BgNW + NI – End NW

## Les Profit Balance Sheet 12/31/X2

ASSETS		LIABILITIES	
<i>Current assets</i>		<i>Current liabilities</i>	
Cash on hand (20) <sup>a</sup>	\$5,200	Feed & fertilizer accounts payable (16)	\$2,000
Crops on hand (3)	28,000	Notes payable (within 12 mos.) (17)	12,000
Feeder cattle (4)	30,000	Accrued items:	
<b>Total current assets</b>	<b>\$63,200</b>	Interest (11)	8,000
<i>Noncurrent assets</i>		Real estate taxes (11)	4,000
Machinery <sup>b</sup>	\$151,000	Income & social security taxes (19)	11,000
Land (13)	500,000	Current portion of principal-term debt:	
<b>Total noncurrent assets</b>	<b>\$651,000</b>	Machinery loan (12)	6,000
<b>TOTAL ASSETS</b>	<b>\$714,200</b>	Real estate loan (12)	2,000
		<b>Total current liabilities</b>	<b>\$45,000</b>
		<i>Noncurrent liabilities</i>	
		Machinery loans (\$19,000-\$6,000)	13,000
		Real estate loan (\$222,000-\$2,000)	220,000
		<b>Total noncurrent liabilities</b>	<b>233,000</b>
			<b>233,000</b>
		<b>TOTAL LIABILITIES</b>	<b>\$278,000</b>
		<b>NETWORTH</b>	<b>\$436,200</b>
		<b>TOTAL NETWORTH &amp; LIABILITIES</b>	<b>\$714,200</b>

<sup>a</sup> Numbers in parentheses refer to the transaction number in Table A-2.

<sup>b</sup> \$150,000 12/31/X1 + \$25,000 drill purchase – \$3,000 drill depr. (X2) – \$21,000 other depr. (X2) = \$151,000

2. Prepare a YrX2 accrual-adjusted income statement.

**Income Statement for year ending 12/31/X2**

**REVENUES**

Cash sales-cash (1)	\$130,000	
Crop inventory change (-\$30,000 Bg. + \$28,000 End)	-2,000	
Total crop		\$128,000
Cattle sales-cash (2)	23,000	
Cattle inventory change (-\$25,000 Bg. + \$30,000 End)	+5,000	
Total cattle		\$28,000
Miscellaneous income, farm (8)		2,200
<b>Gross Revenue</b>		<b>\$158,200</b>
Less feeder cattle purchased (5)		7,000
<b>Value of Farm Production</b>		<b>\$151,200</b>

**EXPENSES**

Cash operating expenses (6)	\$62,000	
Expense adjustment:		
Real estate taxes (-\$5,000 Bg + \$4,000 End)	-1,000	
Accounts payable (feed & fertilizer)		
(-5,000 Bg. + \$2,000 End)	-3,000	
Depreciation	24,000	
Total Operating Expenses		\$82,000
Interest expense		
(\$23,500 cash – \$10,000 Bg. Acc. Int. + \$8,000 End Acc. Int.)		21,500
<b>Net Farm Income</b>		<b>\$47,700</b>

**NON-FARM**

Interest and dividends (15)	\$2,500	
<b>Net Non-farm income</b>		<b>\$2,500</b>
Net income before taxes		50,200
Provision for income & social security tax		
(\$10,000 Cash – \$8,000 Bg. Acc. + End Acc.)		13,000

**NET INCOME** **\$37,200**

<sup>a</sup> Numbers in parentheses refer to the transaction from Table A-2.

3. Reconcile the change in net worth between 12/31/X1 and 12/31/X2 with a statement of owner equity.

**Reconciliation of net worth changes—YrX2.**

Beginning net worth (12/31/X1)	\$ 431,000
+ Net income, YrX2	37,200
– Family living expenses, YrX2	32,000
= Ending net worth (12/31/X2)	= \$436,200

4. Calculate the following measures of financial position and performance for YrX2. Use the cost basis figures from the balance sheet and the financial analysis for the calculations.

**A. Liquidity**

1. Current ratio  
=  $CA \div CL$   
=  $\$63,200 \div \$45,000$   
= 1.404:1

2. Working capital  
=  $CA - CL$   
=  $\$63,200 - \$45,000$   
=  $\$18,200$

**B. Solvency**

1. Debt/asset ratio  
=  $TL \div TA$   
=  $\$278,000 \div \$714,200$   
= 0.389:1

**C. Profitability**

1. Rate of return on assets  
=  $\frac{NFI + Interest - Withdrawals}{(Bg. Total Assets + End Total Assets) \div 2}$   
=  $\frac{\$47,700 + \$21,500 - \$32,000}{(\$720,000 + \$714,200) \div 2} \times 100$   
= 5.2%

$$\begin{aligned}
& 2. \text{Rate of return on equity} \\
& = \frac{\text{NFI} - \text{Withdrawals}}{(\text{B}g. \text{Net Worth} + \text{End Net Worth}) \div 2} \times 100 \\
& = \frac{\$47,700 - \$32,000}{(\$431,000 + \$436,200) \div 2} \times 100 \\
& = 3.6\%
\end{aligned}$$

#### D. Repayment Capacity

##### I. Term debt coverage ratio

NFI	\$47,700
+ Non-Farm Income	+ 2,500
+ Depreciation	+ 24,000
+ Interest on Term Debt (\$21,500-\$3,000 Op. Loan)	+ 18,500
= Earnings Available for Withdrawals, Taxes, P & I on Term Debt, & New Investments	= 92,700
- Personal Withdrawals (\$32,000) & Taxes (\$13,000)	- 45,000
= Capacity for P&I Payments on Term Debt & New Investments	= 47,700
÷ Scheduled P&I Payments on Term Debt	÷ 26,500
= Term Debt Coverage Ratio	= 1.80:1

5. Should Les be pleased with the financial performance of the business in X2?

Yes, but not overjoyed!

Key points:

- 🔧 Liquidity
  - Current ratio 1:4 (yellow)
  - Working capital is positive.
- 🔧 Solvency
  - Debt/asset ratio = 0.39:1 (yellow)
- 🔧 Profitability
  - ROA = 5.2% (green)
  - ROA > ROE, so on the average debt is not being used profitably.
  - Net income exceeds personal withdrawals, so cost basis net worth increased.
- 🔧 Repayment Capacity
  - Term debt coverage ratio = 1.80:1 (green)

