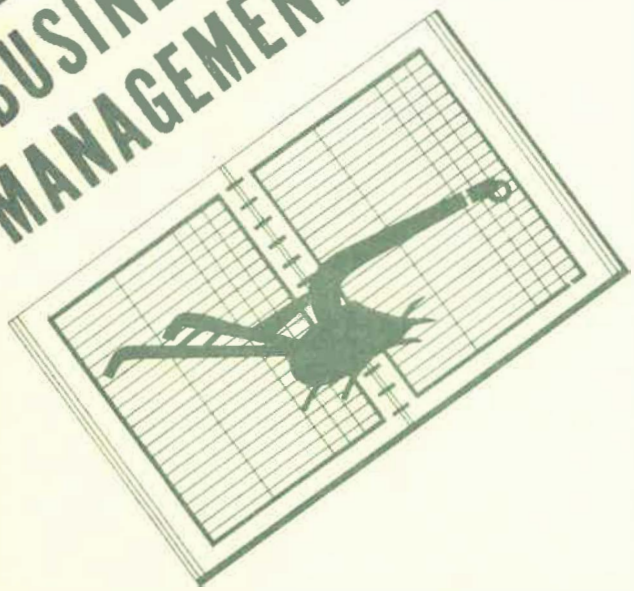
FARM BUSINESS MANAGEMENT



Farm & Ranch Management Education

A Course of Study For Adults
Fourth Edition

Volume II

Edgar A. Persons, Ph.D.
James Warner, M.A.

DIVISION OF AGRICULTURAL EDUCATION
130 Classroom Office Building
University of Minnesota
St. Paul, MN 55108

AN ADULT EDUCATIONAL PROGRAM

FARM and RANCH MANAGEMENT EDUCATION

A course of study
for adults

Fourth Edition
Volume II

by
Edgar A. Persons PhD
James Warner, M.A.

Division of Agricultural Education
Department of Vocational-Technical Education
University of Minnesota
St. Paul, Minnesota

1979

Third Edition published under the Title "A Course of Study for Adult Farmer Instruction in Farm Management and Farm Business Analysis".

TABLE OF CONTENTS

Foreword

Instructors who have used Volume I of this course of study will find a natural transition into the units presented here. It is assumed that all of the farmers and ranchers in the second year of farm and ranch management instruction have completed a business analysis using the Minnesota model for farm business analysis.

Because the crop and livestock enterprises vary so greatly from area to area, this volume concentrates on the principles of business analysis rather than on specific enterprises. The common crop and livestock enterprises are used as illustrations in most of the units.

In order for the instructor to teach these units well, it will be necessary that he/she understands how the analysis has been compiled. Every instructor should have studied the Documentation for the Farm Business Analysis. Completing the worksheets incorporated in Exploring the Farm Business Management Analysis Report will also assist the instructor in understanding how the analysis has been prepared.

Instructors should bear in mind that the objective for this year is to understand the analysis process, interpret the results and translate the interpretation into changes or revisions in the farm operation that will lead toward the family goals. Except to clarify a question, little time should be directed at trying to explain or verify the formulae used in the Analysis process. After all, farmers paid for the analysis to relieve them from the computational chores.

Some farmers will be anxious to make substantial changes in their business as a result of the analysis. Others will be slow to project any changes. It is the task of the instructor to temper the enthusiasm of some for change until adequate thought and planning has occurred, while with others the job will be to motivate them toward change. Some instructors have found that a written evaluation of the analysis that uses comments designed 1) to tell 2) to suggest 3) to question 4) the encourage and 5) to provoke, is a useful tool in assisting farmers to sort out the important facts in their analysis report. The narrative comments can provide the tempering effect on business change.

The role of the instructor is to teach. Farm clients who complete this second year of instruction should be better able to understand the complexities of their business and be prepared to enthusiastically complete the second farm record and business analysis in search of management decision making information.

INTRODUCTION TO FARM AND RANCH

BUSINESS MANAGEMENT II

Because management education is a continuing program, there is no natural break between Farm Management I and Farm Management II. The second year of instruction may be called "Farm Business Analysis", or any other appropriate title that suggests the theme of analysis interpretation. The program of instruction begins in January and continues through December with particular emphasis on the interpretation of the first year's analysis. The first two or three teaching units deal with cash flow projections and other background information that will prepare the farmer or rancher to study the business analysis. The analysis interpretation itself will begin in March or April depending on when the business analysis for the past year's record has been returned from the area analysis center. If the complete analysis summary is not yet available, the March meeting can well be based on general information obtained from the individual preliminary reports of cooperators. At this time, all or most of the families have received their preliminary reports and are eager for guidance to begin a study of the first complete analysis of their farm business. They will no doubt have many questions.

The subject matter of many of the lessons in Farm Management II are examples of the application of sound management and economic principles. While the principles are often not explicitly identified, the instructor should be alert to the opportunity to explain the nature of the principle to the farm families, and to name and identify the principles with which the unit is concerned.

Unit II - 1

CASH FLOW ANALYSIS

PART I. Student Objectives

A. Given a sample annual cash flow analysis form and an explanation of its importance the student will be able to identify five major purposes for making a cash flow analysis.

B. Following a discussion of sources of cash the student will be able to identify five major sources of cash involved in the cash flow of the farm family business.

C. Following a discussion of uses of cash the student will be able to identify four major uses of cash involved in the cash flow of the farm family business.

D. Given a basic diagram showing the flow of cash through the farm business the student will be able to complete a cash flow illustration for his/her farm family business.

E. Given a sample annual cash flow analysis families will be able to complete a cash flow forecast for their farm, and will be able to identify management controls which can be used to influence the flow of cash in the farm family business.

PART II. Transition of Units

The previous unit concluded the first year of farm management instruction and by illustration demonstrated a procedure for closing out the year's farm business record. The close-out procedure will be completed by most farms during the January-February time period.

This unit will begin the year of instruction centering around the analysis of the previous years records. Twelve months of complete farm and family records are now available and can be used to make a cash flow forecast. Careful planning is necessary so that cash is always available in time to meet obligations, or to take advantage of opportunities.

The following unit looks at a number of ways to measure the progress of the farm. Definitions are included of financial items which can be used to measure progress in relationship to goals.

PART III. The Lesson

Attention Focuser

A farmer began the year with a cash balance of $1,000. During the months of January, February and March the farmer had a cash income of $4,000,

$3,000 and $3,000. During that period of months the farm had cash expenses of $2,000, $5,000 and $5,000. Does the farmer have a problem? (use Appendix A to present the problem to the group)

KEY QUESTION 1. What are the purposes of a cash flow analysis?

1. Will show sources of cash.
2. Will show when cash will come in.
3. Will show uses of cash.
4. Will show when cash will be used.
5. Will show when there will be a surplus or shortage of cash.
6. Will show when cash will be available to repay loans.
7. Will show month-to-month progress in reaching your goals.
8. Can be used for credit purposes.

Suggested Teaching Strategy

Utilize Appendices B & C to illustrate and discuss this key question. Briefly explain the organization of a cash flow analysis form, and how it ties to the farm account book by utilizing Appendix C. If the account book used does not have a cash flow section, hand out copies of Appendix C. Use Appendix B as a transparency to highlight the discussion on the purposes of cash flow analysis.

KEY QUESTIONS 2. What are the major sources of cash involved in the cash flow of the farm family business?

1. Farmer's investment

Most farms are bought when the owner gathers enough money to make a down payment on land, buildings, machinery, equipment and livestock. Hopefully there will be enough suplus cash to pay bills until money is received from the sale of livestock products, livestock or crops. Usually, the more money a farmer can leave in the business at the beginning the better will be the chance for success.

Some sources of cash might be:

a. Personal savings
b. Inheritance
c. Sale of real estate or personal property
d. Sale of stock or bonds

2. Borrowing from Financial Institutions

Banks, governmental agencies and other lenders will provide start-up capital for a farm. Loans must be repaid from income on a set schedule. The risk involved will determine the amount of interest which must then be included in the cost of doing business. In all cases the lender will require that the borrower pledge personal and/or farm assets as collateral. Even if the farm business does not succeed the loan and interest must be repaid.

Common sources of borrowed cash are:

a. Banks
b. Farmers Home Administration
c. Federal Land Bank
d. Production Credit Association
e. Friends or relatives

3. Equity Financing

For long-term financial needs you may need to sell part of the ownership in the farm to partners or stockholders who wish to invest. In most cases the money does not have to be repaid but the profit of the farm would be distributed to all the owners according to the amount invested.

4. Cash Sales of Farm Production

Once the farm business is in operation cash will begin to flow according to the sale of livestock, crops or other products. These receipts should be deposited as soon as they are received so they are available to pay bills. Obviously the best cash in-flow will be experienced by those farms that have a regular sale of products, i.e. dairy farms, and those farms that deal strictly in cash.

5. Sale of Fixed Assets

In addition to being used as collateral for loans the assets of the farm may be sold for cash, or more commonly, used as a trade-in toward the purchase of new equipment.

Suggested Teaching Strategy

Utilize Appendix D to highlight the discussion under this key question. Have the class add their experiences to the list of sources of cash.

You might choose to ask class members for their ideas, and after you have written them on the chalkboard in the form of the five major headings, utilize the narrative under each source to aid the discussion.

KEY QUESTION 3. What are the most common uses of cash in the farm family business?

1. Production Costs
   a. Feed
   b. Fertilizer, chemicals, other crop expenses
   c. Repairs and fuel
   d. Labor hired

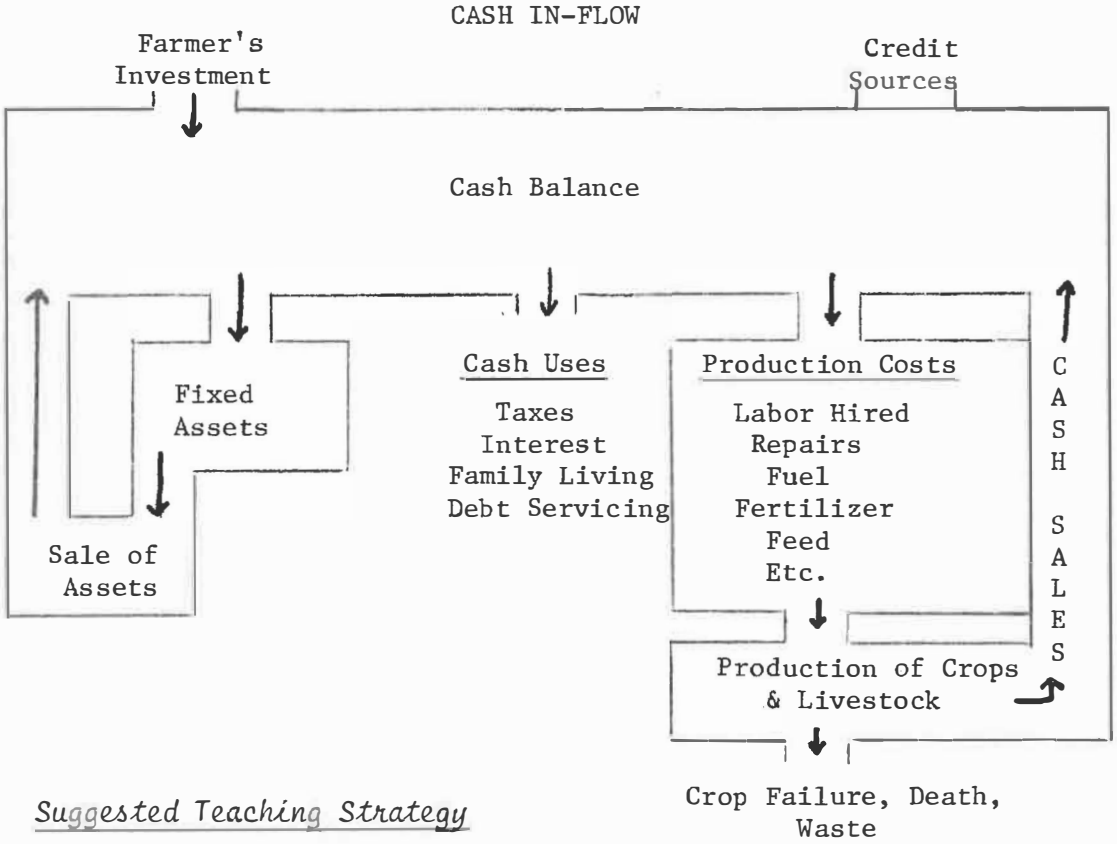
2. Purchase of Fixed Assets
   a. Machinery, equipment
   b. Vehicles
   c. Land, Buildings

3. Taxes and Interest
4. Family Living
5. Debt Servicing

Suggested Teaching Strategy

Solicit suggestions from class members concerning uses of cash. Utilize Appendix E to outline the discussion.

KEY QUESTION 4. How does cash flow through the farm business?



Suggested Teaching Strategy

Utilize Appendices F and G to illustrate how cash flows through the farm business. Appendix F shows cash in-flow, and follows the discussion under Key Question 2. Appendix G shows the cash out-flow and follows the discussion under Key Question 3. When discussing how cash flows through the farm business care should be taken to talk about the "timing" of sources and uses.

It may not be apparent to everyone why cash flow planning is an essential part of every farm business. The timing of purchases and sales can do a lot to decrease the cost of capital (interest) in most farm operations. Proper timing can substantially reduce worry and apprehension over the payment of bills.

KEY QUESTION 5. How can forecasts of farm business be used to complete a cash budget?

Step 1. Calculate Total Cash Sources (A) directly from farm account book.
Step 2. Calculate Total Cash Uses (B) directly from farm account book.
Step 3. Utilizing the Beginning Cash Balance, Total Cash Source and Total Cash Use calculate the Cash Difference (surplus or shortage).
Step 4. Add Money Borrowed during the Year and subtract Principle and Interest Payments on Current Loans to arrive at the Ending Cash Balance.
Step 5. By looking at Monthly Cash Balances determine when surplus cash will be available for loan repayment or for additional purchases. If cash shortages will exist plan what needs to be done to change the situation.

Suggested Teaching Strategy

Utilize Appendix H in handout or transparency form to show the steps in actually completing a Cash Flow Analysis Form. The example shown illustrates a problem occuring as early as the month of March with the cash balance of the farm. It is obvious that cash uses exceed cash sources throughout most of the year. The discussion that is likely to occur when the class members study the illustrated farm will naturally lead to the next key question.

KEY QUESTION 6. What controls can be used to manage the flow of cash in the farm business?

1. Reduction or increase in inventory of livestock or stored crops.
2. Extension of payment dates.
3. Shopping for favorable interest rates and availability of loanable funds.
4. Analysis and reduction of expenses.
5. Price increase through better marketing strategy.
6. Good buying practices.
7. Take less cash out of the farm business.

Suggested Teaching Strategy

Utilize Appendix I to outline the "Management Controls" discussion. Relate the points to Appendix H to illustrate the possible effect of these controls on cash flow.

PART IV. Summary

A. Cash flow analysis will help identify major sources and uses of cash in a time-of-occurence format.

B. A cash flow diagram helps the farmer visualize the flow of cash in and out of the cash reservoir.

C. The timing of cash inflow to meet anticipated cash outflow is one of several management controls that can be used in cash flow budgeting.

As a reminder of the value of cash flow budgeting, distribute a copy of appendix J "How Farmers Can Use Cash Flow Budgets" to each participant.

PART V. At-The-Farm Activities

Every family should be given one or two copies of Appendix C, the blank Cash Flow Analysis form during the class session. Utilizing the previous year completed farm account book they should be urged to complete a cash flow analysis form.

Completion of the cash flow analysis form requires more than just copying numbers from the previous year's historical record. The farm family should be instructed to "forecast" cash sources and uses for the current year. For many of the items appearing on last years record only slight adjustments for inflation need to be made. For other items, like livestock, machinery or buildings, a major purchase or sale that is planned will have to be accounted for.

When the cash flow analysis form has been completed the instructor should remind the farm family of the management controls available to help "fine tune" the cash budget.

PART VI. Resources

Chalkboard/Overhead Projector
Transparencies of Appendices A,B,D,E,F,G,I
Class Quantities of Appendices C,H

PART VII. References

Don Walker, "The Cash Flow Analysis," Minnesota Instructional Materials Center, 3554 White Bear Avenue, White Bear Lake, MN 55110, 1975.

J.H. Herbert, Farm Management - Principles, Budgets, Plans, Stipes Publishing Company, Champaign, IL 61820, 1975.

The Account Book, Burgess Publishing Co., Minneapolis, MN.

PART VIII. Appendices

A. Cash Flow Situation
B. Cash Flow Analysis Will Show
C. Annual Cash Flow by Months
D. Sources of Cash
E. Uses of Cash
F. Cash Sources
G. Cash Sources
H. Annual Cash Flow by Months
I. Management Controls
J. How Farmers Can Use Cash Flow Budgets

APPENDIX A

CASH FLOW SITUATION

JANUARY 1ST CASH BALANCE $1,000

CASH INCOME		CASH EXPENSES
$4,000	JANUARY	$2,000
$3,000	FEBRUARY	$5,000
$3,000	MARCH	$5,000

DOES THIS FARMER HAVE A PROBLEM?

APPENDIX B

CASH FLOW ANALYSIS WILL SHOW:

1. Sources of cash
2. When cash will come in
3. Uses of cash
4. When cash will be used
5. When there will be a surplus or shortage of cash
6. When cash will be available to repay loans
7. Month-to-month progress in reaching your goals
8. Your needs and abilities to Credit Agencies

Line No.	APPENDIX C Item	From Page No. (In this account book)	January	February	March	April	May	June	July	August
CASH INFLOWS										
1.	Beginning Check Book Balance	XXXX								
2.	Milk	2								
3.	Cattle	5, 9, 11 13-15								
4.	Hogs	17, 18								
5.	Other Livestock ( )	13-15, 19 21-23								
6.	Crop ( )	36								
7.	Crop ( )	36, 37								
8.	Crop ( )	36, 37								
9.	Crop ( )	36, 37								
10.	Capital Sales (except breeding livestock)	43								
11.	Custom Work Done	55								
12.	Co-op Dividend (cash amount only)	55								
13.	Other Cash Inflow	55								
14.	New Money Borrowed	57								
15.	Non-Farm Cash Inflow	59								
16.	**Total Cash Inflows	XXXX								
CASH OUTFLOWS		XXXX								
17.	Livestock Bought For Resale	9, 13-16 19, 20								
18.	Breeding Fees	24, 25								
19.	Veterinary	24, 25								
20.	Other Livestock Expense	3, 24, 25								
21.	Feed Purchased	28-31								
22.	Fertilizer & Lime	38								
23.	Crop Chemicals	38								
24.	Seeds & Plants Purchased	39								
25.	Other Crop Expenses	39								
26.	Machine Hire	40								
27.	Freight and Trucking	40								
28.	Building & Fence Repair	41								
a.	Subtotal Cash Outflow - (transfer to page 76)	XXXX								

Line No.	September		October		November		December		Year Total	
XXX										
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										
16.**										
XXX										
17.										
18.										
19.										
20.										
21.										
22.										
23.										
24.										
25.										
26.										
27.										
28.										
a.										

APPENDIX C

WHY KEEP A CASH FLOW SUMMARY?

A Cash Flow Summary can assist the farmer/ranchman three ways in managing the farm/ranch business. First, it provides an opportunity to check the completeness and accuracy of the accounts being kept, i.e., the discrepancy, if one appears on line 53, indicates that something is missing. Second, a monthly cash flow summary permits the manager to better perform an important function of management, that of monitoring and control. Third, a monthly cash flow summary provides the basis for projecting the cash flow for the next year.

Line No.	APPENDIX C Item	From Page No. (In this account book)	January	February	March	April	May	June	July	August
b.	Subtotal Cash Outflow — from page 74)									
29.	Rent	43								
30.	Taxes — R.E. & P.P.	43								
31.	Gasoline, Fuel & Oil	44, 45								
32.	Machinery Repair & Oper. — Crop	46-51								
33.	Machinery Repair & Oper. — Livestock	46-51								
34.	Auto & Truck Expense	46-51								
35.	Labor Hired	52, 53								
36.	Storage & Warehousing	39, 54								
37.	Insurance	39, 46-51, 54								
38.	Utilities	54								
39.	Miscellaneous Expense	54								
40.	Interest	56								
		XXXX								
	CAPITAL PURCHASES (BOOT ONLY)									
41.	Livestock (Dairy & Breeding)	4, 9, 11, 16								
42.	Machinery & Equipment	42								
43.	Buildings & Improvements	42								
44.	Land & Improvements	42								
	OTHER									
45.	Non-Farm Capital Purchases	42								
46.	Repayment of Principal	56								
47.	Addition to Non-Farm Investment	58								
48.	Income Tax & S.E. Social Security	59								
49.	Family Living	73								
50.	Addition to Savings	XXXX								
51.	Ending Check Book Balance	XXXX								
52.	**Total Cash Used	XXXX								
53.	Discrepancy (line 16-line 52)	XXXX								

Line No.	September		October		November		December		Year Total	
28.										
29.										
30.										
31.										
32.										
33.										
34.										
35.										
36.										
37.										
38.										
39.										
40.										
41.										
42.										
43.										
44.										
45.										
46.										
47.										
48.										
49.										
50.										
51.										
52.										
53.										

APPENDIX C

NOTE ON PAGES 76 & 77

Please note that for the items shown in rows 29, 30, 34, 37, 38, 39, and 40, you should enter the total spent or paid for that item for the month, i.e., total rent, total auto & truck expense, total utilities, etc. However, at the end of the accounting or tax year or both, for the purposes of both preparing your income tax return and for your farm and enterprise business analysis, you will need to divide the amount spent for these specific items into farm share and personal share, as is indicated on the respective pages in this account book where these seven items are found.

APPENDIX D

SOURCES OF CASH

1. Farmers Investment
   - A. Personal savings
   - B. Inheritance
   - C. Sale of real estate or personal property

2. Common Sources of Borrowed Cash
   - A. Banks
   - B. Farmers Home Administration
   - C. Federal Land Banks
   - D. Production Credit Association
   - E. Friend or relatives

3. Equity Financing

4. Cash Sales of Farm Production

5. Sale of Fixed Assets

APPENDIX E

USES OF CASH

1. Production Costs
   - A. Feed
   - B. Fertilizer, chemicals, other crop expenses
   - C. Repairs and fuel
   - D. Labor hired

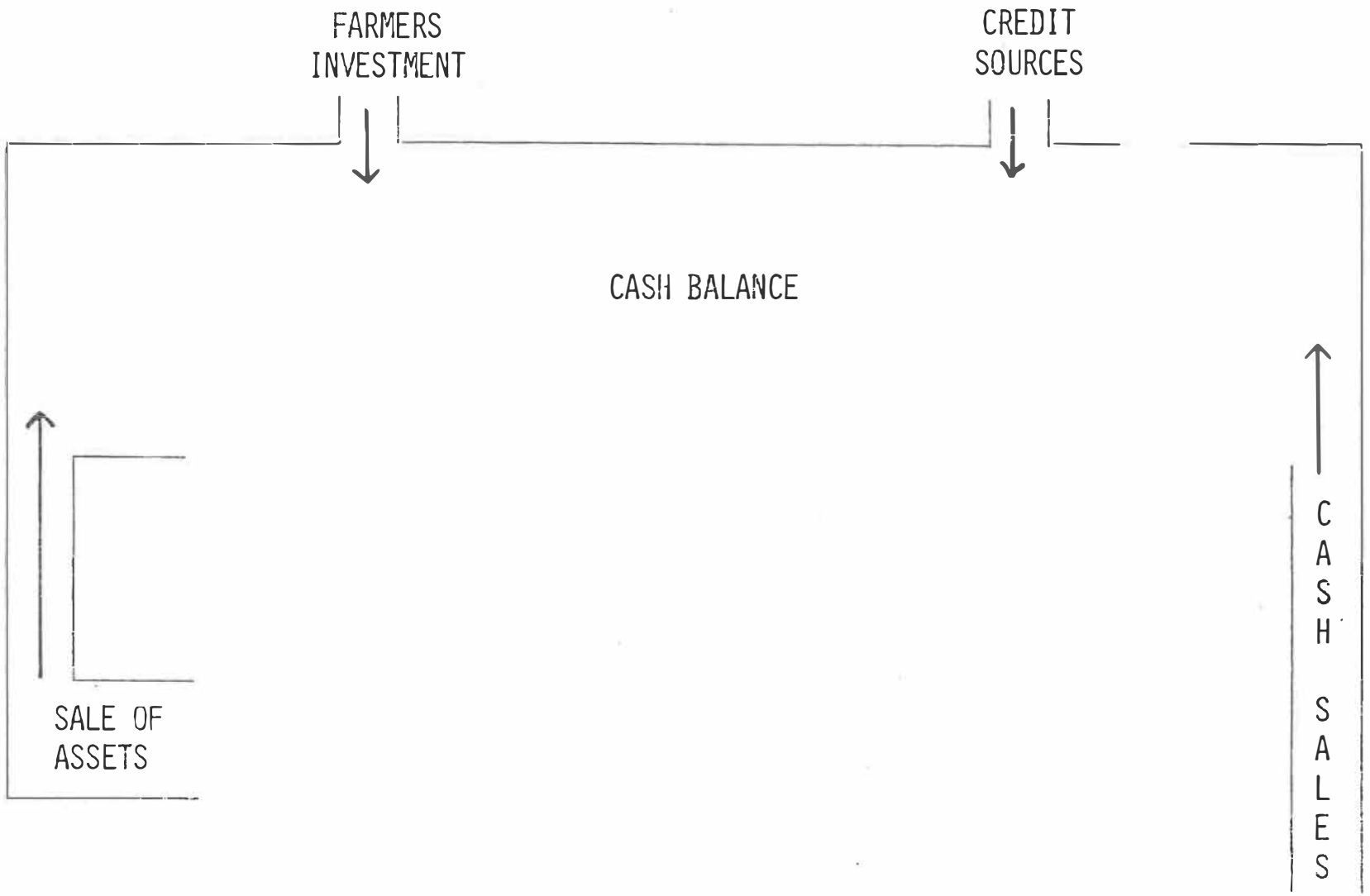
2. Purchase of Fixed Assets
   - A. Machinery, equipment
   - B. Vehicles
   - C. Land, buildings

3. Taxes and Interest

4. Family Living

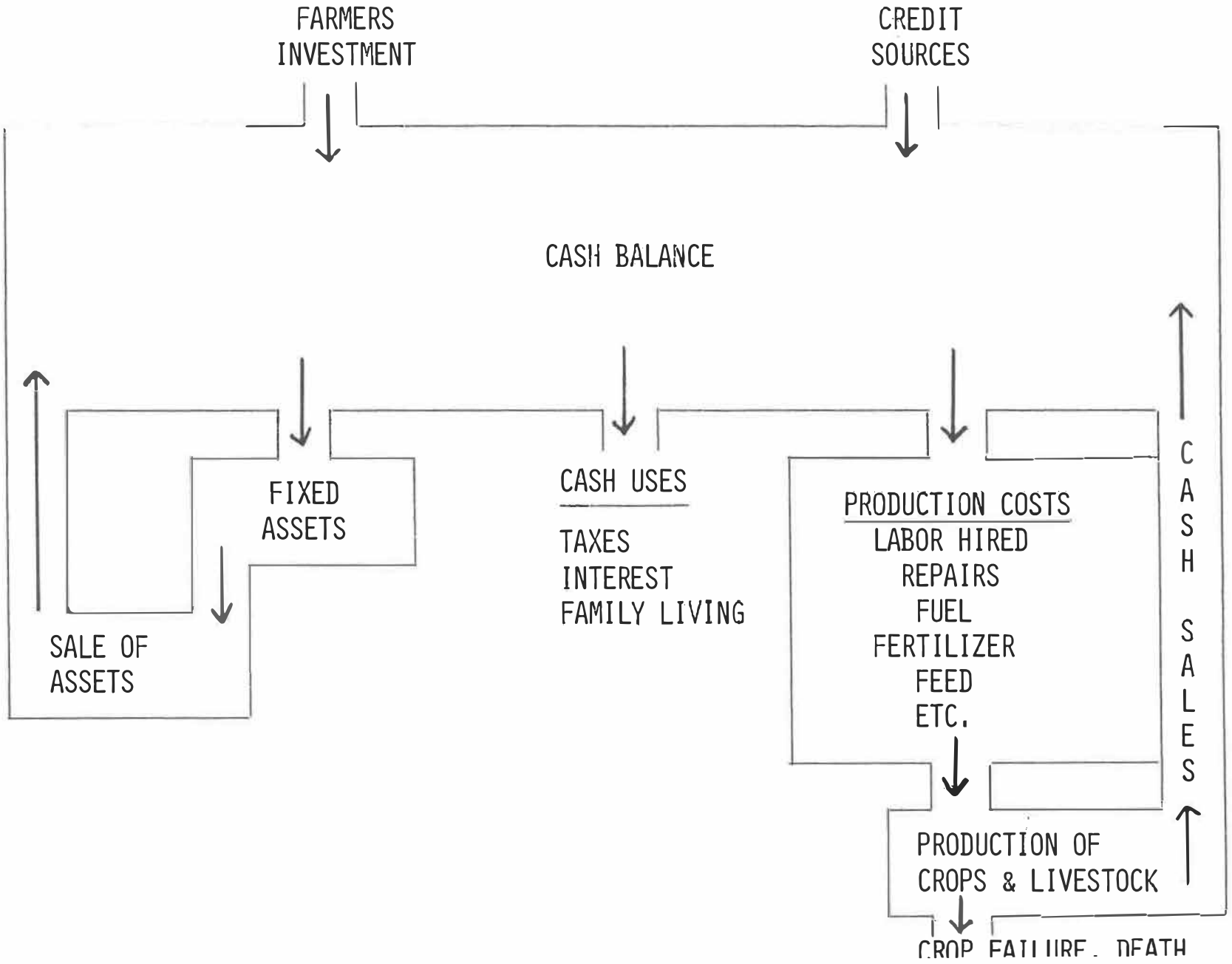
APPENDIX .

CASH SOURCES



APPENDIX G

CASH SOURCES



Line No.	APPENDIX H Item	From Page No. (In this account book)	January	February	March	April	May	June	July	August
CASH INFLOWS										
1.	Beginning Check Book Balance	XXXX	960 –							
2.	Milk	2	4,921 –	5,044 –	4,890 –	4,125 –	4,371 –	4,319 –	4,341 –	4,592 –
3.	Cattle	5, 9, 11 13-15	1,584 –		865 –		591 –	2,354 –	326 –	621 –
4.	Hogs	17, 18	307 –			5,566 –	1,361 –	5,094 –		4,284 –
5.	Other Livestock ( )	13-15, 19 21-23								
6.	Crop ( ) Soybeans	36								
7.	Crop ( )	36, 37								
8.	Crop ( )	36, 37								
9.	Crop ( )	36, 37								
10.	Capital Sales (except breeding livestock)	43								
11.	Custom Work Done	55							536 –	
12.	Co-op Dividend (cash amount only)	55								
13.	Other Cash Inflow Int. + gas tax refund	55			437 –					
14.	New Money Borrowed	57	4,300 –							
15.	Non-Farm Cash Inflow Mrs. Sample	59	220 –	220 –	220 –	220 –	220 –	220 –	220 –	220 –
16.	**Total Cash Inflows	XXXX	12,292 –	5,264 –	6,412 –	9,911 –	6,543 –	11,987 –	5,423 –	9,717 –
CASH OUTFLOWS		XXXX								
17.	Livestock Bought For Resale	9, 13-16 19, 20								
18.	Breeding Fees	24, 25								
19.	Veterinary	24, 25								
20.	Other Livestock Expense	3, 24, 25	349 –	286 –	672 –	227 –	238 –	220 –	531 –	462 –
21.	Feed Purchased	28-31	555 –	232 –	420 –	1,833 –	503 –	1,582 –	1,717 –	745 –
22.	Fertilizer & Lime	38				1,232 –	1,160 –	2,580 –		
23.	Crop Chemicals	38					660 –	864 –		
24.	Seeds & Plants Purchased	39		1,260 –		510 –				
25.	Other Crop Expenses (other than Milk Trucking)	39						120 –		
26.	Machine Hire	40	58 –		27 –	155 –	10 –	170 –	9 –	123 –
27.	Freight and Trucking	40								
28.	Building & Fence Repair	41	28 –		18 –			20 –	110 –	1 –
29.	Subtotal Cash Outflow – (transfer to page 76)	XXXX	990 –	1,778 –	1,137 –	3,957 –	2,571 –	5,556 –	2,367 –	1,331 –

Line No.	APPENDIX H Item	From Page No. (In this account book)	January	February	March	April	May	June	July	August
b.	Subtotal Cash Outflow – from page 74)		990 –	1,778 –	1,137 –	3,957 –	2,571 –	5,556 –	2,367 –	1,331 –
29.	Rent	43			4,745 –					
30.	Taxes – R.E. & P.P.	43					815 –			
31.	Gasoline, Fuel & Oil	44, 45	231 –	196 –	182 –	615 –	668 –	498 –	481 –	408 –
32.	Machinery Repair & Oper. – Crop	46-51	30 –	219 –	419 –	117 –	392 –	226 –	210 –	107 –
33.	Machinery Repair & Oper. – Livestock	46-51								
34.	Auto & Truck Expense	46-51								
35.	Labor Hired	52, 53	846 80	846 80	846 80	846 80	846 80	846 80	846 80	846 80
36.	Storage & Warehousing	39, 54								
37.	Insurance	39, 46-51, 54								
38.	Utilities	54	128 –	176 –	146 –	145 –	141 –	158 –	161 –	144 –
39.	Miscellaneous Expense	54		62 –	84 –	8 –	21 –	20 –	35 –	62 –
40.	Interest	56	1,774 –			1,597 –		1,614 –		243 –
		XXXX								
CAPITAL PURCHASES (BOOT ONLY)										
41.	Livestock (Dairy & Breeding)	4, 9, 11, 16								2,150 –
42.	Machinery & Equipment	42	3,750 –		700 –			950 –		
43.	Buildings & Improvements	42								
44.	Land & Improvements	42								
OTHER										
45.	Non-Farm Capital Purchases	42	1,250 –							
46.	Repayment of Principal	56	2,000 –			2,000 –		2,000 –		430 –
47.	Addition to Non-Farm Investment	58								
48.	Income Tax & S.E. Social Security	59		1,502 –						
49.	Family Living	73	457 –	756 –	499 –	2,350	610 –	721 –	382 –	364 –
50.	Addition to Savings	XXXX								
51.	Ending Check Book Balance	XXXX								
52.	**Total Cash Used	XXXX	11,457 –	5,536 –	8,759 –	11,636 –	6,065 –	12,590 –	4,482 –	6,086 –
53	Discrepancy (line 16-line 52)	XXXX	+ 835 –	(-272) –	(-2,347) –	(-1,725) –	+ 478 –	(- 603) –	+ 940 –	+3,631 –

Line No.	September	October	November	December	Year Total
XXX					
1.					960 -
2.	5,007 -	5,433 -	5,077 -	5,044 -	57,164 -
3.	1,238 -		464 -	2,074 -	10,117 -
4.		6,789 -	3,122 -	1,321	27,844 -
5.					
6.			3,068 -		3,068 -
7.					
8.					
9.					
10.					
11.		2,900 -			3,436 -
12.				81 -	81 -
13.				205 -	642 -
14.					4,300 -
15.	220 -	220 -	520 -	220 -	2,940 -
16.**	6,465	15,342 -	12,261 -	8,945 -	110,552 -
XXX					
17.				4,981 -	4,981 -
18.					
19.					
20.	597 -	444 -	302 -	660 -	4,988 -
21.	2,607 -	250 -	425 -	548 -	11,317 -
22.			440 -		6,412 -
23.					1,524 -
24.					1,770 -
25.	330 -				450 -
26.	38 -	209 -	110 -	82 -	991 -
27.					
28.	98	5 -	63 -	4 -	347 -
a.	3,570 -	908 -	1,340 -	6,275 -	31,780 -

APPENDIX H

WHY KEEP A CASH FLOW SUMMARY?

A Cash Flow Summary can assist the farmer/ranchman three ways in managing the farm/ranch business. First, it provides an opportunity to check the completeness and accuracy of the accounts being kept, i.e., the discrepancy, if one appears on line 53, indicates that something is missing. Second, a monthly cash flow summary permits the manager to better perform an important function of management, that of monitoring and control. Third, a monthly cash flow summary provides the basis for projecting the cash flow for the next year.

Line No.	September	October	November	December	Year Total
28.	3,570 –	908 –	1,340 –	6,275 –	31,780 –
29.					4,745 –
30.		815 –			1,630 –
31.	259 –	815 –	232 –	397 –	4,982 –
32.	586 –	288 –	134 –	202 –	2,880 –
33.					
34.					
35.	846 80	846 80	846 80	846 80	10,161 60
36.					
37.					
38.	145 –	169 –	171 –	173 –	1,857 –
39.	84 –			155 –	531 –
40.	1,155 –	527 –			6,910 –
41.					2,150 –
42.	2,650 –		750 –		8,800 –
43.		9,000 –			9,000 –
44.					
45.				1,500 –	2,750 –
46.	1,000	2,004 –			9,434 –
47.					
48.					1,502 –
49.	548 –	341 –	687 –	2,010 –	9,725 –
50.			700 –		700 –
51.				1,425 –	1,425 –
52.	10,844 –	15,664 –	4,860	12,983 –	110,963 –
53.	(-4,379) –	(-322) –	+7,391 –	(-4,038) –	(-411) –

APPENDIX H

NOTE ON PAGES 76 & 77

Please note that for the items shown in rows 29, 30, 34, 37, 38, 39, and 40, you should enter the total spent or paid for that item for the month, i.e., total rent, total auto & truck expense, total utilities, etc. However, at the end of the accounting or tax year or both, for the purposes of both preparing your income tax return and for your farm and enterprise business analysis, you will need to divide the amount spent for these specific items into farm share and personal share, as is indicated on the respective pages in this account book where these seven items are found.

APPENDIX I

MANAGEMENT CONTROLS

1. Reduction or increase in inventory of livestock or stored crops
2. Extension of payment dates
3. Shopping for favorable interest rates and availability of loanable funds
4. Analysis and reduction of expenses
5. Price increases through better marketing strategies
6. Good buying practices
7. Take less cash out of the farm business

APPENDIX J

HOW FARMERS CAN USE CASH FLOW BUDGETS

1. Since the sources of cash must equal the uses for cash in any month, a cash flow statement helps you anticipate how much money you'll need to borrow. And when you'll need it.

2. By projecting the months in which your cash income will exceed your cash outgo...along with the dollar amounts...you can arrange a debt repayment plan that best fits your farming pattern.

3. A cash flow statement may suggest ways in which you can plan or rearrange purchases and sales to minimize your need for credit.

4. The cash flow statement provides a way to combine all of your financial affairs -- personal as well as business -- into one report.

5. Since cash flow projections involve forward planning, they enable you to arrange credit in advance. When accepted by your bank, they give you assurance of having the money you need for your plan when you need it.

6. The cash flow statement arms you with the facts and figures necessary to demonstrate that your plans are financially sound.

7. The cash flow plan enables your banker to offer you sound financial service. He is better able to spot potential weaknesses, or profit opportunities in your plan of operation.

8. A forward plan puts you in a position to line up in advance the production supplies you'll need. This may enable you to get a better price, or to avoid shortages and possible costly delays that sometime occur at periods of peak demand. It also gives you more time to "shop around".

9. The cash flow technique gives you a way to "test", on paper, your farming plan for the year ahead. It provides a basis for determining more accurately than by plain guesswork, whether a plan will be profitable.

10. By planning ahead to have adequate cash when you need it, you are in a better position to take advantage of cash discounts.

11. A cash flow statement helps you answer the question: Can I afford this? A new items of machinery for example. Or possibly a personal expenditure that you're considering. If the answer is yes, the cash flow plan can tell you when you will have the necessary cash available.

12. A cash flow plan can help you spot an imbalance of short or intermediate term credit in relation to long term debt. Too much short term credit can put you in a bad cash flow position.

13. When you're planning on expanding, cash flow gives you the financial security -- and the "peace of mind" security -- of knowing the dollars will be available to meet the bills.

14. Cash flow is the time-saver and trouble-saver. By planning in advance, when it suits your convenience, you save valuable hours later on when time may be at a premium. As a bonus advantage, you avoid the pitfalls of "piecemeal" planning.

15. A cash flow statement provides a means of financial control, whereby you can periodically check your actual progress against your plans.

16. Preparation of a cash flow statement can pay off in tax planning. The timing of certain purchases and sales, for example, can affect such things as your depreciation deductions, the investment credit and eligibility for capital gains savings.

Unit II - 2

MEASURES OF FARM PROGRESS

PART I. Student Objectives

A. Students will be able to select the measures of progress that are most appropriate for their own farm business.

B. Students will be able to calculate six (6) of the common measures of earnings.

C. Students will describe the concept of residual earnings to the farm and to the inputs of the farm.

D. Students will be able to find where each of the measures of progress are reported in the analysis summary of the business.

PART II. Transition of Units

The previous unit was designed to make families knowledgeable of the process for planning cash flow budgets. Each family should have gotten a good start on the cash flow budget for their own farm.

This unit looks at a number of ways to measure the progress of the farm. Included are numerous definitions of financial items that will appear in the business analysis in preparation for their study of the first business analysis for their farm. A principle outcome is for each family to be able to select those measures of progress that best fit their needs as measures of the goals they set earlier in the year.

The next unit is also preparatory to understanding the analysis. It concentrates on measures that best reflect the relative size of the business operation. Each family will be able to choose from among the many size measures, the measures that best express their business size in comparison to others.

PART III. The Lesson

Attention Focuser

When families arrive, write the following figures on the chalkboard.

Farm A - Labor Earnings	*$7,822*
Farm B - Net Cash Income	*18,721*
Farm C - Return to Capital & Farm Labor	*11,038*

Ask the families to choose which farmer they would rather be and to give some rationale for their choice. Record some of their reasons on the chalkboard. Allow about 5-7 minutes for this activity.

Some students will protest that it is difficult to make a choice, since the measure of earnings are different for each farm. Culminate the attention focuser by changing farm B and C to farm A, telling the class that each of the measures is on the same farm.

KEY QUESTION 1. Why is it important to measure earnings in different ways?

Just as each farm has a different combination of resources that make up the business, each farm has need for a measure of progress that fits their resource combination. Because earnings are relative measures, comparisons among farms can be best made when differences in resources are either known or are compensated for in the calculation of the measure.

One of the principles of management is that a well-managed farm will maximize the return to the scarcest resource. By using different measures or combinations of measures it is possible to obtain some assessment of how returns have been maximized. Of the measures that were reported on the board, labor earnings is a measure of the residual return to labor and management of the operator. If the operator could compute a similar measure for capital and land, he would have an idea of how well he has done on maximizing his income for each resource used.

We could conclude that one of the reasons for calculating earnings in different ways is to provide a way of measuring the return to each of the components of the business - land, labor, capital and management.

One of the values of different earnings or progress measures is the ability to make comparisons with published data about earning levels of other farm and non-farm groups. Perhaps a family is curious about how their farm earnings compare with that of their brother-in-law who works in town, or wants to know if investing in capital on the farm is as profitable as investing in long term certificates of deposit. Since the level of earnings is always a relative measure, it is useful to have a variety of measures that can be used in a variety of comparisons.

Suggested Teaching Strategy

To illustrate the point in this key question, select two families in your group who have widely diverse resource bases. Select one who has sufficient labor (or excess labor) but limited capital and one who has minimum labor but adequate capital. Illustrate how the principle of maximizing income to the scarcest resource applies to the two farms you select. Suggest that the return to capital might be an appropriate measure for farmer A, while residual return to labor might be more important to farmer B.

KEY QUESTION 2. What are the definitions and measures of progress used in the business analysis and how are they calculated?

In order to understand the meaning of various measures of progress, it is first necessary to have a clear cut understanding of the components of the measures. This section is divided into three distinct sections: 1) basic definitions, 2) measures of earnings or progress, and 3) measures of fiscal management and efficiency. Each measure is defined either in a narrative comment or by describing the calculation.

A. Basic Definition

1. Total Farm Capital = The value of real estate (including land and buildings), livestock, machinery, and equipment, feed and supplies.

   a. Average Farm Capital - $\frac{\text{Beginning Inven. + Ending Inven. of Capital}}{2}$

   b. Uses:
      1. A measure of farm business size.
      2. Working capital which must yield a reasonable return.
      3. Net worth determination (operator's share).

2. Total Farm Sales - The sum of all cash sales including breeding livestock, market livestock, livestock products, crops refunds, work off farm and miscellaneous farm income.

3. Adjusted Total Farm Sales - Total farm sales less capital assets sold.

4. Total Farm Receipts - Total farm sales plus increase in farm capital and family living from the farm. Family living from the farm is often called perquisites. (Value of house rent is sometimes included, but not in the Minnesota Vo-Ag Analysis Report.)

5. Total Cash Operating Expense (Whole Farm) - All ordinary cash operating expenses except interest paid and cash rent paid.

6. Total Farm Purchases - Cash operating expense plus capital improvements bought.

7. Total Farm Expense - Total farm purchases plus decrease in farm capital, interest on farm capital, unpaid family labor, labor charge for partners and board for hired labor.

8. Returns and Net Increases - Net production for the year.

9. Expenses and Net Decreases - Net costs for the year.

B. Measures of Earnings or Progress

1. Labor Earnings - Total Farm Receipts minus Total Farm Expense. Labor earnings are what a farmer receives for his year's work after all farm business expenses, unpaid family labor and opportunity cost of interest on the capital invested have been deducted from the farm receipts. Since interest on farm capital is charged as an expense and actual interest paid is not considered, the farmer with a large indebtedness can be compared equally with one who has no debts.

2. Labor Income - This measure is just like labor earnings except that perquisites are not counted as part of the farm receipts.

3. Farm Income - Income from capital and operator's labor (cash receipts and increase in inventory, less cash expenses and unpaid family labor). This is what is left to pay for the farmer's time and for the use of invested capital.

4. Net Cash Operating Income - Adjusted total farm sales minus total cash farm operating expense.

5. Labor Earnings (Operator's Share)- Total farm receipts minus total farm expense (including interest paid, cash rent, and adjusted interest on farm capital).

6. Return to Capital and Family Labor - Labor earnings + interest on farm capital + unpaid family labor. This is the amount the family has to live on, reduce debts and save.

7. Per Cent Return on Investment

   a. $\frac{\text{Farm Income Minus Value of Operator's Time}}{\text{Average Farm Capital}}$ = % Return on Investment

8. Return Above All Costs (Also referred to as the return to management or profit.)

   a. Labor earnings minus value of operator's time = return above all costs.

C. Measures of Fiscal Management and Efficiency

1. Farmer's Net Worth - Total assets minus total liabilities.

2. Ratio of Farm Expense to Farm Receipts - Shows how much of each dollar of income is an expense.

   a. $\frac{\text{Total Farm Expense}}{\text{Total Farm Receipts}}$ = Ratio Farm Expenses to Receipts

3. Ratio of Assets to Liabilities - Shows how much is owned for each dollar of liability.

   a. $\frac{\text{Total Assets}}{\text{Total Liabilities}}$ = Ratio: Assets to Liabilities

4. Labor Earnings Per Man

   a. $\frac{\text{Labor Earnings + Labor}}{\text{Number of Workers}}$ (Tbl. 3, L32, 33) = Labor Earnings Per Man

5. Returns Per Hour of Labor

   a. $\frac{\text{Labor Earnings + Unpaid Labor}}{\text{Work Units x 10}}$ = Returns Per Hour (approximate)

The definitions section gets at the component parts of measures of progress and earnings. It is useful to know what items are included (or excluded) in the component measures. When making farm comparisons with regional, state or national data it is essential that comparisons use the same data base, or can be adjusted to reflect the same data base.

Item 8 (Returns & Net Increases) and 9 (Expenses & Net Decreases) are terms that should be explained very carefully so that farm clients are able to interpret Table 3 of the analysis report. It may be necessary to refer to the Documentation for Farm Business Analysis to properly interpret these two items. Because these terms are used several places in the analysis a good layman's definition is important.

The measures of earnings or progress will help a family look at their business several different ways. Each family should be encouraged to make note of the measures that will best reflect the progress they have made. Because earnings are often reported in various media or government publications, it will be important to stress how these measures compare. The difference between some of the measures is often subtle. For example, the only difference between farm income (an item often used to report the income status of farmers) and the return to capital and family labor as reported on Table 6B of the analysis is the way in which unpaid family labor is handled.

A similar subtle distinction can be made between labor earnings and labor income where the only difference is in the inclusion (or exclusion) of perquisites or family living from the farm.

The measures of fiscal management and efficiency are introduced here to illustrate that there are some general measures of overall efficiency that may be important for all farmers to consider. While these measures may or may not be highly related to the earning level of the farm, they do address some important concepts such as measuring progress, net margins, liquidity, and labor utilization.

The stress should be placed on the utility or usefulness of each measure rather than on the arithmetic calculation. Calculations are useful in explaining the concepts and defining relationships.

Suggested Teaching Strategy

Using a transparency, review each of the definitions listed on the key question. With transparencies of the analysis tables, point out where each measure can be found.

Provide each family with the information given in the supplementary data (see appendix) and have them determine the profits of the example farm. A sample worksheet is provided to assist the instructor in preparing for this unit. The worksheet can be used as is with the figures in the parenthesis omitted. The instructor may wish to expand on this unit by providing additional information from a farm record and adding other calculations.

After the families have worked out each of the various measures of profit for the example farm, discuss the significance of these measures, illustrating the advantages and disadvantages of comparing farms by each of these measures. Emphasize those measures that are used in the current analysis report. As each measure is calculated, illustrate where the measure will be found in the analysis report.

PART IV. Summary

A. Farm earnings or progress can be measured in a number of ways.

B. Each farm needs to select a measure of earnings or progress that is most appropriate for their own business.

C. While it is unnecessary for each farmer to calculate his own measures of earnings, knowing how they are calculated will be useful in making judgements as to the progress of the business.

PART V. At-The-Farm Activity

Review the measures of farm earnings which the family completed at the last class. Discuss the applicability of each measure to their own business. Help the family select the measures most appropriate for their farm operation. If the preliminary farm business analysis is available, assist families in interpreting the report. Identify the measures of earnings and ask the family to evaluate if the measure indicates a strong or weak position in relation to the average farm in the area.

PART VI. Resources

Chalkboard/Overhead Projector
Transparencies: Definitions, Measures of Earnings or Progress, Measures of Fiscal Management and Efficiency, Worksheet for Calculating Measures, A Southern Minnesota Record of Business, and Analysis Tables 1-6B.

PART VII. References

T.R. Nodland, S. Engene. "Measures of Farm Earnings," Department of Agricultural and Applied Economics, Misc. Report, 1975.

Edgar Persons, Documentation for the Farm Business Analysis, Department of Agricultural Education, St. Paul, Minnesota, latest edition.

PART VIII. Appendices

A. A Southern Minnesota Record of Business

B. Worksheet for Calculating Selected Measures of Earnings and Fiscal Management

APPENDIX A

A Southern Minnesota Record of Business

Total Farm Capital

	Jan. 1	Dec. 31
Productive Livestock	19,423	23,157
Crop Seed and Feed	22,047	31,793
Power Mach, & Equip.	29,295	34,318
Land	153,423	155,086
Buildings, Fences, Etc.	23,373	26,319
Total Farm Capital	247,561	270,672

Total Size of Business - Work Units	426.4
Number of Workers	1.55

Farm Sales

Livestock and Products	41,901
Crops Sold & Gov. Pay	23,000
Capital Assets Sold	5,003
Misc. Farm Income	3,807
Total Farm Sales	73,711
Increase of Farm Cap.	23,011
Family Living From the Farm	570
Assumed Value of Operators Labor	10,000

Farm Expenses

Livestock Bought & Misc. Exp.	7,457
Feed & Crop Expense	21,139
Repairs, Gas, Oil & Grease	6,717
Wages, Taxes, Gen. Exp.	4,595
Utilities	4,595
Total Cash Operat. Exp. (not incl. interest paid)	40,844
Capital Assets Bought	23,715
Total Farm Purchases	64,559
Unpaid Family Labor	493
Interest Paid	5,053
Labor Table 3 Line 32	1,697
Labor Other Operators	NONE

APPENDIX B

Calculating Common Measures of Profit

1. Average Farm Capital

$$\text{\_\_\_\_\_} = \frac{\text{(Beginning Inv.)} + \text{(Ending Inv.)}}{2}$$

2. Interest on Total Farm Capital

Average Farm Capital _____ x .07 _____

3. Total Farm Receipts

Total Farm Sales	_____
(+) Increase in Farm Capital	_____
(+) Family Living From Farm	_____
Total Farm Receipts	_____

4. Total Farm Expense

Total Farm Purchases	_____
(+) Decrease in Farm Capital	_____
(+) Interest on Farm Capital	_____
(+) Unpaid Family Labor	_____
(+) Board for Hired Labor	_____
Total Farm Expense	_____

5. Labor Earnings

Total Farm Receipts	_____
(-) Total Farm Expense	_____
Labor Earnings	_____

APPENDIX B (CONT.)

6. LABOR INCOME

LABOR EARNINGS	_____
(-) PERQUISITES	_____
LABOR INCOME	_____

7. FARM INCOME

LABOR INCOME	_____
(+) INTEREST ON FARM CAPITAL	_____
FARM INCOME	_____

8. NET CASH OPERATING INCOME

TOTAL ADJUSTED FARM SALES	_____
(-) TOTAL CASH OPERATING EXP.	_____
NET CASH OPERATING INCOME	_____

9. RETURN TO CAPITAL AND LABOR

LABOR EARNINGS	_____
(+) INTEREST ON FARM CAPITAL	_____
(+) UNPAID FAMILY LABOR	_____
RETURN TO CAPITAL & LABOR	_____

10. RETURN ON INVESTMENT

FARM INCOME	_____
(-) VALUE OPERATORS TIME	_____
	_____
(÷) AVERAGE FARM CAPITAL	_____
RETURN ON INVESTMENT	_____

APPENDIX C

Calculating Common Measures of Profit

Answers for Southern MN. Farm

1. Average Farm Capital

$$259{,}116.50 = \frac{247{,}561 \text{ (Beginning Inv.)} + 270{,}672 \text{ (Ending Inv.)}}{2}$$

2. Interest on Total Farm Capital

Average Farm Capital 259,116.50 x .07 $18,138.15

3. Total Farm Receipts

Total Farm Sales	73,711
(+) Increase in Farm Capital	23,011
(+) Family Living From Farm	570
Total Farm Receipts	97,292

4. Total Farm Expense

Total Farm Purchases	64,559
(+) Decrease in Farm Capital	0
(+) Interest on Farm Capital	18,138
(+) Unpaid Family Labor	493
(+) Board for Hired Labor	0
Total Farm Expense	83,190

5. Labor Earnings

Total Farm Receipts	97,292
(-) Total Farm Expense	83,190
Labor Earnings	14,102

APPENDIX C (CONT.)

6. LABOR INCOME	
LABOR EARNINGS	14,102
(-) PERQUISITES	570
LABOR INCOME	13,352
7. FARM INCOME	
LABOR INCOME	13,352
(+) INTEREST ON FARM CAPITAL	18,138
FARM INCOME	31,670
8. NET CASH OPERATING INCOME	
TOTAL ADJUSTED FARM SALES	68,708
(-) TOTAL CASH OPERATING EXP.	40,844
NET CASH OPERATING INCOME	22,811
9. RETURN TO CAPITAL AND LABOR	
LABOR EARNINGS	14,102
(+) INTEREST ON FARM CAPITAL	18,138
(+) UNPAID FAMILY LABOR	493
RETURN TO CAPITAL & LABOR	32,733
10. RETURN ON INVESTMENT	
FARM INCOME	31,670
(-) VALUE OPERATORS TIME	10,000
	21,670
(÷) AVERAGE FARM CAPITAL	259,116.50
RETURN ON INVESTMENT	8.3%

Unit II - 3

MEASURES OF FARM BUSINESS SIZE

PART I. Student Objectives

A. Given a list of various ways to measure farm size, students will be able to select two or three measures that best reflect the size of their farm business.

B. Given price/profit relationships between enterprises, students will be able to determine the expected relationships between business size and farm earnings.

C. Students will be able to define the expected relationship between farm size and income and the contributions that size makes to the various factors of production.

PART II. Transition of Units

The previous lesson examined a number of measures that could be used to define the progress and efficiency of the farm business. Emphasis was placed on the ability to select the best measures for a particular farm business, given that each farm represents a unique combination of production resources. This unit was in preparation for interpretation of the pending business analysis.

Unit 3 takes a look at how you measure farm size with the idea that farmers must know how "big" their farm is to accurately assess its performance in comparison to others. The students should be able to select measures of size that have the greatest utility for their own business and understand how factors such as price relationships may alter the normal relationships of size to earnings.

The unit which follows will present an overview of the analysis. The purpose is to guide students in the interpretation of their own business analysis. Carefully pointing out the trends that have been occurring in farm businesses and how their business analysis can be related to trends, it will provide a basis for gaining a general understanding of the business.

PART III. The Lesson

Attention Focuser

When the class has assembled, ask each person to think of several ways he could describe the size of his/her farm to their neighbors. When they have thought about it for a couple minutes, ask each farm family to use one term to describe how big their farm is. Each term can be used only once, so once a term is mentioned, the next family must use a different term. Record each new term on the chalkboard as it is mentioned. Emphasize that each family should be describing their own farm. You may expect responses such as no. of acres, no. of tillable

acres, no. of cows, no. of workers, etc. If the class is large you may exhaust the measures of size before you reach the last few families. When you have a sizable list, quit.

You may summarize by simply registering your surprise at the variety of ways in which the class could describe the size of their farm. End the attention focuser by posing the question: "which measure is best?" Do not answer the question but move on to the first key question.

KEY QUESTION 1. Does size of business have any relationship to earnings?

Now that a number of ways of measuring size have been listed, perhaps the appropriate question is "Is there a relationship between the size of business and earnings?" Most obviously the answer is "yes", since almost all would agree that the bigger a business is, the greater the opportunities for producing income. From their own experiences, farmers can illustrate how changes in business size can be a factor in the earnings of the business.

Table 1, taken from the 1977 Austin Area Farm Business Summary illustrates how several measures of size appear to be related to the earnings from the farm business.

TABLE 1. MEASURES OF SIZE & FARM EARNINGS - AUSTIN, 1977

Measure	Low Profit	Avg. Profit	High Profit
*Labor Earnings	(-9464)	17943	52454
Total Acres	376	378	558
Tillable Acres	329	339	516
Farm Capital Invested (Dec. 31)	430816	379503	547706
Number of Workers	1.88	1.8	2.18
Work Units	432	451	605
Total Farm Sales	102155	107756	173482
Sales of Livestock	58808	65460	100154
Sales of Crops	37701	36463	62343

*Earnings should not be considered a measure of size in this instance but rather a measure of how financially successful the business was.

A comparison of the low profit and average profit farms shows that size, as we commonly measure it in acres, work units, workers, or capital investment was not a factor in income. In this case the low profit farms and average profit farms are almost identical in size, yet there is a difference of $27,300 in the earnings of the two groups. If size were the only factor that contributed to earnings, then the earnings of these two groups should have been similar.

On the other hand, the differences in measures of size between the average profit and high profit farms are quite evident. The high profit farms are "larger" as measured by each of the 8 size factors shown on the chart.

To further illustrate how size may (or may not) be related to earnings, examine the size measures and earnings from the Thief River Falls Analysis area for the 1977 year.

TABLE 2. MEASURES OF SIZE & FARM EARNINGS, THIEF RIVER FALLS, 1977

Measure	Low Profit	Avg. Profit	High Profit
Labor Earnings	(-21460)	4568	31555
Total Acres	847	654	856
Tillable Acres	755	560	758
Farm Capital Investment	193968	138995	159741
Number of Workers	1.59	1.53	1.77
Work Units	369	347	474
Total Sales	73778	65489	101533
Livestock Sales	15107	21086	24821
Crop Sales	53482	40038	69527

In this illustration, the low profit farms are appreciably larger than average profit farms as measured by six of the 8 size factors in this chart, yet earned $25,000 less; a clear illustration that size alone is not the only factor that contributes to the financial success of the business.

However, in this chart, larger farms, as measured by work units and represented by the high profit group have a definite earnings advantage.

It could be generally stated that larger farms usually show higher earnings than their smaller counterparts. But since that is not always true, you should examine the conditions under which size is an important factor.

Suggested Teaching Strategy

The attention focuser should have produced a number of suggestions for the way in which farm size could be expressed. Having compiled the list, simply pose the question, "Is size related to earnings?" You would expect to get a "yes" response from the class. Using the information from Table 1 & 2 illustrate that size may or may not be positively related to earnings. Try to make the point that business size is only one factor that relates to earnings and that size is frequently given too much credit for differences in farm earnings. However, it should be pointed out that it is important to know how to express business size so that comparisons between and among farms can be made in reference to the probability or the capacity of the business to offer a good financial return.

KEY QUESTION 2. If it is generally agreed that larger farms are more profitable than smaller ones, what are some of the factors that contribute to the larger profit?

It would be an insult to the farmer's intelligence to suggest that he/she did not recognize the difference in profit potential between a farm that

produced 20,000 bushels of corn for sale compared to one that produced only 10,000 bushels. It is most obvious that larger farms have the opportunity to market more products and/or services than small ones. The most obvious factor is:

1. The difference in the potential for producing products or services.

But what other factors contribute to the apparent success of the larger farm? It would be a good idea to examine some of the positive and negative factors that are associated with larger farms compared to smaller operations.

2. Larger farms can often make better use of labor - especially family labor.

3. Larger farms can spread the fixed costs of capital items, thus lowering the costs to produce a product.

4. Larger farms can frequently strike a better bargain when purchasing input such as feeds, fertilizers, chemicals, etc. because the volume is higher.

5. Larger farms can often market at a slightly better price because of both the quantity to sell and the ability to spread marketing over larger periods and still sell in substantial quantities.

6. Large farms can often obtain credit easier.

7. Large farms can often make better use of management aids such as computer programs for problem solving, sophisticated record schemes and the use of consultants because the volume of business results in a low per unit cost for the use of the aid.

The list presented above is only illustrative of some of the advantages larger farms may have that contribute to greater earnings. The list is not inclusive of all of the important factors.

Not all of the factors are on the plus side, however, there are also disadvantages to large size that should be considered. Some of those disadvantages are listed below.

1. Just as large farms have the opportunity to make more money than smaller farms, they also have the opportunity to lose more. When prices or weather are very adverse, large farms may suffer huge financial losses.

2. Management must be more exacting. Small errors in judgement or performance get multiplied many times by business volume and may result in drastically reduced income.

3. Large farms may have more problems with timeliness. Often certain jobs must be done in a short period of time (planting corn, for example). Large farms may have peak work loads that outstrip their ability to be timely.

4. Efficiency may suffer. For example, most would agree that it is more difficult to obtain a high milk production per cow average on a herd of 150 cows than it is on a herd of 50. The personal attention that one can afford to give to each unit of the enterprise often diminishes as the number of units increases.

5. Large farms frequently have a higher ratio of capital inputs to other inputs than do smaller farms. This high dependence on capital makes large farms more vulnerable to adverse capital markets & reverses in the general economy of the country.

Again, while this list is not complete, it serves to illustrate that large size is not a panacea to solve the problems of inadequate income. Large farms have problems too. It would be a good idea if each farmer adopted the following motto, "Get Better: Before You Get Bigger."

Suggested Teaching Strategy

Begin the discussion by labeling two columns on the chalkborad or overhead transparency: Advantages to Large Farm Size and Disadvantages of Large Farm Size.

Through discussion or direct questioning, establish a list of advantages. When the discussion has been exhausted, compile a similar list of disadvantages. Summarize the two columns by reference to the list of advantages and disadvantages in the subject content. End the key question summary by using the transparency, "Get Better Before You Get Bigger."

KEY QUESTION 3. What measures of size will be found in my business analysis and which of these measures will be the most reliable indicators of how large my farm is?

Almost all of the measures of "size" that were listed on the chalkboard with the attention focuser will be found somewhere in the business analysis. Table 1 of the analysis, for example, lists a number of measures that indicate business size.

TABLE 3. MEASURES OF SIZE - FARM INVENTORIES

Line 1 - Size of Farm - Total Acres
2 - Size of Farm - Tillable Acres
3 - Work Units, Crops
4 - Work Units, Livestock
5 - Work Units, Other
6 - Total Size of Business in Work Units
7 - Number of workers
8 - Farm Capital Investment per Worker
29 - Total Farm Capital

In addition, each analysis table may have one or more measures that could be perceived as an indicator of size, depending upon the type of farm and the way the resources are organized in comparison to other farms in the same geographic area.

What then, is the best way to measure the size of your farm business?

Again, the answer is dependent upon the type of farm and the group to whom your farm size is being compared. However, a universal measure that provides a reasonable comparison among almost all types of farms is the man-work unit, or work unit as used in the business analysis. Since this measure establishes size based upon a weighted comparison of the various crop and livestock enterprises, it is possible to equate the size of businesses that are very different (i.e. comparison of a crop farm to a dairy farm). The work unit is an approximation of the amount of work that must be accomplished to successfully care for a particular enterprise. It is important to note that the work unit cannot be equated to physical human labor used in an enterprise, since farms vary in the amount of machinery, equipment or labor saving devices used to accomplish the "work" associated with each enterprise.

When crops constitute all or almost all of the productive activity on the farm, tillable acres is a reliable measure of relative size within a given geographic area where the same type of crops are grown on most farms. For example, on farms in the corn belt that do not have livestock (or limited livestock enterprises) the number of tillable acres is a good size indicator.

There may be farms where the size of a single enterprise is the best size measure for the farm or ranch. A farmer in upstate New York, for example, may find it best to describe the size of his farm by the number of cows in the milking herd. A rancher in central Wyoming may find that the number of brood cows in the beef herd describes the size of his ranch best, just as the apple grower in the Yakima Valley in Washington may find it easiest to describe his farm size by the number of apple trees in production.

The answer to the question "How big is your farm or ranch?" must be followed with the question "Compared to what?"

Suggested Teaching Strategy

Using a transparency of Table 1 from the business analysis and subsequent analysis tables, illustrate where some of the common measures of farm size can be found.

Follow with the content material on the various measures of size. Stress the fact that no single size measure is perfect for all farms, but that the work unit is the most universally accepted way of comparing farms that are unlike in crops and livestock organization.

KEY QUESTION 4. How can I use the measures of size in interpreting my business analysis?

In one of the later units, considerable time will be devoted to examining the relationships of the size of particular businesses to their financial success. However, since this is the first business analysis, asking the following questions will help you to interpret how well your business is performing compared to others.

1. How large is my business compared to others?

2. Are the earnings from my business reasonable in comparison to others given the relationship of the size of my business to others?

3. Are the parts of my business that are making major contributions to farm size also contributors to farm income?

Suggested Teaching Strategy

Families will be curious as to how they should interpret the measures of size that have been introduced in this unit. Using the 3 questions listed in Key Question 4, illustrate by use of transparencies of the business analysis how they might utilize the measures of size as they review their first analysis.

When you have completed the Key Question put the transparency "Get Better Before You Get Bigger" on the overhead. Leave the transparency on as you summarize the session.

PART IV. Summary

A. There are many ways to express the size of a farm business.

B. Generally, but not always, the size of the farm business is directly related to the earnings from the business.

C. While there are a number of advantages to a larger business, there are also disadvantages. The advantages & disadvantages must be carefully weighed before a business is expanded in size.

D. Each farm will have a "Best Way" to measure size. Decide what it is for your own business.

E. Two of the most reliable measures of size for most farms are total work units and tillable acres.

F. If you have an idea of how your farm compares in size to other farms, you can make a better assessment of the progress of your business compared to others.

PART V. At-The-Farm Activity

Assist the family in selecting measures of size that best describe their own business. Using a business analysis, help each family determine the answers to the three questions posed in Key Question 4.

PART VI. Resources

Chalkboard/Overhead Projector
Transparencies:
- Measures of Farm Size & Earnings - Austin 1977
- Measures of Farm Size & Earnings - Thief River Falls - 1977
- Advantages of Larger Farm Size
- Disadvantages of Larger Farm Size
- Line Titles From Table 1
- Transparencies of other Analysis Tables (not included)
- Individual questions (Key Question 4)
- Get Better...

PART VII. References

Farm Business Analysis Summary for Area - Latest Edition

J. Herbst, Farm Management Principles, Budgets & Plans, Stipes Publishing, Illinois.

PART VIII. Appendices

A. Is there a relationship

B. Measures of Size and Earnings - Austin 1977

C. Measures of Size and Earnings - Thief River Falls 1977

D. Get Better before ...

E. Table 1 - Measures of Size

F. Advantages of Larger Farm Size

G. Dis-Advantages of Larger Farm Size

APPENDIX A

IS THERE A RELATIONSHIP BETWEEN SIZE OF BUSINESS AND EARNINGS?

Appendix B

Table 1 - Measures of Size and Farm Earnings - Austin, 1977

Measure	Low Profit	Average Profit	High Profit
*Labor Earnings	(-9,464)	17,943	52,454
Total Acres	376	378	558
Tillable Acres	329	339	516
Farm Capital Invested (Dec. 31)	430,816	379,503	547,706
Number of Workers	1.88	1.8	2.18
Work Units	432	451	605
Total Farm Sales	102,155	107,756	173,482
Sales of Livestock	58,808	65,460	100,154
Sales of Crops	37,701	36,463	62,343

*Earnings should not be considered a measure of size in this instance but rather a measure of how financially successful the business was.

Appendix C

Table 2 - Measures of Size & Farm Earnings, Thief River Falls, 1977

Measure	Low Profit	Average Profit	High Profit
Labor Earnings	(-21,460)	4,568	31,555
Total Acres	847	654	856
Tillable Acres	755	560	758
Farm Capital Investment	193,968	138.995	159,741
Number of Workers	1.59	1.53	1.77
Work Units	369	347	474
Total Sales	73,778	65,489	101,533
Livestock Sales	15,107	21,086	24,821
Crop Sales	53,482	40,038	69,527

APPENDIX D

GET BETTER

BEFORE

GETTING BIGGER

Appendix E

Measures of Size

Table 1 - Farm Inventories

Line 1 - Size of Farm - Total Acres

2 - Size of Farm - Tillable Acres

3 - Work Units, Crops

4 - Work Units, Livestock

5 - Work Units, Other

6 - Total Size of Bus, in Work Units

7 - Number of Workers

8 - Farm Capital Investment per Worker

29 - Total Farm Capital

APPENDIX F

Advantages of Larger Farm Size

1. The difference in the potential for producing products or services.

But what other factors contribute to the apparent success of the larger farm? It would be a good idea to examine some of the positive and negative factors that are associated with larger farms compared to smaller operations.

2. Larger farms can often make better use of labor - especially family labor.

3. Larger farms can spread the fixed costs of capital items, thus lowering the costs to produce a product.

4. Larger farms can frequently strike a better bargain when purchasing input such as feeds, fertilizers, chemicals, etc. because the volume is higher.

5. Larger farms can often market at a slightly better price because of both the quantity to sell and the ability to spread marketing over larger periods and still sell in substantial quantities.

6. Large farms can often obtain credit easier.

7. Large farms can often make better use of management aids such as computer programs for problem solving, sophisticated record schemes and the use of consultants because the volume of business results in a low per unit cost for the use of the aid.

APPENDIX G

Disadvantages of Larger Farm Size

1. Just as large farms have the opportunity to make more money than smaller farms, they also have the opportunity to lose more. When prices or weather are very adverse, large farms may suffer huge financial losses.

2. Management must be more exacting. Small errors in judgement or performance get multiplied many times by business volume and may result in drastically reduced income.

3. Large farms may have more problems with timliness. Often certain jobs must be done in a short period of time (planting corn, for example). Large farms may have peak work loads that outstrip their ability to be timely.

4. Efficiency may suffer. For example, most would agree that it is more difficult to obtain a high milk production per cow average on a herd of 150 cows than it is on a herd of 50. The personal attention that one can afford to give to each unit of the enterprise often diminishes as the number of units increases.

5. Large farms frequently have a higher ratio of capital inputs to other inputs than do smaller farms. This high dependence on capital makes large farms more vulnerable to adverse capital markets & reverses in the general economy of the country.

Unit II - 4

GENERAL INTERPRETATION OF THE ANALYSIS

PART I. Student Objectives

A. Given a general overview of the farm business analysis the student will be able to identify which tables refer to the whole farm analysis, and which tables refer only to the operator's share.

B. Given tables showing trends in farm receipts and farm expenses over the past five years, and an opportunity to discuss the reasons why these trends occurred, the student will be able to identify the continuing increase in investment in the farm business.

C. Given a comparison of most profitable farms for the past two years the student will be able to identify what changes have occurred during those two years among the most profitable farms.

D. Given a series of tables developed from the Annual Farm Management Program Report for the area the student will be able to identify the characteristics of the average, high, and low farm in the area for the previous and past five years.

PART II. Transition of Units

The previous unit looked at measures of farm business size so that farmers would be able to accurately assess their farms performance in comparison to others. Each family was assisted in selecting the measures of size that had the most meaning for their farm.

This unit will provide a comprehensive overview of the farm business analysis. The purpose will be to guide students in the interpretation of their own business analysis. Trends will be studied that are occurring in farming as they relate to each student's farm.

The following unit will teach the importance of inventories in the farm business. The correlation between distribution of farm capital and earnings will be covered.

PART III. The Lesson

Attention Focuser

The following statement should be read to the class. "The farm business analysis is to the operator like a road map to the traveler. The traveler needs a complete and detailed map to give him confidence and

a comfortable journey. A farmer builds his own "map," the farm business analysis. While his "map" may be compared to "maps" of other operators, its primary value is the story it tells about the farmer's own farm."

Ask a few class members why this historical "map" can be a valuable management tool. End the discussion by pointing out that a map is useless unless it is studied and used.

KEY QUESTION 1. What tables in the farm business analysis can be used to analyze the whole farm and the operator's share only.

General Overview of the Farm Business Analysis

Whole Farm	Resources Used	Table 1
	Cash Income	Table 2A
	Cash Expense	Table 2B
	Earnings by Enterprise	Table 3
Operator's Share Only	Family Living Expense	Table 4
	Net Worth Statement	Table 5
	Cash Income	Table 6A
	Cash Expense	Table 6B
Whole Farm	Summary Measures	Table 8
Whole Farm	Crop Enterprises	Tables 10-0001 to 10-9999
Whole Farm	Livestock Enterprises	Tables 11A-32B

Suggested Teaching Strategy

Utilize Appendix A in transparency form to highlight the discussion of the analysis overview. It is important for families to recognize that Summary Measures, Crop Enterprises and Livestock Enterprises are analyzed on the foundation of whole farm data. Whole farm data, to be accurate and complete, must contain complete information on the landlords share of the whole farm business.

Each family should have a copy of their farm business analysis at the class session. As you give the general overview they should be urged to follow each table in their analysis. Allow brief clarification questions from the class but try to avoid prolonged discussions, especially on the crop and livestock tables. The in-deptth study of each table will occur in the units which follow during this second year of instruction.

KEY QUESTION 2. How have trends over the past five years affected farming?

1. Trends in farm receipts over the past five years.

   a. Dairy product sales
   b. Beef feeder cattle sales
   c. Hogs - complete - sales
   d. Hogs - finishing - sales
   e. Hogs - weaning pigs - sales
   f. Wheat, corn & soybean sales
   g. Total farm sales
   h. Total farm receipts

2. Trends in farm expenses.

   a. Beef feeder cattle purchases
   b. Miscellaneous livestock expense
   c. Feed bought
   d. Crop chemicals bought
   e. Gas, oil & grease bought
   f. Wages paid hired labor
   g. Electricity expense
   h. Total cash operating expense
   i. New real estate purchases
   j. Interest on farm capital
   k. Total farm expense

3. Trends in labor earnings

4. Relationship between total farm sales and cash operating expenses.

Suggested Teaching Strategy

Use Appendix B, Summary of Farm Earnings, to show the trends in receipts and expenses that show a significant trend over the past five years. For example, the increasing sale of dairy products was due to a combination of increased production and a better price. The five year period shown is somewhat distorted by the outstanding year in agriculture in 1973 which tended to stretch into 1974. However, poor beef prices following that period reduced that enterprise as the shift went to hogs and crops. The relatively poor year of 1975 for farm receipts which was not matched by a similar decline in farm expenses resulted in extremely low labor earnings.

Continue discussing the trends in receipts and expenses. If the instructor chooses to develop data for this table from a different geographic

area, different receipt and expense items might appear. In any area selected it is probable that receipts will have gone steadily up over the past five years, but the rise in total farm expenses has continued upward also. In the five year example shown for the Mankato area, farm receipts have increased from $126,589 in 1973 to $132,297 in 1977. The increase of $5,708 calculates to 4.5 percent. During the same period farm expenses increased from $78,151 to $110,032. The increase of $33,881 calculates to 43.4 percent. Thus, while labor earnings in actual dollars declined from $48,438 to $22,265, in real dollars, adjusted for inflation the decline would be much more severe. If you assumed only a five percent per year inflation rate during the five year period shown, a 1977 dollar would only be worth 78 cents in buying power compared to a 1973 dollar. This means that the $22,265 1977 labor earnings figure would be the equivalent of $17,366 in buying power when compared to the $48,438 labor earnings in 1973.

KEY QUESTION 3. What changes have occurred in high profit farms in the past three years?

Selected Comparison Items

Items	1975 84 Most Profitable Farms	1976 86 Most Profitable Farms	1977 76 Most Profitable Farms
Returns & Net Increases			
6. Feeder Cattle	9,632	5,986	8,452
7. Complete Hog Enterprises	57,267	21,858	37,229
8. Hog Finishing Enterprises	10,060	6,233	7,558
9. Producing Weaning Pigs	3,208	2,531	5,428
18. Crop, Seed & Feed	55,009	104,145	90,974
22. Total Returns & Net Increases	98,131	122,124	126,661
Expenses & Net Decreases			
35. Interest on Farm Capital	20,920	27,794	27,949
36. Total Expenses & Net Decreases	49,113	60,943	69,328
37. Labor Earnings	49,018	61,181	57,333

Suggested Teaching Strategy

Utilize Appendices C, D and E for this Key Question in both transparency and handout form. This question deals primarily with high profit farms but comparisons with average and low profit farms can be useful.

Using Appendix C in transparency form highlight the selected comparison items shown under this Key Question with a colored marking pen. Interest on farm capital increased significantly indicating an increased capital investment. Changes in these values are due primarily to market influences on the profitability of specific enterprises in any given year.

The importance of the figures is their contribution to historical knowledge and a farmers comparison to that knowledge. e.g. He can compare his hog feeding operation for 1976 and say, because he had fed hogs, he was in the low profit group.

When line 37, Labor Earnings is covered the instructor should point out that this measure increased $8,315 for high profit farms. Referring to Appendices D & E it can be shown that average farms increased their labor earnings $13,065 while low profit farms showed an $18,212 increase.

Appendices D, E and F can be used to show that the high profit farms have tended to be crop and complete hog operations in all three years. Low profit farms have had more beef feeders, fewer hogs and considerably fewer crop sales. While total farm sales were less for the low profit group compared to high profit farms, it should be pointed out that under the expense side of the enterprise statement a different situation exists. In 1975 expenses were greater on the low profit farms than the high profit farms, and in 1976 they were almost equal. In 1977 expenses for the low profit group were considerably less than the high profit group but they still lost money.

Appendices C, D, & E might be difficult to see in transparency form unless classroom conditions and equipment are ideal. If these full page tables are too small for class members to see on an overhead screen the instructor should use them only in handout form.

KEY QUESTION 4. What are the general characteristics of the average, high and low farms in the Mankato area?

1. Size in acres, work units and workers.
2. Investment dollars.
3. Percent of investment by major areas.
4. Total farm receipts by areas.
5. Total farm purchases by areas.
6. Family information.
7. Money spent.
8. Five year total capital comparison by area.
9. Five year feed costs & price received comparisons.
10. Miscellaneous items by year.

Suggested Teaching Strategy

Appendices G-N contain 9 tables developed from data in the 1977 Farm Business Management Education Program for the Mankato area. They should be used in transparency form with the class. A local instructor might develop tables similar to these if the local farm management program is large enough. Care must be taken at the local level to avoid identifying an individual farm or a small group of farms that might constitute the total sample for a specific enterprise.

Most of the tables are self-explanatory. A few special areas should be noted by the instructor.

Appendix K shows what the average farmer did with available cash. The instructor might want to multiply these figures by the number of families in the local program to give an additional dimension to the importance of the farmer to the business community.

Appendix N shows the rapid increase in family spending. Farm expense per dollar of farm receipts have tended to increase. The 1977 figure of .84 can be interpreted to mean that for every dollar of farm receipts 84 cents must be put back in the farm as expenses.

PART IV. Summary

A. Total farm receipts have increased over the past five years but total farm expenses have continued upward also.

B. High profit farms tended to be those that were crop farms during the high crop prices but tended to have more livestock as crop prices declined.

C. Individual family progress should be measured against the goals they have established.

PART V. At-The-Farm Activities

Review the analysis report with the family. You should have provided them with written comments of your own analysis when the final analysis copy was returned to each farmer. Go over your comments with the family and encourage them to make a written list of their own concerns.

This written list should include plans to eliminate weaknesses in the farm business, and plans to build on strengths.

It is important that you spend a considerable amount of time going over the analysis with each family so that they recognize its value. Remind them that the analysis will be an excellent tool to gauge progress towards goals they have established.

PART VI. Resources

Chalkboard/Overhead Projector, Screen
Transparencies of Appendices A-N
Class Quantities of Appendices A

PART VII. References

Delbert Hodgkins, Farm Business Management Education Program Annual Reports, Mankato AVTI, Mankato, Minnesota, 1973-1977.

Minnesota Farm Business Management Analysis.

Charles M. Painter, Using Farm Analysis Information, Austin Area Vocational Technical School, Austin, Minnesota, 1972.

PART VIII. Appendices

A. General Overview of the Farm Business Analysis

B. A Selected Summary of Farm Earnings By Years

C. Summary of Farm Earnings - 1975-1976-1977

D. Summary of Farm Earnings (Enterprise Statement - Whole Farm) 1975

E. Summary of Farm Earnings (Enterprise Statement - Whole Farm) 1976

F. Summary of Farm Earnings (Enterprise Statement - Whole Farm) 1977

G. 1977 Average Farm Mankato Area

H. Farm Business Investment 1977 Mankato Area

I. Total Farm Receipts 1977 Mankato Area

J. Total Farm Purchases 1977 Mankato Area

K. How Much Money Did The Average Farmer Spend and Whom Did They Spend It With Mankato Area

L. Total Farm Capital By Years Mankato Area

M. Feed Cost and Price Received Mankato Area

N. Miscellaneous Items By Years Mankato Area

APPENDIX A

GENERAL OVERVIEW OF THE FARM BUSINESS ANALSYIS

WHOLE FARM	RESOURCES USED	TABLE 1
	CASH INCOME	TABLE 2A
	CASH EXPENSES	TABLE 2B
	EARNINGS BY ENTERPRISE	TABLE 3
OPERATOR'S SHARE ONLY	FAMILY LIVING EXPENSE	TABLE 4
	NET WORTH STATEMENT	TABLE 5
	CASH INCOME	TABLE 6A
	CASH EXPENSE	TABLE 6B
WHOLE FARM	SUMMARY MEASURES	TABLE 8
WHOLE FARM	LIVESTOCK ENTERPRISES	TABLES 11A - 18B
WHOLE FARM	CROP ENTERPRISES	TABLES 10-0001 - 10-9999

APPENDIX B

A SELECTED SUMMARY OF FARM EARNINGS BY YEARS*

Farm Receipts	1973	1974	1975	1976	1977
Dairy Product	9,224	10,957	11,279	13,255	13,842
Beef Feeder Cattle	12,659	13,640	9,291	9,313	8,895
Hogs - Complete	13,046	12,680	16,820	15,181	16,954
Hogs - Finishing	6,727	7,987	8,662	9,106	8,021
Hogs - Weaning Pigs	579	943	1,388	1,303	1,198
Wheat, Corn, Soybeans	28,150	49,608	34,496	38,757	40,487
Total Farm Sales	79,418	104,976	93,278	100,892	100,344
Total Farm Receipts	126,589	135,265	106,140	124,934	132,297

In this example receipts which showed no significant trend over the past five years were not shown.

Farm Expenses	1973	1974	1975	1976	1977
Beef Feeder Cattle	8,216	5,965	4,348	4,341	5,348
Misc. Lvstck. Expense	1,290	1,421	1,676	1,821	2,100
Feed Bought	9,726	9,910	10,132	12,216	12,763
Crop Chemicals	1,699	3,025	2,831	3,050	2,847
Gas, Oil & Grease	1,775	2,295	2,478	2,538	2,888
Wages - Hired Labor	1,349	1,438	1,738	1,674	2,151
Electricity Expenses	458	557	623	731	900
Total Cash Oper. Exp.	45,366	51,906	51,822	53,017	56,633
New Real Estate	7,273	14,671	13,153	18,127	16,255
Interest on Farm Cap.	13,543	17,394	17,876	18,629	20,641
Total Farm Expense	78,151	105,309	96,940	108,651	110,032

In this example expenses which showed no significant trend over the past five years were not shown.

	1973	1974	1975	1976	1977
Labor Farnings	48,438	29,955	9,200	16,283	22,265

*Materials adapted from the 1973-77 Annual Farm Management Program Reports, Mankato Area Vocational Technical Institute, Mankato, MN.

APPENDIX C

SUMMARY OF FARM EARNINGS - 1975 - 1976 - 1977 *

	Items	1975 - 84 Most Profitable Farms	1976 - 86 Most Profitable Farms	1977 - 76 Most Profitable Farms
1.	Returns & Net Increases:			
2.	Productive Livestock			
3.	Dairy Cattle	$ 6,014	$ 6,751	$ 10,560
4.	Other Dairy Cattle	1,516	1,376	1,895
5.	Beef Breeding Cattle	135	590	183
6.	Feeder Cattle	9,632	5,986	8,452
7.	Complete Hog Enterprises	57,267	21,858	37,229
8.	Hog Finishing Enteprise	10,060	6,233	7,558
9.	Producing Weaning Pigs	3,208	2,531	5,428
10.	Farm Flock Sheep	144	65	-
11.	Feeder Lambs	-	2	-
12.	Chickens (Incl. Hens & Broilers)	128	2,491	-
13	Turkeys	-	399	672
14.	Other Productive Livestock	66	3	1
15.	All Productive Livestock	88,170	48,286	71,977
16.	Value of Feed Fed to Livestock	48,621	32,710	39,668
17.	Return Over Feed From Livestock	39,549	15,576	32,309
18.	Crop, Seed & Feed	55,009	104,145	90,974
20.	Cooperative Patronage Refunds	3,119	1,777	2,127
21.	Miscellaneous Farm Income	454	626	1,231
22.	Total Returns & Net Increases	$ 98,131	$ 122,124	$ 126,661
23.	Expenses & Net Decreases:			
24.	Truck & Auto (Farm Share)	$ 3,245	$ 3,474	$ 3,872
25.	Tractors & Crop Machinery	12,187	13,543	14,380
25A	Irrigation Equipment	148	-	363
26.	Electricity	849	897	1,188
27.	Livestock Equipment	2,035	1,876	2,418
28.	Buildings, Fences & Tiling	4,253	2,758	6,496
29.	Bare Land	(6,255)	-	(-1,310)
30.	Miscellaneous Livestock Expense	2,476	2,018	2,728
31.	Labor	3,351	2,249	3,709
32.	Labor Charge for Other Operator(s)	1,348	445	1,470
33.	Property Tax	3,177	4,250	4,193
34.	General Farm Exp. & Telephone	1,379	1,639	1,872
35.	Interest on Farm Capital	20,920	27,794	27,949
36.	Total Expenses & Net Decreases	$ 49,113	$ 60,943	$ 69,328
37.	Labor Earnings	$ 49,018	$ 61,181	$ 57,333
38.	Number of Farm Operators	1	1	1

*Adapted from Table 3, Farm Business Management Analysis, Annual Report, Mankato Area Vocational Technical Institute, Mankato, Minnesota, 1975, 1976 and 1977.

APPENDIX D

TABLE 3. SUMMARY OF FARM EARNINGS (ENTERPRISE STATEMENT - WHOLE FARM) 1975*

	Items	Average of - 420 Farms	84 Most Profitable Farms	84 Least Profitable Farms
1.	Returns & Net Increases			
2.	Productive Livestock			
3.	Dairy Cattle	$10,897	$ 6,014	$ 9,022
4.	Other Dairy Cattle	2,752	1,516	2,203
5.	Beef Breeding Cattle	325	135	844
6.	Feeder Cattle	6,666	9,632	12,524
7.	Complete Hog Enterprise	17,832	57,267	3,573
8.	Hog Finishing Enterprise	5,704	10,060	5,474
9.	Producing Weaning Pigs	1,802	3,208	436
10.	Farm Flock of Sheep	46	144	2
11.	Feeder Lambs	206		12
12.	Chickens (Incl. Hens & Broilers)	214	128	43
13.	Turkeys	133		
14.	Other Productive Livestock	41	66	120
15.	All Productive Livestock	$46,618	$88,170	$34,253
16.	Value of Feed Fed to Livestock	30,167	48,621	26,280
17.	Return Over Feed From Livestock	16,451	39,549	7,973
18.	Crop, Seed & Feed	36,134	55,009	33,499
20.	Cooperative Patronage Refunds	1,869	3,119	1,601
21.	Miscellaneous Farm Income	364	454	742
22.	Total Returns & Net Increases	$54,818	$98,131	$43,815
23.	Expenses & Net Decreases			
24.	Truck & Auto (Farm Share)	$ 2,639	$ 3,245	$ 3,523
25.	Tractors & Crop Machinery	10,263	12,187	13,249
25A	Irrigation Equipment	30	148	
26.	Electricity	623	849	617
27.	Livestock Equipment	1,530	2,035	1,445
28.	Buildings, Fences & Tiling	3,854	4,253	5,897
29.	Bare Land	153	(6,255	7,079
30.	Misc. Livestock Expense	1,676	2,476	1,356
31.	Labor	2,549	3,351	3,338
32.	Labor Charge for Other Operator(s)	688	1,348	821
33.	Property Tax	2,565	3,177	3,341
34.	General Farm Expense & Telephone	1,172	1,379	1,369
35.	Interest on Farm Capital	17,876	20,920	24,725
36.	Total Expenses & Net Decreases	$45,618	$49,113	$66,760
37.	Labor Earnings	$ 9,200	$49,018	$(22,945)
38.	Number of Farm Operators	1.07	1.1	1

Table 3 combines Tables 1, 2A & 2B. Cash receipts and expenses are adjusted for changes in inventory for each enterprise and for each category of expense in order to show net increases and net decreases. The resulting labor earnings are the same as those on Page 4.

*Farm Business Management Education Program Annual Report, Mankato Area Vocational Technical Institute, Mankato, MN, 1975.

APPENDIX E

TABLE 3. SUMMARY OF FARM EARNINGS (ENTERPRISE STATEMENT - WHOLE FARM) 1976*

	Items	Average of - 420 Farms	84 Most Profitable Farms	84 Least Profitable Farms
1.	Returns & Net Increases			
2.	Productive Livestock			
3.	Dairy Cows	$13,203	$ 6,751	$ 4,249
4.	Other Dairy Cattle	2,600	1,376	1,598
5.	Beef Breeding Cattle	373	590	528
6.	Feeder Cattle	4,135	5,986	7,810
7.	Hogs - Complete & Mixed	13,760	21,858	13,391
8.	Hogs Finishing Enterprise	4,952	6,233	7,509
9.	Producing Weaning Pigs	1,836	2,531	562
10.	Sheep & Goats	75	65	46
11.	Sheep - Feeder Lambs	270	2	1,022
12.	Chickens (Incl. Hens & Broilers)	521	2,491	13
13.	Turkeys	80	399	
14.	Other Productive Livestock	6	3	2
15.	Total All Productive Livestock	$41,812	$48,286	$38,729
16.	Value of Feed Fed to Livestock	29,974	32,710	34,846
17.	Return Over Feed from Livestock	11,837	15,576	3,883
18.	Crop, Seed & Feed	48,819	104,145	28,206
19.	Cooperative Patronage Refunds	1,554	1,777	1,695
20.	Miscellaneous Farm Income	409	626	264
21.	Custom Work Enterprise	19		44
22.	Total Returns & Net Increases	$62,638	$122,124	$34,091
23.	Expenses & Net Decreases			
24.	Truck & Auto (Farm Share)	$ 2,757	$ 3,474	$ 3,163
25.	Tractors & Crop Machinery	10,192	13,543	10,562
26.	Irrigation Equipment	95		389
27.	Electricity	731	897	700
28.	Livestock Equipment	1,722	1,876	1,642
29.	Buildings, Fences & Tiling	3,948	2,758	7,794
30.	Bare Land			
31.	Miscellaneous Livestock Expenses	1,821	2,018	1,783
32.	Labor	2,132	2,249	2,435
33.	Labor Charge for Other Operator(s)	477	445	516
34.	Property Tax	2,619	4,250	2,546
35.	General Farm Expense & Telephone	1,233	1,639	1,340
36.	Interest on Farm Capital	18,629	27,794	21,280
37.	Total Expenses & Net Decreases	$46,356	$60,943	$54,149
38.	Labor Earnings	$16,283	$61,181	$(20,058)
39.	Number of Farm Operators	1	1	1

Table 3 combines Tables 1, 2A & 2B. Cash receipts and expenses are adjusted for changes in inventory for each enterprise and for each category of expense in order to show net increases and net decreases. The resulting labor earnings are the same as those on Page 4.

*Farm Business Management Education Program Annual Report, Mankato Area Vocational Technical Institute, Mankato, MN, 1976.

APPENDIX F

TABLE 3, SUMMARY OF FARM EARNINGS (ENTERPRISE STATEMENT - WHOLE FARM) 1977*

	Items	Average of 378 Farms	76 Most Profitable Farms	76 Least Profitable Farms
1.	Returns & Net Increases:			
2.	Productive Livestock			
3.	Dairy Cattle	$ 13,565	$ 10,560	$ 5,548
4.	Other Dairy	2,873	1,895	1,187
5.	Beef Breeding Cattle	447	183	1,018
6.	Feeder Cattle	4,960	8,452	4,550
7.	Complete Hog Enterprise	17,914	37,229	8,061
8.	Hog Finishing Enterprise	5,248	7,558	3,918
9.	Producing Weaning Pigs	2,422	5,428	2,076
10.	Farm Flock of Sheep	70	-	18
11.	Feeder Lambs	50	-	200
12.	Chickens (Incl. Hens & Broilers)	40	-	40
13.	Turkeys	135	672	-
14.	Other Productive Livestock	1	-	1
15.	All Productive Livestock	47,725	71,977	26,617
16.	Value of Feed Fed to Livestock	28,381	39,668	19,071
17.	Return Over Feed From Livestock	19,344	32,309	7,546
18.	Crop,Seed & Feed	52,553	90,974	34,783
20.	Cooperative Patronage Refunds	1,495	2,127	985
21.	Miscellaneous Farm Income	817	1,231	494
22.	Total Returns & Net Increases	$ 74,228	$ 126,661	$ 43,814
23.	Expenses & Net Decreases			
24.	Truck & Auto (Farm Share)	3,058	3,872	2,692
25.	Tractors & Crop Machinery	11,268	14,380	10,098
25A	Irrigation Equipment	102	363	-
26.	Electricity	900	1,188	665
27.	Livestock Equipment	1,902	2,418	1,391
28.	Buildings, Fences & Tiling	4,641	6,496	4,647
29.	Bare Land	(- 374)	(-1,310)	-
30.	Misc. Livestock Expense	2,100	2,728	1,122
31.	Labor	2,565	3,709	2,182
32.	Labor Charge for Other Operator(s)	817	1,470	934
33.	Property Tax	2,900	4,193	2,543
34.	General Farm Expense & Telephone	1,416	1,873	1,310
35.	Interest on Farm Capital	20,641	27,949	20,963
36.	Total Expenses & Net Decreases	51,963	69,328	48,547
37.	Labor Earnings	22,265	57,333	(-4,733)
38.	Number of Farm Operators	1	1	1

Table 3 combines Tables 1, 2A & 2B. Cash receipts and expenses are adjusted for changes in inventory for each enterprise and for each category of expense in order to show net increases and net decreases. The resulting labor earnings are the same as those on Page 4.

* Farm Business Management Education Program Annual Report, Mankato Area Vocational Technical Institute, Mankato, MN 1977.

APPENDIX G

1977
AVERAGE FARM
MANKATO AREA
(SOUTHERN MINNESOTA)

SIZE OF FARM	355.2 ACRES
WORK UNITS	383.9
NO. OF WORKERS	1.6

INVESTMENT*

LIVESTOCK	27,959
CROP, SEED & FEED	55,861
POWER, MACHINERY & EQUIPMENT	41,856
LAND	192,985
BUILDINGS	41,147
TOTAL	359,808
TOTAL RECEIPTS	132,297
TOTAL EXPENSES	110,032
FAMILY	4 PERSONS
FAMILY LIVING EXPENSES (CASH & NON-CASH)	15,630

*INVESTMENT AS OF DECEMBER 31, 1977

APPENDIX H

FARM BUSINESS INVESTMENT-1977
(PER CENT)

	AVERAGE	HIGH	LOW
LIVESTOCK	7.7	7.6	5.7
CROP, SEED & FEED	15.6	17.8	11.8
POWER, MACHINERY, LIVESTOCK EQUIPMENT	11.8	11.5	9.9
LAND	57.8	51.6	63
BUILDING, FENCES & TILE	11.7	11.4	9.6

AVERAGE OF JANUARY 1 AND DECEMBER 31, LINE 29, TABLE 1 USED AS BASE FOR DETERMINING ABOVE PERCENTAGES.

APPENDIX I

TOTAL FARM RECEIPTS-1977
(Per Cent)

	Average	High	Low
Livestock Sales	39.3	35.4	36.6
Crop Sales	32.0	32.1	37.7
Increase in Farm Capital	23.9	28.7	16.9
Miscellaneous Sources	4.8	3.8	8.8

APPENDIX J

TOTAL FARM PURCHASES-1977

	Percent of Total Purchases		
	Average	High	Low
Livestock Purchases	11.2	11.9	13.9
Feed Bought	14.5	14.3	12.1
Miscellaneous Livestock Expense	2.4	2.1	1.6
Fertilizer, Chemicals, Seed & Other	16.4	16.2	18.1
Custom Work	2.3	1.7	2.7
Repairs, Gas & Oil	9.1	8.1	9.7
Wages Hired Labor	2.4	2.5	2.1
Real Estate Taxes	3.3	3.2	3.6
General Farm Telephone & Electricity	2.6	2.3	2.8
Machinery, Power Livestock Equipment & Buildings	35.7	37.8	34.9

APPENDIX K

HOW MUCH MONEY DID THE AVERAGE FARMER SPEND AND WHOM DID THEY SPEND IT WITH

To other farmers for livestock and custom work (2-13 plus lines 20 & 21)	$11,509
To the agribusiness community for fertilizer, chemicals, seeds, feeds, repairs and feul (lines 14-18, 22-27, plus line 31)	34,974
For extra labor (line 28)	2,136
Support of local government (property tax)(line 29)	1,549
For utilities (electricity & telephone)(line 19,32&33)	1,065
For use of other peoples capital (interest & cash rent) (line 30 & 34)	12,385
Farm equipment dealers (power and machinery)(lines 36, 37 38 & 39)	14,901
Total Farm Operating Purchases	79,718
Real Estate Purchase & Improvement	16,028
Household and Personal Expenses	15,630
Total Money Spent in Community and Service Area By One Average Farmer	111,376

Table 6B 1977 Annual Farm Management Program Report, Mankato Area.

APPENDIX L

MANKATO AREA
TOTAL FARM CAPITAL BY YEARS

	1973	1974	1975	1976	1977
Investment Per Worker	$150,554	$182,242	$194,368	$202,928	$216,363
Investment in Livestock, December 31	30,332	24,608	28,000	23,275	27,959
Inventory Value of Crops & Feed, December 31	48,848	67,090	50,905	49,960	55,861
Investment in Power, Machinery & Equip., December 31	24,776	32,962	35,274	36,678	41,856
Total Capital	249,070	302,937	304,141	319,667	359,808

APPENDIX M

FEED COSTS & PRICE RECEIVED

	1973	1974	1975	1976	1977
Feed Cost/Cwt Hogs	$19.92	$25.99	$25.71	$24.86	$23.82
Price Rec'd/Cwt	40.33	34.99	47.75	43.34	41.10
Feed Cost/Cow	372.73	602.97	597.96	618.18	540.91
Price Rec'd/Cwt Milk	6.31	7.53	7.68	8.77	8.77
Feed Cost/Cwt Beef	26.87	51.85	42.77	39.30	36.23
Price/Cwt Sold	43.05	41.23	41.28	36.87	38.08

APPENDIX N

MISCELLANEOUS ITEMS BY YEARS

	1973	1974	1975	1976	1977
Farm Purchases	$78,151	$105,309	$77,687	$89,107	$95,746
Family Spending (Cash)	6,811	10,801	12,886	15,498	15,212
Farm Expense Per $Farm Receipts	.61	.79	.91	.87	.84
$Assets to Liabilities	3.19	3.30	2.90	2.68	2.60
Non Real Estate Assets to Non Real Estate Liabilities	4.54	4.82	3.77	3.32	3.04
Real Estate Assets to Real Estate Liabilities	2.17	2.27	2.37	2.19	2.26
Money Borrowed	30,285	29,367	45,562	49,893	51,703

Unit II - 5

THE IMPORTANCE OF INVENTORIES

PART I. Student Objectives

A. Given three samples of Summary of Inventory statements and the opportunity to discuss them in a comparative setting, the student will be able to classify assets and identify the correlation between distributuion of farm capital and earnings.

B. Given a comparison of beginning and ending inventories of high and low profit farms, and the opportunity to discuss changes in inventories over that period of time, the student will be able to identify the effect these changes have on present and future earnings.

C. Given four asset to liability ratios, with the instructor's assistance in identifying their usage, the student will be able to identify their importance in the management of the farm business.

D. Utilizing the capital turnover ratio measure, the student will be able to calculate the number of years required to turn over the capital investment in his business.

PART II. Transition of Units

The previous unit outlined a format for a general overview of the farm business analysis. Its purpose was to guide students in the interpretation of their own business analysis. This unit will cover the importance of inventories in the farm business. The correlation between distribution of farm capital and earnings, asset to liability ratios, and return on investment calculations will also be studied.

The following unit will help to evaluate the cropping program. Several efficiency measures will be used from the farm business analysis to help show the family more about its cropping program.

PART III. The Lesson

Attention Focuser

Begin the presentation by displaying a plastic container full of ice. This is to represent the total assets of a farm business. Allow a small portion of the ice to melt prior to the class. In explaining the topic of this unit, pour out the liquid (water) into a clear container illustrating that this could relate to one's current and working assets. The question may be asked how one knows the ideal or correct proportions of current and working assets to fixed assets.

KEY QUESTION 1. How are inventories related to farm profit?

Classification of Farm Capital

1. Current Assets
   a. Market Livestock
   b. Crop, Seed and Feed

2. Working Assets
   a. Breeding Livestock
   b. Power, Machinery & Equipment

3. Fixed Assets
   a. Land
   b. Buildings, Fences, etc.

Correlation Between Distributuion of Farm Capital & Earnings

1. Do high profit farms have more current and working (liquid) assets?

2. Do high profit farms have more long-term assets?

TABLE 1. SUMMARY OF INVENTORIES - DECEMBER 31, 1977*

Items	Average 331 farms	%**	71 Most Profitable	%**	71 Least Profitable	%**
Productive Livestock	25,471	10.8	36,161	10.2	19,107	8.7
Crop, Seed & Feed	52,026	22.1	87,817	24.8	38,601	18.5
Power, Mach. & Equip	41,218	17.5	60,374	17.0	32,023	14.5
Land	77,964	33.1	109,695	31.0	98,046	44.5
Building,Fences,etc.	39,115	16.6	60,313	17.0	32,512	14.8
Total farm capital	235,794	100.00	354,360	100.0	220,289	100.0
Labor earnings	19,918		45,621		(-2656)	

* Adapted from Table 5, Farm Business Management Education, Program Annual Report, Mankato, Area, SouthernMN April 1978.

** Expressed as a percent of total farm capital.

TABLE 2. SUMMARY OF INVENTORIES - DECEMBER 31, 1977*

Items	Average 433 Farms	%**	87 Most Profitable	%**	87 Least	%**
Productive Livestock	19,784	19.8	34,698	22.1	13,253	14.8
Crop, Seed & Feed	11,116	11.1	20,310	12.9	7,766	8.7
Power, Mach. & Equip.	22,801	22.8	37,808	24.9	19,475	22.8
Land	28,209	28.3	34,750	22.1	34,225	38.3
Buildings, Fences,etc.	17,913	17.9	29,650	18.9	14,661	16.4
Total farm capital	99,822	100.0	157,216	100.0	89,380	100.0
Labor earnings	5,978		25,454		(-9,823)	

* Adapted from Table 5, Farm Business Management Education Program Annual Report, Northeastern and North Central Minnesota, April 1978.
** Expressed as a percent of total farm capital.

TABLE 3. SUMMARY OF INVENTORIES - DECEMBER 31, 1977*

Items	Average 563 farms	%**	114 Most Profitable	%**	114 Least Profitable	%**
Productive Livestock	14,770	8.6	15,693	6.6	16,067	7.1
Crop, Seed & Feed	27,267	15.8	54,266	22.7	28,452	12.6
Power, Mach. & Equip.	38,507	22.3	53,777	22.5	51,148	22.6
Land	74,082	42.9	89,911	37.7	111,373	49.2
Buildings,Fences,etc.	17,958	10.4	25,904	10.5	19,353	8.5
Total farm capital	172,584	100.0	238,742	100.0	226,393	100.0
Labor earnings	3,615		26,873		(-20,188)	

*Adapted from Table 5. Farm Business Management 1977 Annual Report, Northwestern Minnesota, Thief River Falls, April 1978.

** Expressed as a percent of total farm capital.

Suggested Teaching Strategy

Discuss the classifications of farm assets, pointing out that current assets and working assets are considered short-term and can be almost immediately converted to cash. Fixed assets are long-term and the least liquid.

Using Tables 1, 2 and 3 from above and as transparencies of Appendices A, B and C, point out that there is a significant difference in the distribution of capital between earnings groups.

The low profit farms were larger than the average profit farms, but not quite as big as the high profit groups in terms of total farm capital. In all three tables the low profit group had a small investment in crop, seed and feed compared to the average and high profit groups. Tables 1 and 3 represent areas where earnings from crops were more significant than earnings from livestock during the period shown.

Table 2 represents a predominantly livestock area. The low profit farms from that area show a smaller investment in livestock than the average or high profit groups. Farmers in this area generally rely on livestock to increase the value of forage type crops. The deficiency of livestock coupled with a high investment in the fixed assets of land and buildings leaves little earning power for the low profit group. A high investment in land and building is characteristic of the low profit groups in all three tables. This situation results in a slow capital turnover, thus, reduced earnings.

In prior years when livestock enterprises were generally more profitable than crop enterprises, low profit farms were characterized by low livestock investments and high land investments. While one would expect farms with high land investments to appear in the high profit column during recent years when crop enterprises were more favorable than livestock, this is not the case. This again demonstrates that the annual return to investment in land is not very high.

It should be pointed out at this point that the inventory values placed on land may not reflect present market price. A particular farmer could have realized from 10-23% increase in the value of his land last year, depending on his location. This, however, is not an annual return which he can tap for living or paying production expenses or an indicator of his production efficiency. Since it is not an annual return, the future income which could be derived from the sale of the land must be discounted to give it a present value comparable to that from the productive enterprise. For some farmers nearing retirement and who would not receive full useful benefits from an investment in livestock, facilities or equipment, this may be a sound investment.

KEY QUESTION 2. What are the effects of changes in the yearly inventories on present and future earnings?

One year's analysis can seldom be used as a basis for decision. However, when we compare changes in the business which have occurred over a period of two or more years, relationships start to appear which can be used to determine causes of earnings.

TABLE 4. SUMMARY OF INVENTORIES - Jan. 1 and Dec. 31, 1976*

Item	Average 364 Farms		79 Most Profitable		79 Least Profitable	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Total ProductiveL.S.	23904	22258	25294	25209	33756	26967
Crop,Seed & Feed	42761	46545	71340	93332	43982	32376
Tot.PowerMach.Equip.	31737	36155	41898	47266	36948	40313
Land	60194	66915	77386	86819	83084	91941
Buildings,Fences,etc	28922	34047	40339	46170	37569	44854
Total Farm Capital	187517	205919	256257	298796	235338	236450
RealEstate Mort.	41012	50439	60565	68751	47422	66311
Chattel Mort.	22849	25621	19623	21635	49325	51439
Notes	9446	10729	9653	10495	13135	13809
Accts. Payable	1485	1580	658	783	2788	2814
Tot.Liabilities	74792	88369	90498	101665	112670	134372
Net Worth **	139157	148156	201136	238987	149011	132814
Change in Net Worth		8998		37851		(-16196)
Labor Earnings		14660		49769		(-18518)

*Adapted from Table 5, Farm Business Management 1976 Annual Report, Mankato Area, Southern MN, April 1977.

**Non farm assets have been omitted from this adaptation but included in Net Worth.

TABLE 5. SUMMARY OF INVENTORY CHANGES - Jan. 1 to Dec. 31, 1977*

Item	Average 331 Farms		71 Most Profitable		71 Least Profitable	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
FARM ASSETS						
Productive Livestock	20732	25471	26549	36161	16408	19107
Crop, Seed & Feed	43533	52026	68003	87817	36972	38601
Power Mach. & Equip.	35174	41218	49217	60374	28861	32023
Land	71103	77964	101748	109695	87398	98046
Building,Fences,etc.	33749	39115	53694	60313	29323	32512
TotalFarmCapital	204291	235794	299211	354360	198962	220289
FARM LIABILITIES						
Real Estate Mort.	48715	58710	80931	94652	43225	59138
Chattel Mort.	26043	29894	30750	35217	26438	30596
Notes	11765	13855	20449	22984	9086	11210
Acct. Payable	2057	2672	3803	4026	1241	1933
Total Liabilities	88580	105131	135933	156869	79990	102877
Net Worth**	145637	164345	203767	241805	144670	147431
Change In Net Worth		18708		38038		2761
Labor Earnings		19918		45621		(-2656)

*Adapted from Table 5, Farm Business Management 1977 Annual Report, Mankato Area, SouthernMinnesota, April 1978.
** Non farm assets have been omitted from this adaptation but included in Net Worth.

A look at tables 4 and 5 shows that in both 1976 and 1977 the high profit farms increased their inventories of crops, feed and seed by a substantial amount, while the low profit farms either reduced or increased by a marginal amount their inventories in crop, seed, and feed. This may be due to poor production because of drought, poor land or poor managment or because a greater percentage was fed through livestock which had lower returns in these years.

The value of having larger inventories of productive livestock and crops, seed and feed is its effect on working equity capital. Working equity capital is defined as the difference between current assets and current liabilities and is an indicator of the liquidity of the business. Table 6 shows the high profit farms to have a higher percentage of assets as current assets and a lower percentage of liabilities as current liabilities than the low profit farms. This difference in available working equity capital can allow for better marketing and production planning.

TABLE 6. COMPARISON OF INVENTORIES BY PERCENT *

ASSETS **	Average 1976	Average 1977	High Profit 1976	High Profit 1977	Low Profit 1976	Low Profit 1977
Total ProductiveLivestock	11	11	8	10	11	9
Crop, Seed and Feed	23	22	31	25	14	18
Total Power Mach.Equip.	18	17	16	17	17	15
Land	32	33	29	31	39	45
Buildings,Fences,Equip.	17	17	15	17	19	15
Total Farm Capital	100%	100%	100%	100%	100%	100%
LIABILITIES ***						
Real Estate Mortgages	57	56	68	60	50	57
Chattel Mortgages	29	28	21	22	38	30
Notes	12	13	10	15	10	11
Accts. Payable	2	3	1	3	2	2
Total Liabilites	100%	100%	100%	100%	100%	100%

* Adapted from Table 5, Farm Business Managment 1977 Annual Report, Mankato Area, Southern Minnesota, April 1978.
** Expressed as percent of total farm capital.
*** Expressed as percent of total liabilities.

Suggested Teaching Strategy

Ask the class to list various assets and liabilities and write these on the chalkboard. Classify each one using the format of Appendices D and E. Discuss the figures on these two tables and the comparison with Appendix F with the class until they recognize the differences between the high profit and low profit farms. Ask what relationship each of these differences have to future earnings factors (e.g. working capital, liquidity, solvency, profitability and risk).

TABLE 7. SELECTED RATIOS OF FINANCIAL PROGRESS * 1977

Item	331 Farms Average		71 Most Profitable		71 Least Profitable	
Total Farm Exp. to Total Farm Rec.		.837		.768		1.032
	Jan. 1	Dec. 31	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Tot.Assets to Tot.Liab.	2.644	2.563	2.499	2.541	2.809	2.433
NonReal Est. Assets to Non Real Est. Liab.	3.014	3.063	3.148	3.490	2.685	2.480
Real Est. Assets to Real Est. Liab.	2.342	2.168	2.058	1.918	2.914	2.398
Net Worth to Tot. Liab.	1.644	1.563	1.499	1.541	1.809	1.433
Cash Operate Exp. to Adj. Tot. Farm Sales		.712		.690		.932
Tot. Farm Receipts to Aver. Farm Cap. (W.F.)		.388		.435		.302
Tot. Farm Receipts to Aver. Farm Cap.(O.S.)		.555		.602		.399

* Farm Business Managment Annual Report, Mankato, Area, Southern Minnesota, April, 1978.

KEY QUESTION 3. What are the financial ratios and what is their importance in business management?

1. Total Farm Expenses to Total Farm Receipts.--This is a ratio showing what portion of every dollar of receipts, including increases in farm capital and family living from the farm went back out again as an expense, including interest on equity. It is a measure of residual profitability when coupled with the size of the operation.

2. Total Assets to Total Liabilities.--This ratio shows how many dollars of assets the operator has to cover each dollar of debt which he owes. It is a measure of the solvency of the business if it should be necessary to liquidate it. The size of this ratio often depends upon ownership of real estate since real estate ownership generally tends to lower the ratio while still allowing the business to be solvent. The size of the ratio must be examined in relationship to the ratios listed in points three and four before judgments can be made about it.

3. Non-Real Estate Assets to Non-Real Estate Liabilities.--This ratio reflects the working position of the business. It shows how many dollars of livestock, crops, seed and feed, power,

machinery and equipment and non-farm assets are available to cover debts which are coming due in the short and intermediate categories.

This is perhaps one of the most important ratios since a business which cannot meet its working capital needs either through sales or refinancing is considered bankrupt.

Lenders typically like to see this ratio larger than either the total ratio or the real estate ratio. This is due to the fluctuating markets of the assets which are considered current. For example, a change in corn prices from $3. to $1.50 can drastically reduce the ratio if a large portion of the inventory is made up of corn.

4. Real Estate Assets to Real Estate Liabilities.--This is the ratio of the value of real estate available to cover each dollar of liabilities against it. This ratio may come closer to a 1 to 1 ratio than the others since some lenders, particularly individuals, are willing to finance real estate with little money down. This is due to the inherent characteristics of real estate and its tendency to maintain stable or increased market value. A large ratio here may provide working capital through refinancing, particularly if the ratio of non-real estate assets to liabilities is small.

5. Net Worth to Total Liabilities. This is a ratio of owner's equity to creditor's equity in the business. It shows how many dollars the owner has invested for each dollar his creditors have in the business. Typically, this will not get below a 1 to 1 ratio, but again it will depend on the make-up of the assets.

6. Cash Operating Expense to Adjusted Total Farm Sales.--This is a measure of operating efficiency which shows what protion of each dollar of sales (adjusted for sales of capital assets) went out of the business in the form of operating expenses.

Suggested Teaching Strategy

Display Appendix G on the overhead with only the figures for the average farms showing. Ask the group which direction the ratios for the high profit and low profit farms will move.

If time permits, describe how each ratio is calculated using the Documentation for Farm Business Analysis to locate the information which goes into each ratio.

Relate the ratios on the overhead to the figures shown on Appendices D and E so the class can see how the trends in inventories relate to the trends in the ratios. These ratios can be early danger signals of financial difficulties.

KEY QUESTION 4. What is the importance of the capital turnover ratio?

The capital turnover ratio indicates to the operator what portion of his investment (OS) or total farm investment (WF) is equaled each year in gross revenues. A farm which has a capital turnover ratio of .55 is generating the equivalent of .55% of the capital in a given year as its gross revenues. Looking at it alternatively, the operation turns over its capital investment every 1.82 years in gross revenues. This ratio gives information about the volume of business relative to the size of business. As can be seen in table 7 of the appendix, the high profit farms had a much higher (.602) rate of capital turnover than the low profit farms (.399).

Had the low profit farms a higher ratio (.155) and maintained the same ratio of expenses to receipts (1.032) they would have lost dollars on more units of production and used more of their equity. When expanded sales volume is not matched by improved cost control we find one of the few cases when a higher capital turnover ratio would not be a better indicator of the operations financial status.

Suggested Teaching Strategy

Calculate the ratio for the average farms on the chalkboard so the class can see how the ratio is derived. Write a higher and lower ratio on either side of average ratio. Ask for a consensus as to which ratio belongs to the high profit group.

At this time display the transparency of Appendix G and relate the importance of the ratio to the overall financial health of the business.

PART IV. Summary

A. Assets can be listed as current, working or fixed.

B. Liabilities can be listed as current or short term, intermediate and long term.

C. The make up of the business by distribution of current and working assets vs. fixed assets may have a great deal of effect on the profitability of the business.

D. The financial ratios are indicators of a business' liquidity, solvency and repayment capacity. Close examination of trends in these ratios can show where the business' financial position is heading.

E. The capital turnover ratio shows if the business is generating enough volume relative to the capital investment to give it profit potential.

PART V. At-The-Farm Activities

The worksheet, Trends in Capital Control, should be given to each family in class. They should be encouraged to complete this on the farm if they have not already done so. An analysis of their figures and trends should be made with them to spot any items which might point to possible financial problems or those which would allow them to expand in areas of higher profitability.

PART VI. Resources

Chalkboard/Overhead Projector
Transparencies of Appendices A, B, C, D, E, F, G, H.
Class quantities of Appendix H
Farm Business Management Area Analysis
Individual analysis for each family

PART VII. References

Nelson and Murray. Agricultural Finance. Ames, Iowa: Iowa State University Press, 1971.

Persons, Edgar. Documentation for Farm Business Analysis. Division of Agricultural Education, University of Minnesota, 1977.

Hopkin, Barry, Barker. Financial Management in Agriculture, Danville, Ill.: The Interstate, Inc., 1973.

Walker, Donald. "The Net Worth Statement." Minnesota Instructional Media Center, 3354 White Bear Ave., White Bear Lake, MN. Current edition.

Schneeberger, Kenneth C. and Donald Osburn, Financial Planning in Agriculture, Danville, Ill.: The Interstate, Inc., 1977.

Farm Business Management 1977 Annual Report. Mankato Area Southern Minnesota, Mankato AVTI, Mankato, Minnesota, 1978.

Farm Business Management 1977 Annual Report, Northwestern Minnesota, Thief River Falls, AVTI, Thief River Falls, Minnesota, 1978.

Farm Business Management 1977 Annual Report. Northeastern and North-central Minnesota, Staples AVTI, Staples, Minnesota, 1978.

PART VIII. Appendices

A. Summary of Inventories - December 31, 1977, Mankato.

B. Summary of Inventories - December 31, 1977, Staples

C. Summary of Inventories - December 31, 1977, Thief River Falls.

D. Summary of Inventory Changes, 1976, Mankato.

E. Summary of Inventory Changes, 1977, Mankato.

F. Comparison of Inventories by Percent.

G. Selected Ratios of Financial Progress, 1977.

H. Trends in Capital Control-Worksheet.

Appendix A

Summary of Inventories, Dec. 31, 1977*

Items	Average 331 Farms	% **	71 Most Profitable	% **	71 Least Profitable	% **
Productive Livestock	25471	10.8	36161	10.2	19107	8.7
Crop Seed & Feed	52026	22.1	87817	24.8	38601	17.5
Power, Machine Equip.	41218	17.5	60374	17.0	32023	14.5
Land	77964	33.1	109695	31.0	98046	44.5
Building Fences, Etc.	39115	16.6	60313	17.0	32512	14.8
Total Farm Capital	235794	100%	354360	100%	220289	100%
Labor Earnings	19918		45621		(-2656)	

* Adapted from Table 5, Farm Business Management Education Program Annual Report, Mankato Area Southern, MN April 1978

** Expressed as a percent of total from Capital.

DECEMBER 31, 1977*

APPENDIX B

SUMMARY OF INVENTORIES, DEC. 31, 1977*

ITEMS	AVERAGE 433 FARMS	% **	87 MOST PROFITABLE	% **	87 LEAST PROFITABLE	% **
PRODUCTIVE LIVESTOCK	19784	19.8	34698	22.1	13253	14.8
CROP, SEED, & FEED	11116	11.1	20310	12.9	7766	8.7
POWER, MACHINES EQUIP.	22801	22.8	37808	24.0	19475	21.8
LAND	28209	28.3	34750	22.1	34225	38.3
BUILDINGS, FENCES, ETC.	17913	17.9	29650	18.9	14661	16.4
TOTAL FARM CAPITAL	99822	100%	157216	100%	89380	100%
LABOR EARNINGS	5978		25454		(-9823)	

* ADAPTED FROM TABLE 5. FARM BUSINESS MANAGEMENT EDUCATION PROGRAM ANNUAL REPORT, NORTHEASTERN AND NORTH CENTRAL MINNESOTA, APRIL 1978

** EXPRESSED AS A PERCENT OF TOTAL FARM CAPITAL.

TABLE 3

APPENDIX C

SUMMARY OF INVENTORIES, DEC. 31, 1976*

ITEMS	AVERAGE 563 FARMS	% **	114 MOST PROFITABLE	% **	114 LEAST PROFITABLE	% **
PRODUCTIVE LIVESTOCK	14770	8.6	15693	6.6	16067	7.1
CROP SEED AND FEED	27267	15.8	54266	22.7	28452	12.6
POWER MACHINE & EQUIP.	38507	22.3	53777	22.5	51148	22.6
LAND	74082	42.9	89911	37.7	111373	49.2
BUILDINGS, FENCES, ETC.	17958	10.4	25094	10.5	19353	8.5
TOTAL FARM CAPITAL	172584	100	238742	100	226393	100
LABOR EARNINGS	3615		26873		(-20188)	

*ADAPTED FROM TABLE 5, FARM BUSINESS MANAGEMENT 1977 ANNUAL REPORT, NORTHWESTERN MINNESOTA, THIEF RIVER FALLS, APRIL 1978.

**EXPRESSED AS A PERCENT OF TOTAL FARM CAPITAL.

TABLE 4

APPENDIX D

SUMMARY OF INVENTORIES, JAN. 1 AND DEC. 31, 1976*

	AVERAGE 364 FARMS		79 MOST PROFITABLE		79 LEAST PROFITABLE	
ITEMS	JAN. 1	DEC. 31	JAN. 1	DEC. 31	JAN. 1	DEC. 31
TOTAL PRODUCTION. L.S.	23904	22258	25294	25209	33756	26967
CROP, SEED AND FEED	42761	46545	71340	93332	43982	32376
TOTAL POWER MACH. EQUIP.	31737	36155	41898	47266	36948	40313
LAND	60194	66915	77386	86819	83084	91941
BUILDINGS, FENCES, ETC.	28922	34047	40339	46170	37569	44854
TOTAL FARM CAPITAL	187517	205919	256257	298796	235338	236450
REAL ESTATE MORT.	41012	50439	60565	68751	47422	66311
CHATTEL MORT.	22849	2562	19623	21635	49325	51439
NOTES	9446	10729	9653	10495	13135	13809
ACCTS. PAYABLE	1485	1580	658	783	2788	2814
TOTAL LIABILITIES	74792	88369	90498	101665	112670	134372
NET WORTH*	139157	148156	201136	238987	149011	132814
CHANGE IN NET WORTH		8998		37851		(-16196)
LABOR EARNINGS		14660		49769		(-18518)

* ADAPTED FROM TABLE 5, FARM BUSINESS MANAGEMENT 1976 ANNUAL REPORT, MANKATO AREA, SOUTHERN MINNESOTA, APRIL 1977.

TABLE 5

APPENDIX E

SUMMARY OF INVENTORY CHANGES FROM JAN. 1 TO DEC. 31, 1977

ITEM	AVERAGE 331 FARMS JAN. 1	AVERAGE 331 FARMS DEC. 31	71 MOST PROFITABLE JAN. 1	71 MOST PROFITABLE DEC. 31	71 LEAST PROFITABLE JAN. 1	71 LEAST PROFITABLE DEC 31
FARM ASSETS						
PRODUCTIVE LIVESTOCK	20732	25471	26549	36161	16408	19107
CROP, SEED AND FEED	43533	52026	68003	87817	36972	38601
POWER MACH, AND EQUIP.	35174	41218	49217	60374	28861	32023
LAND	71103	77964	101748	109695	87398	98046
BUILDINGS, FENCES, ETC.	33749	39115	53694	60313	29323	32512
TOTAL FARM CAPITAL	204291	235794	299211	354360	198962	220289
FARM LIABILITIES						
REAL ESTATE MORTGAGE	48715	58710	80931	94652	43225	59138
CHATTEL MORTGAGE	26043	29894	30750	35217	26438	30596
NOTES	11765	13855	20449	22984	9086	11210
ACCT. PAYABLE	2057	2672	3803	4016	1241	1933
TOTAL LIABILITIES	88580	105131	135933	156869	79990	102877
NET WORTH**	145637	164345	203767	241805	144670	147431
CHANGE IN NET WORTH		18708		38038		2761
LABOR EARNINGS		19918		45621		(-2656)

*ADAPTED FROM TABLE 5, FARM BUSINESS MANAGEMENT 1977 ANNUAL REPORT, MANKATO AREA, SOUTHERN MINNESOTA, APRIL 1978

**NON FARM ASSETS HAVE BEEN OMMITTED FROM THE ADAPTATION BUT INCLUDED IN NET WORTH.

HOGS - MOST PROFITABLE LS L.S. GENERALLY PROFITABLE CROPS HIGHEST RETURN ENTERPRISE

TABLE 6

APPENDIX F

COMPARISON OF INVENTORIES BY PERCENT*

	AVE.		H.P.		L.P.	
	1976	1977	1976	1977	1976	1977
ASSETS**						
TOTAL PRODUCTIVE L.S.	11	11	8	10	11	9
CROP, SEED AND FEED	23	22	31	25	14	18
TOTAL POWER MACH. EQUIP.	18	17	16	17	17	15
LAND	32	33	29	31	39	45
BUILDINGS, FENCES EQUIP.	17	17	15	17	19	15
TOTAL FARM CAPITAL	100%	100%	100%	100%	100%	100%
LIABILITIES***						
REAL ESTATE MORTGAGES	57	56	68	60	50	57
CHATTEL MORTGAGES	29	28	21	22	38	30
NOTES	12	13	10	15	10	11
ACCTS. PAYABLE	2	3	1	3	2	2
TOTAL LIABILITIES	100%	100%	100%	100%	100%	100%
RATIO OF ASSETS TO LIABILITIES	2.33	2.24	2.94	2.26	1.76	2.14

* ADOPTED FROM TABLE 5, FARM BUSINESS MANAGEMENT 1977 ANNUAL REPORT, MANKATO AREA, SOUTHERN MINNESOTA, APRIL 1978.

** EXPRESSED AS PERCENT OF TOTAL FARM CAPITAL

*** EXPRESSED AS PERCENT OF TOTAL LIABILITIES

TABLE 7

APPENDIX G

SELECTED RATIOS OF FINANCIAL PROGRAM *1977

ITEM	AVERAGE 331 FARMS		MOST PROFITABLE 71		LEAST PROFITABLE 71	
TOTAL FARM EXPENSE TO TOTAL FARM RECEIPTS	.837		.768		1.032	
	JAN. 1	DEC. 31	JAN. 1	DEC. 31	JAN. 1	DEC. 31
TOTAL ASSETS TO TOTAL LIABILITIES	2.644	2.563	2.499	2.541	2.809	2.433
NON REAL ESTATE ASSETS TO NON REAL ESTATE LIAB.	3.014	3.063	3.148	3.490	2.685	2.480
REAL ESTATE ASSETS TO REAL ESTATE LIAB.	2.342	2.168	2.058	1.918	2.914	2.398
NET WORTH TO TOTAL LIAB.	1.644	1.563	1.499	1.541	1.809	1.433
CASH OPERATING EXPENSE TO ADJUSTED TOTAL FARM SALES		.712		.690		.832
TOTAL FARM RECEIPTS TO AVERAGE FARM CAPITAL (W.F.)		.388		.435		.302
TOTAL FARM RECEIPTS TO AVERAGE FARM CAPITAL (O.S.)		.555		.602		.399

* FARM BUSINESS MANAGEMENT ANNUAL REPORT, MANKATO AREA, SOUTHERN MINNESOTA, APRIL 1978

Appendix H

Trends in Capital Control - Worksheet

Item	Jan. 1 19__	Jan. 1 19__	Jan. 1 19__	Jan. 1 19__	Jan. 1 19__
Productive Livestock					
Crop, Seed, Feed					
Power, Mach., Equipment					
Land					
Buildings, Fences, Etc.					
TOTAL FARM CAPITAL					
Real Estate Mortgages					
Chattel Mortgages					
Note					
Acct. Payable					
TOTAL LIABILITIES					
Labor Earnings					
Ratios					
Total Farm Exp. To Farm Rec.					
Total Assets to Liabilities					
Non-Real Est. Assets to Liab.					
Real Est. Assets to Liab.					
Cash Operating Exp. to Adj. Farm Sales					
Total Farm Rec. to Ave. Farm Cap. (W.F.)					
Total Farm Rec. to Ave. Farm Cap. (O.S.)					

Unit II - 6

USING THE PROFITABILITY FACTORS IN FARM ANALYSIS INTERPRETATION

Part I. Student Objectives

A. Families will be able to use the information on Table 8 to aid in the analysis of their farm business.

B. Families will be able to determine if their farm is specialized, and if it can be evaluated under those guidelines.

C. Families will be able to examine a thermometer chart based on their farm business analysis information to provide a basis for further business interpretation and decision making.

PART II. Transition of Units

The prior unit examined the capital organization and financial structure of the business. Ratios used to examine the financial soundness and progress of the business were presented. The unit culminated in a discussion of capital turnover and the effect that turnover can have on the profitability of the farm business.

This unit will concentrate on the use and interpretation of Profitability Factors (Table 8) from the farm business analysis summary. The importance of understanding and utilizing the profitability factors which are useful in predicting farm earnings will be emphasized. Each family will determine only one or two farming enterprises providing most of the farm income (all cash crops would be considered as one enterprise). This information will be useful in evaluating their thermometer chart in view of recent research information which indicates a relationship between labor earnings and the profitability factors as found on Table 8.

Following an examination of the business financial structure and the measures of organization and efficiency, the cropping program analysis will be examined in detail. Of primary concern will be an assessment of the changes that can be made in the cropping program to improve crop profitability.

PART III. The Lesson

Attention Focuser

From the master copy in the appendix, make an overhead of the visual "Watch Repair". This will give you an opportunity to

open the meeting by indicating it takes time to evaluate and analyze a watch--as it does a farm business. A "quick fix" in both cases may give you the same bad results. Knowing which factors are important in the evaluation of your farm business is the first critical step.

KEY QUESTION 1. What factors are important to you in the evaluation of your farm business?

The answers to this question will vary with the individual farmer. Some sample answers may be:

1. Net profit or labor earnings.
2. Productivity, crop yield or livestock produced.
3. Efficiencies, return over feed cost.
4. Business size, acreage or livestock numbers.
5. Cost of supplies, breeding stock, machinery, repairs, labor.
6. Capital investment, land, buildings, machinery, equipment.
7. Marketing prices, livestock and cash grain market prices.

Suggested Teaching Strategy

Have the class list four or five selections on a separate piece of paper and call on them to give you the top two on their list. Copy these on the blackboard for reference in Question 2.

As the students give you their top choices, ask why they view Number 1 as a good evaluation of their farm business. If there are many repeats, question their second choice. You should obtain a variety of responses. Point out the wide variety of "best" evaluation methods.

KEY QUESTION 2. What tables in your analysis are important in evaluating your farm business?

It would be helpful to categorize answers in terms of the tables from the farm business analysis summary. Some sample answers might be:

Evaluation Factor	Tables
1. Labor Earnings	T 2B, 5A, 6B, 8 & 3
2. Productivity	T 3, 8, 9 Crop & Livestock Tables
3. Efficiencies	T 3, 8, Crop & Livestock tables
4. Business Size	T 1 & 8
5. Cost	T 2B, 3, 4, 6B, Crop & Livestock Tables, & 8
6. Capital Investment	T 1, 5A & 8
7. Marketing Prices	T 8, Crop & Livestock Tables

Suggested Teaching Strategy

Since the list from Key Question 1 is still on the chalkboard or overhead sheet, use it as a basis for finding information in the annual farm analysis. List the tables in which the information is found next to the individual "best" evaluator factors as shown in the example. You will find many tables showing up more than once but Table 8 should show up the most often. This is due to the wide variety of information either shown directly or synthesized in Table 8. (A brief review of Table 8 for the instructor might be helpful for this section). Because Table 8 involves so many parts of your farm business it would be helpful to know more about it.

KEY QUESTION 3. How do the factors on Table 8 reflect your farm business?

Profitability Factors: Measures and efficiency factors as found on Table 8 provide a brief comprehensive, economic and physical assessment of the farm business record. These specific measures are related to earnings but the relationship can vary greatly from farm to farm. They include the next ten items to be listed.

Whole Farm Labor Earnings: A measure of the relative financial return for the operator's labor taking into account all income and expense, cash and non-cash including a charge for the use of farm capital and unpaid family labor. This is based on the whole farm business.

Crop Yield Index: A measure of the crop yield level for all crops produced expressed as a percentage of the average--the average being 100%.

Percent of Tillable Land in High Return Crops: A measure of crop selection based on a rating of individual crops. Crop ratings take into account such things as dollar return, effect on soil, TDN yield, labor required, etc.

Gross Return Per Cropped Acre: An additional measure of crop selection based on total production times an average price for the crops.

Return per $100 Feed Fed to Productive Livestock Index: Measures the general level of efficiency for all livestock. It is expressed as a percentage of the average and combines the individual livestock indexes into one figure. The average is 100.

Livestock Units per 100 Acres: A measure of livestock density of population. Unit values are assigned to the various classes of livestock.

Total Work Units - Size of Business: A measure of the total work load. A work unit represents the average accomplishment of a worker in one ten (10) hour day. Work unit values are assigned to each class of livestock, each crop, and to other tasks utilizing farm labor.

Work Units per Worker: Measures labor efficiency. It is the total work units divided by the number of workers including the operator, hired labor and family labor.

Power, Machinery, Equipment and Building Expense per Work Unit: A measure of expense control. The net costs of owning and operating the machinery, equipment and buildings for each unit of business size.

Capital Investment per Worker: Indicates size of business. Useful in comparing a farm business to other industries or businesses.

Suggested Teaching Strategy

Select the visual from the appendix which is labeled "Profitability Factors From Table 8". Use this to focus attention while you briefly discuss the factors. Discuss briefly each of the profitability factors which appear on Table 8. The "documentation" describing each factor contains a complex of mathematical formulas which should be used with great discretion during the class period. A one-on-one discussion during the farm visit would be the preferred way to explain the formulas to persons who may be interested in a more in-depth understanding of how the item is devised.

KEY QUESTION 4. How can you determine if you meet the criteria of specialized farming types?

Because some specific information can be determined from the analysis of profitability factors for specialized farm types, it would be helpful for the instructor and client to know if an individual farm meets the prescribed criteria.

As previously indicated, the profitability factors are useful in predicting whole farm labor earnings for many types of specialized farms.

Specialized Farm Type: A farm in the Minnesota Vocational Agriculture Farm Managment Education Program which derives 80 percent or more of its farm income from one or two farm business enterprises. The second of the two enterprises accounts for a minimum of 20 percent of the total.

Farm Enterprise: A subset of the total farm business, i.e., crops, dairy cows, beef breeding herd, hogs finishing, etc. which are analyzed as specific units in the farm business summary.

Suggested Teaching Strategy

Select from the appendix the handout "Computation for Determination of Specialized Farm Types" and give each farmer a copy. Using a pencil and his farm analysis, he will be able to determine whether his farm is specialized under the guidelines in the study.

This exercise will need the support of examples (included), some calculations and strict attention to the directions on the handout sheet. Complete a dry run demonstration first with the sample problem and then ask the students to complete their farm using the numbers from their farm business analysis. The information derived from this farm can provide a brief discussion on the importance that contributions from one or two farm enterprises can make to the total value of farm products.

Steps to follow when filling out the handout "Computation for Determination of Specialized Farm Types."

Step 1, 2, and 3 are self-explanatory and should be taken from the appropriate tables in the students farm business analysis.

Step 4. There can be more than one equation with a value above .80. Do not worry, one or both of the equations will be eliminated in Step 5.

There are farms which will not meet the criteria based on their input from the first step. Based on the selection process in a recent research study, about 45 percent of the farms met the criteria each year.

For those people not meeting the criteria in Step 4, point out the percentage their farm enterprises contribute to the total value of farm products.

Step 5. This step is designed to determine if each farm enterprise meets the miniumum 20 percent criteria. In developing the equation for Step 5, use only the figures from A, B or C. Do not use added scores.

If farmers do not enter the specialized farming group in Step 5, point out the impact one or two parts of their farm business can have on their total value of farm products.

NOTE: It would be helpful if the instructor completed 4 or 5 prior to class time. Examine the sample problems of the computation handouts found in the appendix.

Analysis of Computation of Specialized Farming Types SAMPLES (For instructor use only)

Sample 1. This farm does not meet the initial 80 percent criteria and is not considered a specialized farm type.

Sample 2. This farm meets the initial criteria in Step 4a. In Step 5, however, both equations do not meet the minimum of 20 percent. This farm is not specialized.

Sample 3. This farm meets the initial criteria in Step 4a with a value of 1.00. In Step 5, the minimum criteria of 20 percent from both equations are also met. This farm is specialized. Consult Table 3 as to the specific categories in the livestock operations sections.

Sample 4. This farm meets the initial criteria in Step 4a and 4b. Select the equation with the largest value and enter Step 5. In Step 5, only one of the equations, 5a, is above the minimum level of 20 percent for a two enterprise specialty farm. Step 5 a is also above the level of .80 which is the criterion level for a one enterprise specialty farm type. The farm in Sample 4 is a one enterprise specialty farm. Check Table 3 to find which livestock enterprise contributed the $11,541 of the net increases to the total farm value.

KEY QUESTION 5. What has research shown about the relationship between whole farm labor earnings and the profitability factors?

A research study completed in 1977 on 7,138 records from the farm management program found the profitability factors (percent of tillable land in high return crop is not included due to inconsistent reporting) to be important in predicting whole farm labor earnings. Select "Percent of Whole Farm Labor Earnings Predicted by the Profitability Factors from Table 8," from the appendix.

Important points to emphasize about the overhead:

1. This table will tell you the portion, in percent, of whole farm labor earnings as predicted by the profitability factors. (Example: for hogs complete farms, those

farms making 80 percent or more of their income through hogs complete enterprise only, the percent of all labor earnings predicted by the profitability factors for 1972 was 90.3%, 1973 was 62.1%, 1974 was 71.5% and 1975 was 85.7%).

2. 1972 to 1975 was a period of dramatic price changes, both high and low prices were received in those periods.

3. Predictability ranges are from 13.3 percent (cash crops, 1975) to 90.3 percent (hogs complete, 1972). Thirty-five of the 44 values listed on the Table are between 30 and 70 percent. This indicates the relationship between whole farm labor earnings and the profitability factors is substantial in size and reasonably consistent over a period of time.

4. Knowledge of this relationship between the profitability factors and labor earnings will increase the amount and quality of information available from Table 8. It will allow for better management planning based on the most important and economically productive business factors.

5. A trend which is recognizable in this Table is the reduction in predictability of labor earnings in 1975 from those farms containing cash crops. This is due in part to a drop in feed grain prices for that year.

Suggested Teaching Strategy

The overhead used in this section is based on a research study of profitability factors and their relationship to whole farm labor earnings. This study was based on data from farms in the program from 1972 to 1975. It addressed the issue of improving the analysis for various types of farms through the examination of farm types with similar type business operations.

When summarizing the data, point out this information was developed for specialized farm types which obtained most of their farm income from one or two key farming enterprises. This will help to lead into the next key question.

KEY QUESTION 6. What does farm specialization mean to the evaluation of Table 8 for your farm?

This section will address four groups of farms:

1. Dairy Only Farms

2. Cash Crops Only Farms

3. Farms with Swine Enterprises

4. Crops Farms with Dairy or Feeder Cattle

In an effort to improve the quality of the farm analysis, 11 types of farms have been examined to find characteristics in the individual farm analysis which would aid farm families in meeting their goals. Because adequate farm income is a principle goal of most farm families, Table 8, which is a summary of the farm business, and its association to labor earnings was selected as a basis for the study.

The principle conclusions of the study are as follows:

1. The profitability factors, as listed in Table 8, predicted whole farm labor earnings.

2. The profitability factors predicted labor earnings in a reasonable and consistent manner for the farm types studied.

3. Three of the factors predicted labor earnings with enough consistency to be of practical value for planning and decision making. They were total work units, index return per $100 feed fed and gross return per cropped acre. A fourth factor, crop yield index, was slightly less important than the first three.

4. The importance of individual factors in predicting whole farm labor earnings varied with each of the farm types. There were however, groups of farms with some identical factors which had substantial impact on whole farm labor earnings. (These farm groups will be discussed in this section.)

5. As whole farm labor earnings declined due to rising input cost and decreasing market prices, the factor total work units (business size) tended to become less important. This was replaced to some degree, in predictive power, by the factor index return per $100 feed fed. This indicates that when returns decline, efficiency becomes more important than size.

6. In many of the farms analyzed in the research study, gross return per cropped acre appeared to be much more important than crop yield index. Because of the high association or intercorrelation between the two factors, they are not as incompatible as they might appear. Crop yield index is only slightly less important than gross return per cropped acre when viewing the farms which contain livestock.

The factors for Dairy Only Farms were found to be related to whole farm labor earnings in the following manner.

1. Index Return per $100 Feed Fed. Since feed cost for dairy is only about 45 percent of the total cost, this index is an important indicator of earnings.

2. Gross Return per Cropped Acre. A strong cropping program is integral to a well managed dairy operation. Most of the crop usually goes directly into the farm feeding program.

3. Total Work Units. As the ratio of expense to income becomes smaller, volume (business size) becomes a more important factor.

The factors for Cash Crops Only Farms were found to be related to whole farm labor earnings in the following manner.

1. Total Work Units. Business size was found to be the most important predictor of labor earnings. If this factor is found to be low compared to the average, it is a likely cause for low labor earnings.

2. Crop Yield Index. This factor is slightly less important than business size. An index below average is cause for concern as it is the principle income source for these farms.

3. Gross Return per Cropped Acre. This factor demonstrates that value received or determined is of slightly less importance than the actual ability to produce the crops.

The factors for Farms with Swine Enterprises were found to be related to whole farm labor earnings in the following manner.

1. Total Work Units. Business size was the most important predictor of labor earnings for farms with swine enterprises.

2. Index Return per $100 Feed Fed. Feeding efficiency complemented the business size. Without adequate effifiencies to cover cost, business size would be of little or negative value.

3. Gross Return per Cropped Acre. This factor complements the first two factors in that much of the feed raised is input directly to the hogs or sold to purchase supplements or complete feeds.

The factors for Crops Farms with Dairy or Feeder Cattle were found to be related to whole farm labor earnings in the following manner.

1. Index Return per $100 Feed Fed. Feeding efficiency is the most important predictor of whole farm labor earnings for these two farm types. In view of the decreasing profit margins for these farms, the size of that return is directly related to earnings.

2. Total Work Units. Business size complements the need for feeding efficiency. Adequate earnings cannot be derived if the business is too small.

3. Crop Yield Index. The ability to produce high yielding crops which can be used in the feeding program, in lieu of purchased feeds, complements the feeding program.

The factors for the last farm type, Beef Breeding and Cash Crops, were not consistent enough in their relationships to whole farm labor earnings to be useful in making management decisions.

The other profitability factors were not considered to be useful in predicting whole farm labor earnings. They are useful in the determination of livestock intensity, cost control and capital requirements for other purposes. Table 8 should be examined to find if these three factors are of acceptable levels. A quick review of the thermometer chart would be helpful to ascertain the relative ranks of the factors. If the factors are low, discuss some of the items which affect the factors and what can be done to improve the situation. When all factors are found to be average or better, mention should be made of the efforts to gain that position or maintain it.

Suggested Teaching Strategy

Determine the farm group each individual enters using the information derived from Key Question 4. The groups would be:

1. *Dairy Farms Only*

2. *Cash Crops Farms Only*

3. *Farms with Swine Enterprises Only*

4. *Crops Farms with Dairy or Feeder Cattle*

5. *Farms not Entering the Specialized Group*

As you talk about the various groups, have them examine their thermometer chart for the relative position of the important profitability factors for the specific group. Use the visuals for the farm types from the appendix to focus attention on the important factors when you are discussing them. For some farms this provides an excellent opportunity for further on-farm discussion to improve their performance. Others may want more information on efforts which can be made to maintain their present level of earnings. In general, the discussion should offer new insight into a table which generates much information about the entire farm business.

KEY QUESTION 7. How does this information affect you if your farm is not in one of the specialized farming categories?

Farms Not Meeting the Criteria of Specialization. While specific mention of factors affecting their farm earnings cannot be made, it can be assumed the association between the profitability factors and Table 8 still occur to some degree outside of the specific criterion for the farm types. The relationship of total work units, index return per $100 feed fed, gross return per cropped acre and crop yield index were important to about 45 percent of the population in the entire Farm Management Education Program from 1972 to 1975 and could be judged important to some degree to all farms in the management program.

Because these farms contain some make-up of crop and livestock enterprises not addressed in the study on which this curriculum is based, it is useful to examine the specialized farm from a general perspective to project some of the findings to the non-specialized farms.

The factors for Livestock Only Farms and Livestock and Crop Farms combinations found to be related to whole farm labor earnings were:

1. Index Return Per $100 Feed Fed. This factor which determines feeding efficiency per dollar invested was found to have the highest relationship to labor earnings. This indicates feeding efficiency and return must have a high priority for these farms to achieve maximum success.

2. Total Work Units. This factor is the second most important in predicting labor earnings. In addition to having a good rate of return for feed, you must have it over enough livestock numbers to be of value.

3. Gross Return Per Cropped Acre. While livestock is of principle importance to these farm types, the cropping program is also of critical value. Much of the cropping program's value is directly input into the livestock program in terms of feed.

Suggested Teaching Strategy

This question must be addressed from a general perspective as there is no specific information to detail the important profitability factors for this group. Because of the overall strength of the factors previously discussed in Key Question 6, it is appropriate to generalize the findings from the visual Profitability Factors Which Have The Greatest Effect On Whole Farm Labor Earnings For Livestock Only and Livestock and Crop Farms. This will provide some focus and insight of the non-specialized farm business records.

PART IV. Summary

A. There are many views of the "best" method by which a farm business can be effectively evaluated.

B. Table 8 contains an overview of the entire farm business operation.

C. The profitability factors listed on Table 8 do affect the level of whole farm labor earnings for your business, and knowing these factors, specific management steps can be employed to help maximize labor earnings.

D. Three profitability factors were found to be related to whole farm labor earnings for the farm types examined. They were: toal work units, index return per $100 feed fed and gross return per cropped acre.

PART V. At-The-Farm Activity

Review the profitability factors in Table 8. Examine them in light of the information available for the appropriate farm type. If the farm does not meet the specialization category, you should address the factors in a more general manner. Discuss what may be done to increase or maintain their current levels as it will influence future earnings. Trace factors, not at acceptable levels, back through the analysis to determine what may be done to improve the farming operation.

PART VI. Learning Resources

Chalkboard/Overhead Projector
Transparencies, Handouts and Sample Problems
Calculators, Paper for Computung Small Amounts of Math Problems
Farm Business Analysis for Each Farmer

PART VII. References

Kleene, Marvin D. Teaching Strategies Based on An Analysis of Profitability Factors for Selected Farming Types in the Minnesota Vocational Agriculture Management Education Program, University of Minnesota, 1977.

Walker, Donald. Farm Business Management Annual Summary Report, Winona, Winona Area Vocational Technical Institute, 1976.

PART VIII. Appendices

A. Transparency Master (Watch Repair)

B. Profitabilities Factors

B(1) Cash Crop Farms

B(2) Swine Enterprise

B(3) Dairy Farms

B(4) Dairy or Feeder Cattle

B(5) Livestock and Cash Crop Farms

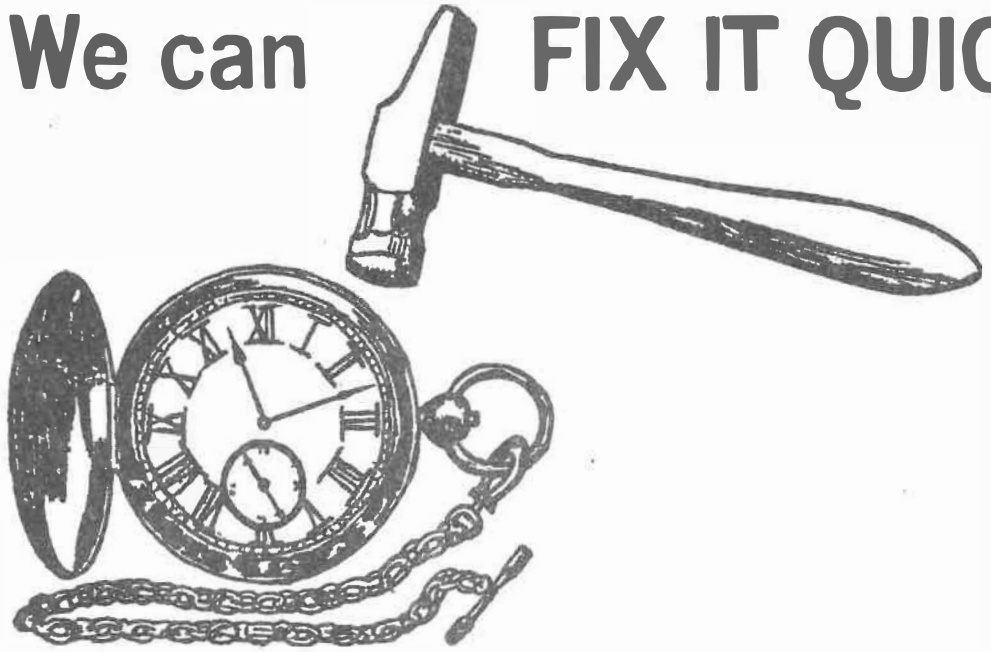
C. Percent of Whole Farm Earnings By Factor

D. Handout: Computation for Determination of Specialized Farm Types

E. Sample Problems: Computation for Determination of Specialized Farm Types

Watch Repair

We can FIX IT QUICK



or FIX IT RIGHT

APPENDIX B

PROFITABILITY FACTORS

1. Whole Farm Labor Earnings
2. Crop Yield Index
3. Percent of Tillable Land in High Return Crops
4. Gross Return Per Cropped Acre
5. Return Per $100 Feed Fed Index
6. Livestock Units Per 100 Acres
7. Total Work Units
8. Work Units Per Worker
9. Power, Machinery, Equipment and Building Expense Per Work Unit
10. Capital Investment Per Worker

PROFITABILITY FACTORS WHICH HAVE GREATEST EFFECT ON WHOLE FARM LABOR EARNINGS FOR CASH CROP FARMS

1. Total Work Units

2. Crop Yield Index

3. Gross Return Per Cropped Acre

APPENDIX B(2)

PROFITABILITY FACTORS WHICH HAVE GREATEST EFFECT ON WHOLE FARM LABOR EARNINGS FOR FARMS WITH SWINE ENTERPRISES

1. Total Work Units

2. Index Return Per $100 Feed Fed

3. Gross Return Per Cropped Acre

APPENDIX B(3)

PROFITABILITY FACTORS WHICH HAVE GREATEST EFFECT ON WHOLE FARM LABOR EARNINGS FOR DAIRY ONLY FARMS

1. Index Return Per $100 Feed Fed

2. Gross Return Per Cropped Acre

3. Total Work Units

APPENDIX B(4)

PROFITABILITY FACTORS WHICH HAVE GREATEST EFFECT ON WHOLE FARM LABOR FOR CASH CROP FARMS WITH DAIRY OR FEEDER CATTLE

1. Index Return Per $100 Feed Fed

2. Total Work Units

3. Crop Yield Index

APPENDIX B(5)

PROFITABILITY FACTORS WHICH HAVE THE GREATEST EFFECT ON WHOLE FARM LABOR EARNINGS FOR LIVESTOCK ONLY AND LIVESTOCK AND CASH CROP FARMS

1. Index Return Per $100 Feed Fed

2. Total Work Units

3. Gross Return Per Cropped Acre

APPENDIX C

PERCENT OF WHOLE FARM LABOR EARNINGS PREDICTED BY PROFITABILITY FACTORS FROM TABLE 8

	1972	1973	1974	1975
Hogs Complete Farms	90.3	62.1	71.5	85.7
Dairy Farms: Under 34 Cows	46.3	61.1	47.4	34.8
Dairy Farms: 35 to 54 Cows	59.7	38.0	44.3	47.8
Dairy Farms: 55 or More Cows	62.7	39.6	48.1	50.3
Dairy and Hog Farms	68.2	59.0	58.2	51.0
Dairy and Crops Farms	53.3	49.0	51.8	37.7
Beef Breeding & Cash Crops Farms	52.8	63.4	81.4	58.1
Hogs Complete & Crops Farms	70.4	71.3	55.9	18.1
Hogs Finishing & Crops Farms	53.0	65.3	51.4	31.3
Feeder Cattle & Crops Farms	74.0	68.1	50.3	40.8
Cash Crops Farms	35.7	50.1	43.8	13.3

APPENDIX D

COMPUTATION FOR THE DETERMINATION OF SPECIALIZED FARM TYPES

1. Record dollar values from your two largest livestock enterprises as listed on Table 3, line 3 to 14. Dairy cattle and other dairy cattle are considered to be one enterprise and are to be listed as one combined value. List the values in blanks A and B.

   _____ (A) _____ (B)

2. Record dollar value of crops sold from Table 2A, line 30 and list in blank C. _____ (C)

3. Add sum of net increases to livestock, Table 3, line 15 and (insert value in blank D) cash income from the sale of crops (step 2, item C). C + D = E, the value of farm products.

   _____ (D) + _____ (C) = _____ (E) value of farm products

4. Divide each of the equations in step 4 until one or two answers is equal to .80 (80% of the total value of farm products). Examine values A, B and C from the previous steps and use the equation with the largest numerator first. There are no combinations of 2 livestock enterprises and crops possible in these equations.

   4a. $\frac{\text{livestock (A) + (B)}}{\text{value (E)}} =$ _____

   4b. $\frac{\text{crop (C)}}{\text{value (E)}} =$ _____

   4c. $\frac{\text{livestock (A) + crop (C)}}{\text{value (E)}} =$ _____

   4d. $\frac{\text{Livestock (B) + crop (C)}}{\text{value (E)}} =$ _____

   If the values from one or more of the above equations is .80 or more go to step 5. If the values are less than .80, wait for further explanation from your instructor.

5. Using the successful equation(s) from step 4, divide each of the items from the numerator by value (E). The resulting values must be above .20 (20% of the farm products value) to be considered a specialized farm. If 2 equations from step 4 are above .80, compute the one with the highest value first.

   5a. $\frac{\text{\_\_\_\_\_}}{\text{value (E)}} =$ _____

   5b $\frac{\text{\_\_\_\_\_}}{\text{value (E)}} =$ _____

   If one of the values is equal to or above .80 in step 5, you have a one enterprise speciality farm. If both enterprises contribute .20 or more to the equation, you have a two enterprise speciality farm. If one of the values is less than .20 and the other does not exceed .80, wait for further instruction.

APPENDIX E

COMPUTATION FOR THE DETERMINATION OF SPECIALIZED FARM TYPES

1. Record dollar values from your two largest livestock enterprises as listed on Table 3, line 3 to 14. Dairy cattle and other dairy cattle are considered to be one enterprise and are to be listed as one combined value. List the values in blanks A and B.

   14032 (A) 10581 (B)

2. Record dollar value of crops sold from Table 2A, line 30 and list in blank C. 6900 (C)

3. Add sum of net increases to livestock, Table 3, line 15 and (insert value in blank D) cash income from the sale of crops (step 2, item C). C + D = E, the value of farm products.

   24704 (D) + 6900 (C) = 31604 (E) value of farm products

4. Divide each of the equations in step 4 until one or two answers is equal to .80 (80% of the total value of farm products). Examine values A, B and C from the previous steps and use the equation with the largest numerator first. There are no combinations of 2 livestock enterprises and crops possible in these equations.

   4a. $\frac{\text{livestock (A) + (B) } 24613}{\text{value (E) } 31604} = .77$

   4b. $\frac{\text{crop (C)}}{\text{value (E)}} =$

   4c. $\frac{\text{livestock (A) + crop (C) } 20932}{\text{value (E) } 31604} = .66$

   4d. $\frac{\text{Livestock (B) + crop (C) } 17481}{\text{value (E) } 31604} = .55$

   If the values from one or more of the above equations is .80 or more go to step 5. If the values are less than .80, wait for further explanation from your instructor.

5. Using the successful equation(s) from step 4, divide each of the items from the numerator by value (E). The resulting values must be above .20 (20% of the farm products value) to be considered a specialized farm. If 2 equations from step 4 are above .80, compute the one with the highest value first.

   5a. $\frac{\qquad}{\text{value (E)}} =$

   5b $\frac{\qquad}{\text{value (E)}} =$

   If one of the values is equal to or above .80 in step 5, you have a one enterprise speciality farm. If both enterprises contribute .20 or more to the equation, you have a two enterprise speciality farm. If one of the values is less than .20 and the other does not exceed .80, wait for further instruction.

APPENDIX E

COMPUTATION FOR THE DETERMINATION OF SPECIALIZED FARM TYPES

1. Record dollar values from your two largest livestock enterprises as listed on Table 3, line 3 to 14. Dairy cattle and other dairy cattle are considered to be one enterprise and are to be listed as one combined value. List the values in blanks A and B.

   31043 (A) 6791 (B)

2. Record dollar value of crops sold from Table 2A, line 30 and list in blank C. 2270 (C)

3. Add sum of net increases to livestock, Table 3, line 15 and (insert value in blank D) cash income from the sale of crops (step 2, item C). C + D = E, the value of farm products.

   40172 (D) + 2270 (C) = 42442 (E) value of farm products

4. Divide each of the equations in step 4 until one or two answers is equal to .80 (80% of the total value of farm products). Examine values A, B and C from the previous steps and use the equation with the largest numerator first. There are no combinations of 2 livestock enterprises and crops possible in these equations.

   4a. $\frac{\text{livestock (A) + (B) } 37834}{\text{value (E) } 42442} = .89$

   4b. $\frac{\text{crop (C)}}{\text{value (E)}} =$ _____

   4c. $\frac{\text{livestock (A) + crop (C) } 33313}{\text{value (E) } 42442} = .78$

   4d. $\frac{\text{Livestock (B) + crop (C)}}{\text{value (E)}}$

   If the values from one or more of the above equations is .80 or more go to step 5. If the values are less than .80, wait for further explanation from your instructor.

5. Using the successful equation(s) from step 4, divide each of the items from the numerator by value (E). The resulting values must be above .20 (20% of the farm products value) to be considered a specialized farm. If 2 equations from step 4 are above .80, compute the one with the highest value first.

   5a. $\frac{31043}{\text{value (E) } 42442} = .73$

   5b $\frac{6791}{\text{value (E) } 42442} = .16$

If one of the values is equal to or above .80 in step 5, you have a one enterprise speciality farm. If both enterprises contribute .20 or more to the equation, you have a two enterprise speciality farm. If one of the values is less than .20 and the other does not exceed .80, wait for further instruction.

APPENDIX E

COMPUTATION FOR THE DETERMINATION OF SPECIALIZED FARM TYPES

1. Record dollar values from your two largest livestock enterprises as listed on Table 3, line 3 to 14. Dairy cattle and other dairy cattle are considered to be one enterprise and are to be listed as one combined value. List the values in blanks A and B.

   22926 (A) 17270 (B)

2. Record dollar value of crops sold from Table 2A, line 30 and list in blank C. 0 (C)

3. Add sum of net increases to livestock, Table 3, line 15 and (insert value in blank D) cash income from the sale of crops (step 2, item C). C + D = E, the value of farm products.

   40196 (D) + 0 (C) = 40196 (E) value of farm products

4. Divide each of the equations in step 4 until one or two answers is equal to .80 (80% of the total value of farm products). Examine values A, B and C from the previous steps and use the equation with the largest numerator first. There are no combinations of 2 livestock enterprises and crops possible in these equations.

   4a. $\frac{\text{livestock (A) + (B)}}{\text{value (E)}} \quad \frac{40196}{40196} = 1.0$

   4b. $\frac{\text{crop (C)}}{\text{value (E)}} = $ _____

   4c. $\frac{\text{livestock (A) + crop (C)}}{\text{value (E)}} = $ _____

   4d. $\frac{\text{Livestock (B) + crop (C)}}{\text{value (E)}} = $ _____

   If the values from one or more of the above equations is .80 or more go to step 5. If the values are less than .80, wait for further explanation from your instructor.

5. Using the successful equation(s) from step 4, divide each of the items from the numerator by value (E). The resulting values must be above .20 (20% of the farm products value) to be considered a specialized farm. If 2 equations from step 4 are above .80, compute the one with the highest value first.

   5a. $\frac{\text{value (E)}}{\text{value (E)}} \quad \frac{22926}{40196} = .57$

   5b $\frac{\text{value (E)}}{\text{value (E)}} \quad \frac{17270}{40196} = .42$

   If one of the values is equal to or above .80 in step 5, you have a one enterprise speciality farm. If both enterprises contribute .20 or more to the equation, you have a two enterprise speciality farm. If one of the values is less than .20 and the other does not exceed .80, wait for further instruction.

APPENDIX E

COMPUTATION FOR THE DETERMINATION OF SPECIALIZED FARM TYPES

1. Record dollar values from your two largest livestock enterprises as listed on Table 3, line 3 to 14. Dairy cattle and other dairy cattle are considered to be one enterprise and are to be listed as one combined value. List the values in blanks A and B.

   11541 (A) 312 (B)

2. Record dollar value of crops sold from Table 2A, line 30 and list in blank C. 1497 (C)

3. Add sum of net increases to livestock, Table 3, line 15 and (insert value in blank D) cash income from the sale of crops (step 2, item C). C + D = E, the value of farm products.

   12185 (D) + 1497 (C) = 13682 (E) value of farm products

4. Divide each of the equations in step 4 until one or two answers is equal to .80 (80% of the total value of farm products). Examine values A, B and C from the previous steps and use the equation with the largest numerator first. There are no combinations of 2 livestock enterprises and crops possible in these equations.

   4a. $\frac{\text{livestock (A) + (B) } 11853}{\text{value (E) } 13682} = .86$

   4b. $\frac{\text{crop (C)}}{\text{value (E)}} =$

   4c. $\frac{\text{livestock (A) + crop (C) } 13038}{\text{value (E) } 13682} = .95$

   4d. $\frac{\text{Livestock (B) + crop (C)}}{\text{value (E)}} =$

   If the values from one or more of the above equations is .80 or more go to step 5. If the values are less than .80, wait for further explanation from your instructor.

5. Using the successful equation(s) from step 4, divide each of the items from the numerator by value (E). The resulting values must be above .20 (20% of the farm products value) to be considered a specialized farm. If 2 equations from step 4 are above .80, compute the one with the highest value first.

   5a. $\frac{11541}{\text{value (E) } 13682} = .84$

   5b $\frac{1497}{\text{value (E) } 13682} = .10$

   If one of the values is equal to or above .80 in step 5, you have a one enterprise speciality farm. If both enterprises contribute .20 or more to the equation, you have a two enterprise speciality farm. If one of the values is less than .20 and the other does not exceed .80, wait for further instruction.

UNIT II - 7

EVALUATING THE CROPPING PROGRAM

PART I. Student Objectives

A. The student will list the management factors used in evaluating the cropping program.

B. The student will describe the importance of each of these factors in evaluating his cropping program.

C. The student will list practices which could improve his cropping program.

D. The student will make recommendations using the list of recommended practices developed for the improvement of his cropping program.

PART II. Transition of Units

The previous unit covered the factors found on Table 8 of the Farm Business Analysis and their value as indicators of return to labor and management.

This unit covers the various factors related to the cropping program and their use in evaluating the cropping program. It leads to the evaluation of various practices which are summarized in these factors and recommendations for implementing these practices.

The following unit will deal with a similar evaluation of the supporting enterprises of power machinery and equipment, buildings, fences and tile and how these supporting enterprises affect the income producing enterprises such as crops and livestock.

PART III. The Lesson

Attention Focuser

Place the transparency of the thermometer on the overhead. Ask the class what the temperature in the room is. Someone will soon give an estimate of the temperature. Ask "How should I record the temperature on the thermometer?" After obtaining several suggestions and drawing in lines at several points, point out that unless we have a scale of some sort and that the scale is constant from day to day, year to year and person to person, we really do not know what the "temperature" of our business is. We must have a means, such as the business analysis, which provides a scale of measurement.

KEY QUESTION 1. What are the factors to be considered in evaluating the cropping program?

1. Crop yield index
2. Percent tillable land in high return crops
3. Gross return per tillable acre
4. Work units in crops
5. Individual crop yields
6. Direct costs
7. Allocated costs
8. Return over listed costs
9. Total listed cost per unit
10. Break even yield

Each of the above factors has a degree of importance to the cropping program. Some relate only to the specific crop being considered while others relate to the overall performance of the cropping program. The operator should be aware that taking one factor by itself may give a misconception about the cropping program. Farms with a high crop yield index or high percent tillable land in high return crops may be found among the low profit farms if these farms are highly intensified in hogs, beef, or dairy and these enterprises have had an unprofitable year.

Suggested Teaching Strategy

Ask the class what factors they might consider in evaluating their cropping enterprise. Write the answers on the chalkboard. Point out the many factors which can be used and that a number of them are found in the analysis. Relate to the attention focuser showing that the analysis serves as a scale for the evaluating "thermometer."

KEY QUESTION 2. What can I tell about my farm from each of these factors?

Establishment of what each factor can tell an operator about his business can be done by using a brief description of each factor.

A. Index of crop yields

1. This is a weighted factor for all crops based on the scope of each crop and the operator's performance compared to the average. It is expressed as being above or below average

in overall crop production with 100 being average. The formula for calculation can be found in the documentation for the farm business management analysis.

2. This index could be viewed as the number of acres it would take an average farmer to produce what the operator produced on each 100 acres in his farm.

3. Appendix C points out that farmer A had a crops yield index of 127 and that all of his yields are comparatively high. Farmer B, however, has a respectable index of 102 but closer examination shows his alfalfa yields are well below average. In this case, the index is deceptive and not a reliable indicator of overall crop performance.

B. Percent tillable land in high return crops

1. This is a factor weighted by the ranking of the various crops multiplied by the acres in each crop and then divided by the tillable acres. A list of the various ranks is found in the area analysis report.

2. This factor must take into consideration the land capabilities of a particular farm. Substituting short run income for long run income by overlooking conservation practices may lead to the eventual destruction of the farm's production capabilities. With the exception of soil conservation and erosion control practices, substitution of low return crops for high return crops is seldom profitable.

3. The value of this measure for comparison will depend on the type of crops grown in a particular area and the particular farms crop production capabilities compared to the average.

C. Gross return per tillable acre

1. This is calculated by taking price times yield and adding in any miscellaneous crop income for each crop, summing these totals and dividing this by total tillable acres excluding pasture.

2. This measure is probably one of the single most important measures of the cropping program. Farms with high gross returns per acre for corn and soybeans had higher returns after all listed costs than other farms. This was true for each of the five years from 1973 to 1977. The averages for these years can be seen in Appendix B. Even though these are for only two specific crops, farms with a good selection of high return crops and high gross return per acre are usually in the high profit category.

3. James and Stoneberg from Iowa State point out that farms with high crop values (gross returns per acre) have higher net incomes than those with low crop values within the same size group.

D. Work units in crops

1. This is the number of work units for a particular crop multiplied by the acres of that crop, the sum added to the sum for all crops.

2. This gives the relative importance of the crops in the overall operation. Excessively high work units in crops can lead to labor and timeliness problems at peak times of the year and unused labor available at other times.

E. Individual crop yields

1. This measure needs no explanation but it should be pointed out that some farms that consistently report high yields also report poor feed conversion ratios. This phenomenon may occur if farmers have a tendency to overestimate yields. Grain and roughages produced must be accounted for somewhere and often winds up in the feed fed column.

2. High crop yields contribute to high gross returns per acre.

F. Direct costs

1. These are costs for fertilizer, chemicals, seed, custom work, special hired labor and irrigation operation on a per acre basis for each crop.

2. This figure gives a comparison from year to year and also to other farms in the area.

3. Costs listed under direct costs are variable costs and usually occur only if the crop is produced. An exception might occur on farms that experienced complete crop failure due to drought, flood or other severe weather damage.

G. Allocated costs

1. Allocated costs are farm power and machinery ownership and operation, irrigation ownership, land costs, miscellaneous costs and interest on investment.

2. Except for machinery operation, these are primarily fixed costs that occur even if the decision is made not to produce. There would be a possibility that land cost could be considered as a variable cost if a lease contract could be negated.

3. Allocated costs are important figures since there is a tendency recently for many farmers to be overequippped and to try to outbid others for rented land. By including these figures, they can see what the result is to their net return.

4. Appendix B points out that farmers with high allocated costs and high direct costs for the average of five years also had higher net returns. The increased returns are primarily due to the higher gross returns that were attained from the added investment. Similar phenomena have been observed in other studies of related crop costs and returns.

H. Return over listed costs

1. Return over listed costs is a residual figure after the listed direct and allocated costs have been deducted from gross return.

2. It is the "bottom line" for the production of each crop and points out what each acre of production is adding to returns for labor and management and also for paying for any costs that are not listed.

3. Many farmers tend to ignore these figures for the first analysis year for the typically low return crops. It is often necessary to point out from previous analysis that these crops on the average do not contribute as much to earnings as the high return crops. Again, the land use capabilities of the individual farm must be taken into consideration.

I. Total listed cost per unit

1. Total listed cost per unit is the total listed costs divided by the unit of production.

2. This factor can be used for planning marketing strategy. The operator can determine what costs are associated with a unit of production, add the amount he feels necessary for labor, management and non-listed costs and then set a market price which will maximize his profits or minimize his losses, depending on his view of the upcoming markets.

3. He can also use it in evaluating production plans if he has a belief in long range market trends.

J. Break even yield

1. This is the yield required to break even at the listed cost of production and listed value per unit of production.

2. The farmer can use this information together with information about government programs, outlook reports, long range weather forecasts and other sources to determine optimum crop selection at various yield levels and market prices. He can also determine what effect the cost of additional equipment will have on the yield required to break even.

Suggested Teaching Strategy

Using the transparency of Appendix D, point out the value of each of the factors listed in evaluating the cropping program. Use Appendix B as indicated to show that high expenses per acre are not necessarily bad if they contribute to a high gross return per acre. Copies of individual farm analysis of Table 10 for specific crops can be utilized to demonstrate the variability from one farm to the next and the impact such variability has on returns. Remove the farmers name from the Table 10's before showing the information to the class.

KEY QUESTION 3. What practices can I use to improve my cropping program?

Basically, the operator can look at two areas to improve the cropping program. One would be organization of the overall cropping program to high return crops, the second would be the efficiencies of the methods used in crop production. Each of these could be further broken down to areas which would increase output, and secondly, areas which would decrease input.

These areas are covered in the publication Farm Management Enterprise Analysis and Evaluation for several of the more common agricultural crops. The use of these evaluation sheets by farmers will help them to recognize practices that need improving and those which should be dropped. Similar evaluation sheets can be developed for other crops.

For selecting the most profitable organization of the cropping program, once improved practices have been listed along with their expected costs and returns, the computer program Bescrop, available from Extension Farm Management at the University of Minnesota, can be run. This program selects the optimum crop given various yields, prices and costs of production. It will be covered in greater detail in Farm Business Management Volume III since two years of supporting analysis data will be available to the farmer at that time.

Suggested Teaching Strategy

Point out to the group that each of the factors in the analysis is the culmination of many practices employed in the cropping program the previous year.

Hand out the worksheets taken from the publication Farm Management Enterprise Analysis and Evaluation for each enterprise the student has on his farm. If time permits, have them complete the worksheet in class or if not, before the next farm visit.

Since this class will be held in the middle of the summer, have the class members evaluate their present cropping program for weed control, plant population, crop health and insect control compared to what it was the previous year. This will be discussed more under at-the-farm activity.

PART IV. Summary

1. There are many factors which can be used to evaluate the cropping program, a number of which are found in the farm business analysis.

2. The Business analysis serves as a scale and provides a basis of evaluation for past performance of the cropping program.

3. Based on the more general indicators, specific practices can be listed which will help to improve the program.

PART V. At-The-Farm Activity

Go over the worksheets that were completed in class with each family. Point out areas which you see as weak and those which you see as being strong. Answer questions about specific herbicides, insecticides, fertilizer programs and other crop production practices.

This is an excellent time to walk over the fields with each operator and determine how successful his crop management program is in the above areas. Population, weed control, disease and insect control, chlorosis problems and many others can be found at this time and recommendations made. Consider the results improved practices as described on the worksheets would have on this years cropping program.

PART VI. Resources

Chalkboard/Overhead
Transparencies of Appendices A, B, C, D
Class quantities of worksheets on enterprise evaluation
Area Analysis Report
Individual family analysis report

PART VII. References

James and Stoneberg. Farm Accounting and Business Analysis. Ames, Iowa: Iowa State University, Rev. 1977.

Persons, Edgar. Documentation for Farm Business Analysis. St. Paul, Minn., Division of Agricultural Education, University of Minnesota, 1977.

Doanes Farm Managment Guide. 12 ed. Doanes Agricultural Service, St. Louis, Mo., 1978

Herbst, J. H. Farm Management Principles, Budgets and Plans. Stipes, Champaign, Ill., 1975.

Farm Management Enterprise Analysis and Evaluation, 1975. Division of Agricultural Education, University of Minnesota, St. Paul, MN 1975.

Farm Business Management Area Report, 1973-1977. East South Central Minnesota, Austin AVTI, Austin, MN.

PART VIII. Appendices

A. What is the Temperature?

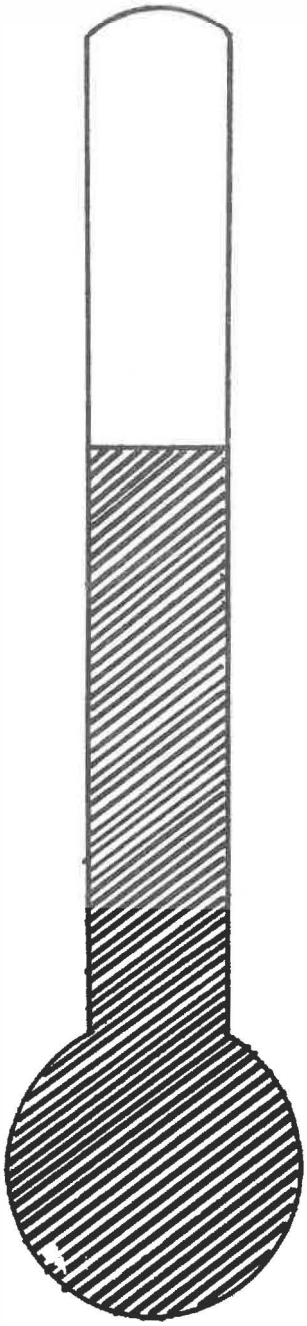
B. Average Costs and Returns

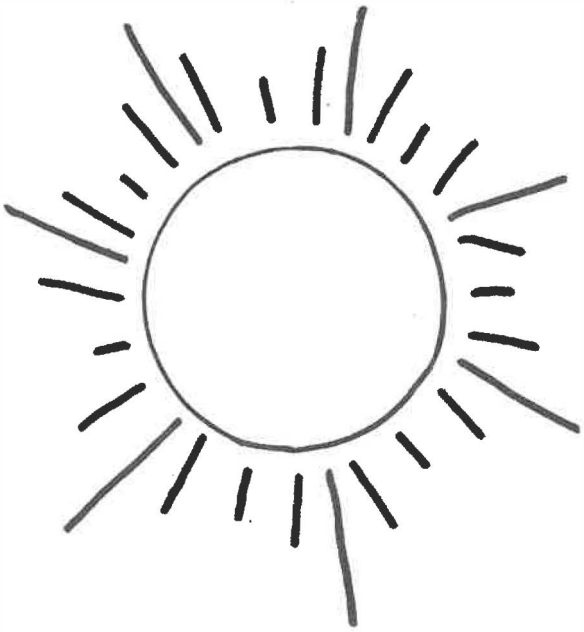
C. Crop Data from Analysis Reports

D. Selected Evaluation Factors

APPENDIX A

WHAT IS THE TEMPERATURE?





Appendix B

Average Costs & Returns - Corn & Soybeans*

	Corn			Soybeans		
	High Yield	Average	Low Yield	High Yield	Average	Low Yield
Yield	106	93	78	35	29	23
Crop Return	246	218	181	201	171	136
Direct Costs	75	70	65	28	26	23
Allocated Costs	91	85	80	81	77	73
Return over Listed Costs	81	62	36	92	69	40

* 1973-1977 5 year average, Farm Business Management Annual Report East South Central Minnesota. Austin AVTI, Austin

Appendix C

Crop Data From Analysis Reports*

Item	Average 258 Farms	51 Most Profitable	51 Least Profitable	Farm A	Farm B
Index of Crop Yields	100	115	90	127	102
% Till. Land H.R. Crops	72.8	75.3	73.3	70.5	51.0
Gross Return Per Acre	82.66	91.24	76.55	95.02	66.03
Corn Bu/A	95.9	103.6	89.3	118	103
Oats Bu/A	62.3	66.5	58.8	---	70
Alfalfa Hay Ton/A	3.3	3.6	3.0	4.1	2.4
Soybeans Bu/A	26.7	28.9	22.0	33.0	---
Labor Earnings	$6,280	$18,478	$-3,511	$12,850	$3,659

*Adapted from Vocational Agriculture Farm Analysis, Annual Report, 1971, East South Central Minnesota, Austin, Minnesota, April, 1972, and from Analysis Reports of two Faribault area families.

Appendix D

Selected Cropping Program Evaluation Factors

1. Crop Yield Index
2. Percent tillable land in High Return Crops
3. Gross return per tillable acre
4. Work units in crops
5. Individual crop yield
6. Direct costs
7. Allocated costs
8. Return over listed costs
9. Total listed cost per unit
10. Break even yield

UNIT II - 8

ANALYZING MACHINERY, EQUIPMENT AND BUILDING COSTS

PART I. Student Objectives

A. The student will identify the various methods of analyzing costs.

B. The student will compare his costs with those which are average and those which are above and below the average.

C. The student will identify those items in his operation which he can use to control the cost factors.

D. The student will be able to list the steps in calculating one or more of the cost factors.

PART II. Transition of Units

The previous lesson dealt with the evaluation of the cropping program. It considered the various factors which can be used in evaluation of the cropping program and what practices contributed to high and low levels for each of these factors.

This unit specifically examines the resources of machinery, equipment and buildings, their combination in the business and the effect on earnings. This unit will look at the various methods of calculating costs; what their effects are on the student's business and methods for controlling these costs.

The following unit will deal with the abilities of the livestock enterprises to meet these costs and provide a return for labor and management.

PART III. The Lesson

Attention Focuser

Ask the students to list five items of machinery, buildings, or equipment or combination of the three which they have on their farm which they could farm without. They should not consider changing enterprises. On the lists may be some of the following:

1. *Pipeline milker*
2. *Barn cleaner*
3. *Slatted floors*
4. *Bin Dryer*
5. *Silo unloader*

After the lists are complete, ask some of the students for their lists which can be written on the chalkboard.

Most of the items on the list will be labor saving devices which may recently have been added to the business. Point out that getting rid of any of these items would require changes in the allocation of labor, money, or skills in the farm business. This illustrates the economic principle of resource substitution. Adding a machine to reduce labor requirements adds to the cost of production in the power or equipment category.

KEY QUESTION 1. What are the methods of analyzing machinery, equipment and building costs and how can they be calculated?

Costs can be analyzed as either general costs or as costs that are specific to an enterprise. It is necessary to remember that machinery, equipment and buildings are support enterprises and that their production (net decreases or costs) are used up in the profit producing enterprise. It is by curtailing these costs while working for optimum production that the business will operate at its most efficient level.

The methods of determining overall cost factors could be listed as:

1. Power, machinery, equipment and buildings per work unit.

    a. This is a measure of the portion of the capital and operating costs that are generated in the above items on a work unit basis.

    b. It is a measure of cost control and can be compared to other farms of similar size since work units are directly comparable.

    c. It is calculated by adding lines 24-29 on Table 3, making allowances for custom work and then dividing by work units.

2. Capital investment per worker

    a. This is a measure of how much capital each worker in the business has at his control on an average basis.

    b. Although primarily a measure of labor/capital organizations, it can indicate if an operation has an overly large investment per worker compared to similar farms in the area.

    c. It is calculated by dividing average farm capital on Table 1, line 29, by number of workers on Table 1, line 7.

3. Net decreases from power, machinery, equipment and buildings

   a. Each of the net decreases gives the expense to the support enterprise which has produced the expense. It is a summary measure of the costs of owning and operating each supporting enterprise.

   b. Net decreases can be used to identify those support enterprises which appear to be extremely out of line when compared with similar farms.

   c. Net decreases are calculated by a somewhat long formula which includes beginning and ending inventories, custom work hired, income from work off-farm, repair and operation and gas, oil and grease for truck, auto, tractors and crop machinery.

4. Power, machinery, equipment and building costs can each further be divided by work units.

   a. Each net decrease can be divided by work units to give a comparative figure for each category from farm to farm.

   b. These are listed as "Expenses per Work Unit"

      1) Tractor and crop machinery expense

      2) Farm share auto and truck expense

      3) Farm share electricity expense

      4) Livestock equipment expense

      5) Building, fencing and tiling expense

   c. The comparison of these expenses on a per work unit basis gives a very good breakdown of the costs. In years when prices are low or production is short, farms with good cost control are often the profitable ones.

      All five of the expense per work unit factors are ways of comparing the individual farm to the group averages. When used for decision making, it must be kept in mind that certain economies of scale are in effect. For example:

	Farm A	Farm B
Tractor and crop machinery expense per work unit	$19.00	$32.00
Total work units	500.0	296.8

      Farmer A and Farmer B may have exactly the same models, year and quality of machinery and tractors. Farmer A has less

expense per work unit because he has a greater number of work units. Keeping pace with changing technology requires a certain minimal investment in machinery. Spreading the cost out over more work units will make the farm business more efficient. In this case, Farmer A has a better possibility for getting a greater return for his machinery investment than does Farmer B.

d. These factors are calculated by dividing each of the net decrease figures on lines 24 through 29 of Table 3 by total work units.

There are several measures of support enterprise costs which do not fall entirely into the general or enterprise cost analysis categories. These measures begin to point specific costs either toward the crops enterprise or the livestock enterprises.

1. Tractor and crop machinery expense per crop acre.

   a. This method divides the expense for tractor and crop machinery by the number of tillable acres and acres of non-tillable pasture, under the assumptions that these are the acres on which costs for power and machinery would be expended.

   b. Since machinery costs have escalated at a much higher rate than general inflation, these costs become extremely valuable for determining what the overall expense for machinery and equipment is on an average per acre basis and for planning changes in the size of business.

   c. This factor is calculated by dividing Table 3, line 25 by total acres tillable and non-tillable acres of hay.

2. Farm power and machinery costs allocated to livestock and building, fencing and tiling allocated to crops.

   a. Since it is necessary to use tractors and other machinery to the benefit of livestock and to use buildings, etc. to to the benefit of crops, part of the costs of these support enterprises should be carried by each of the general areas of production.

   b. These costs are calculated on the basis of work units as a percentage of total work units and modified as necessary for each farm business using the PCAF and the BCAF.

Since the real value of a cost analysis is to determine what the per unit cost is, factors which help arrive at these per unit costs must be considered. These factors are primarily on a per acre basis for crops and on a per hundred weight, per head or per litter basis for livestock. With knowledge of what per unit costs are, we have a basis for budgeting

for production as well as determining what effect major changes in capital investment will have on profitability.

1. Power and machinery expense per crop acre or livestock enterprise.

   a. Power and machinery costs are divided into two areas, one for ownership and the other for operation. A portion is then set aside to be charged to the various livestock enterprises. The balance is allocated to each crop on a work unit per acre basis modified by PCAF, and gives an estimate of what portion of the machinery inventory was "used up" in production and what the cost of operating that machinery was on a per acre basis. All allocations are based on a work unit basis. However, in crops since some crops are heavily labor intensive and use a very small portion of the machinery expense pool, the PCAF is used to transfer away from these crops any undue portion of the expense.

   b. The portion that is set aside for livestock enterprises is allocated to each unit of livestock production on a work unit basis also. Although the pool which is considered an expense to livestock is generally much smaller than that for crops, provisions are made to allocate these costs differently between enterprises by utilizing the PCAF factor and the work unit value.

2. Allocations of building costs to livestock.

   a. Like the power machinery and equipment costs per acre, the buildings costs are allocated to each specific livestock enterprise from a pool which includes all building expenses except those set aside for the crops. From this pool, expenses are allocated on a work unit basis so each livestock enterprise shares in the cost of these expenses. The allocation work unit can be modified by BCAF. However, for crops, building expenses are calculated on a per work unit basis and only the total figure appears on Table 8 as an allocation to all crops.

   b. The building, fencing and tiling expense is put on a per head, hundred weight or per litter basis for each livestock enterprise. The owner is then able to compare his costs from year to year and enterprise to enterprise to see if he is returning an adequate amount to that investment.

Suggested Teaching Strategy

Use Appendix A to show what the various methods of determining costs are as each one is discussed. A summary of how each factor is calculated should be presented on the chalkboard so the student can see the relation of the measures to his overall business analysis. As the discussion progresses, make the student aware that there is a definite relation between the high costs per work unit and low profit farms. It would be appropriate to spend some time in this discussion on the fixed/variable cost principles.

Hand out a copy of Appendix A for each student. Have him fill in the section for his own figures from the analysis and then make a notation of the two he feels he has done the best on and the two he needs to give his closest attention for improvement.

KEY QUESTION 2. What items contribute to and can be used to control expenses in my operation?

For each measure of expense there are contributing items which can directly control the overall expense factors.

1. Power, machine and equipment and building, fencing, tiling

    a. number of acres or head of livestock

    b. number of work units

    c. cost of machine, including taxes

    d. method of depreciation

    e. repairs, fuel and grease, maintenance schedules and practice

    f. insurance *

    g. interest on investment ***

    h. shelter costs **

    i. labor *

    j. lease payments * (unless included as custom work hired)

    k. custom work hired, machine portion

---

* Not included in the analysis figures by enterprise.

** Included in livestock enterprises but not crop enterprise tables.

*** Included in crop enterprises but not livestock tables.

2. Related items

   a. timeliness *

   b. obsolescence *

   c. opportunity cost of capital investment *

   d. purchasing ability *

   e. discounting future returns *

Suggested Teaching Strategy

Ask the class what specific items they would include to develop a list of factors affecting costs on their farms. The list could become quite lengthy since many items can affect costs and may not be included in the text. Point out why some items have been included in the analysis and how they show up in the expense measures. Point out which do not show up in the analysis and what effect they have on profitability of the operation. Farmers can be encouraged to take the items starred (*) and allocate them to the enterprises using their own scheme.

Using the graph in Appendix C, show that the low profit group of farms consistently had high expenses per work unit. This can be attributed to lack of size of business and poor management of the expense factors in relation to the size of business.

Illustrate the effect that a single equipment purchase can have on each of the factors and the action farmers must take to control costs when large purchases are made.

PART IV. Summary

A. There are a number of methods of analyzing costs, some of which are general to the whole operation and some which are specific to the various enterprises.

B. For each type of operation some cost analysis procedures are more valuable than other methods.

C. Various items from each farmer's records go into each analysis procedure and these determine the accuracy of the information and value of the factors in making decisions for change.

PART V. At-The-Farm Activity

Have the farmer bring out his copy of Appendix A with the figures from the analysis entered. Take note of those items he feels he is doing well

---

* Not included in the analysis figures by enterprise.

on and those which he thinks need improvement.

Point out that capital is a substitution for labor and that it should make him more efficient. If he has a high expense per work unit, it may be necessary to determine if he has over-invested or if he is not using the resources of capital and labor in the best combination for efficient production.

PART VI. Resources

Chalkboard/Overhead Projector
Transparencies: Appendices, A. B, C
Handouts: Appendices A, C
Area Farm Business Management, Individual Analysis

PART VII. References

Donnell Hunt. Farm Power and Machinery Management. Ames, Iowa: Iowa State University Press, 1973

Hopkin, Barry, Baker. Financial Management in Agriculture. Danville, Ill. The Interstate, 1973.

Farm Business Management Annual Reports 1967-1977. East South Central Minnesota, Austin, Minnesota.

Farm Business Management Annual Report 1977. Central Minnesota, Willmar, Minnesota, 1978.

Persons, Edgar. Documentation for the Farm Business Analysis. Department of Agricultural Education, St. Paul, Minnesota, 1977.

PART VIII. Appendices

A. Selected General Cost Factors 1977
B. Summary Power Machinery Equipment and Building Expense per Work Unit - Table
C. Summary Power Machinery Equipment and Building Expense per Work Unit - Graph

Appendix A

Selected General Cost Factors 1977*

	679 Farms Ave	136 Most Prof.	136 Least Prof.	Yours
Power Mach. Equip. Bldgs./W.U.	40.54	39.69	60.06	
Capital Invest/Worker	$179,786	$232,786	$196.698	
Net Decreases				
Truck & Auto	2,351	3,114	2,942	
Tractors & Crop Machinery	9,564	12,905	10,850	
Irrigation Equipment	230	238	284	
Electricity	746	868	850	
Livestock Equipment	1,538	1,948	1,459	
Bldgs., Fences & Tiling	2,822	3,108	4,062	
Total	$17,251	$22,181	$20,447	
No. W.U.	426.40	558.99	307.08	
Expenses Per Work Unit				
Tractor and Crop Machinery	23.01	23.52	33,58	
Farm Share Auto and Truck	5.52	5.57	8.37	
Farm Share Electricity	1.75	1.55	2.14	
Livestock Equipment	3.61	3.49	4.14	
Building, Fencing, Tiling	6.63	5.56	11.83	
Tractor and Crop Mach. Exp./ Crop Acre	31.17	28.54	34.94	
Farm Power & Mach. Cost Allocated to Livestock	1,644.44	1,946.46	1,669.29	
Building, Fencing and Tiling Allocated to Crops	1,222.96	1,475.48	1,849.98	

*Adapted from Farm Business Management 1977 Annual Report, Central Minnesota, Willmar, MN, April 1978.

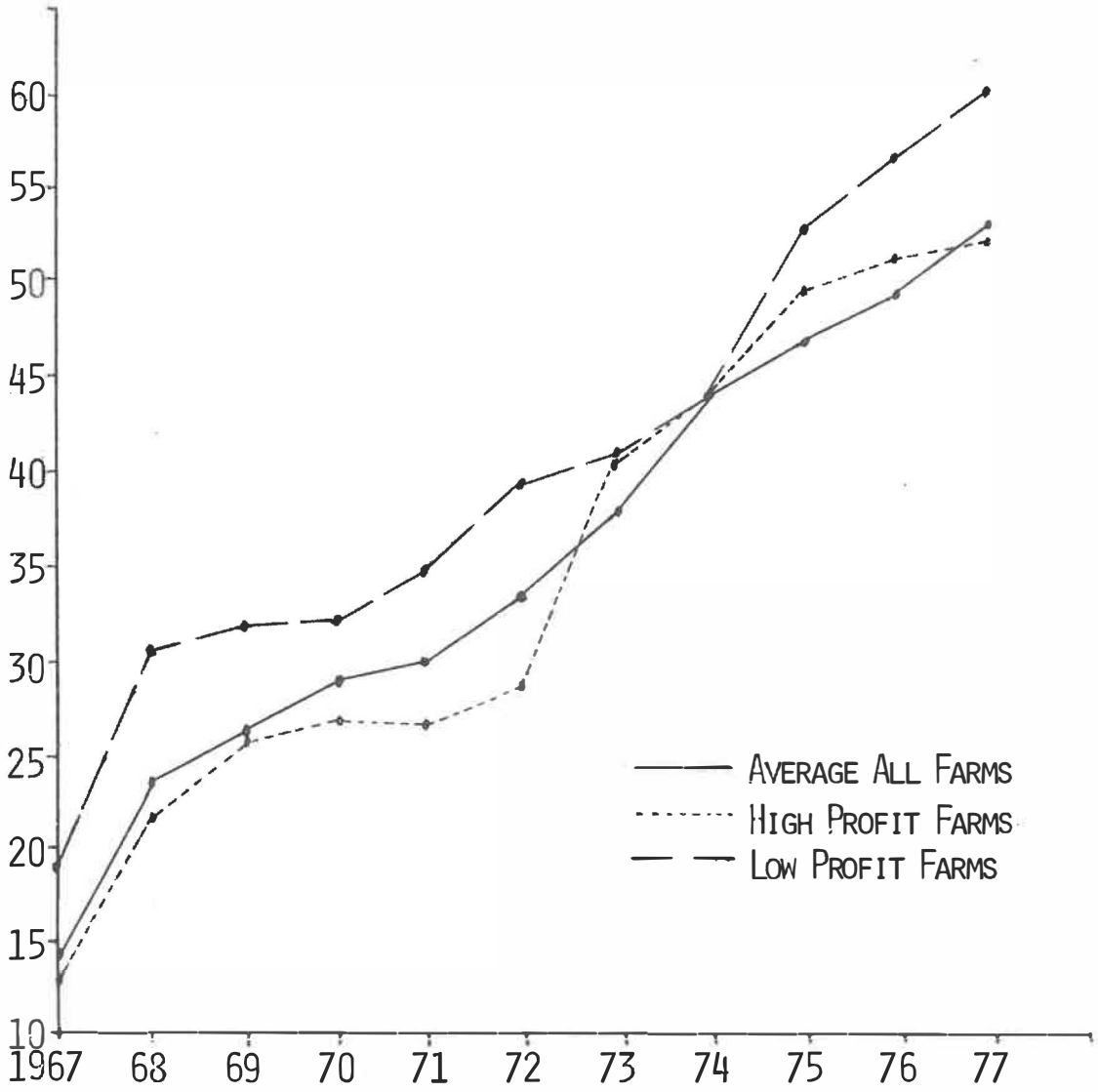
Appendix B

Summary	Power Machine, Equipment, Building Exp./W.U.		
	Average	High Profit	Low Profit
1967	14.32	13.05	18.82
1968	23.36	21.25	30.23
1969	26.40	26.00	32.09
1970	28.68	26.90	32.38
1971	28.92	26.14	34.57
1972	32.56	28.18	39.06
1973	37.30	40.26	41.33
1974	43.46	43.86	43.70
1975	46.90	49.00	52.55
1976	49.01	50.99	56.90
1977	52.61	51.99	59.23

* Adapted from, Farm Business Management Annual Reports, 1967 - 1977, East South Central Minnesota, Austin, Minnesota.

Appendix C

Comparison of Power Machines, Equipment and Building Costs per Work Unit 1967 - 1977. *



* Farm Business Management Annual Reports 1967 - 1977 East South Central Minnesota, Austin, MN.

UNIT II - 9

ANALYZING LIVESTOCK EFFICIENCIES

PART I. Student Objectives

A. The student will identify the livestock enterprise efficiency factors as presented in the analysis.

B. The student will interpret the factors for his livestock enterprise(s).

C. The student will make recommendations to improve his livestock enterprise efficiency based on his interpretation of the factors.

PART II. Transition

The previous unit developed a method for analyzing the machinery, equipment and building costs of the operation. This was based on allocation of the costs, as determined in the farm records, to the various enterprises.

This unit develops a method of analysis of these allocated costs and also direct costs for each specific livestock enterprise. In addition, it lists common measure of profitability for the livestock enterprises by comparing levels of production with the resources used to attain that production and gives a framework for resource allocation.

The following unit will tie this unit and previous units together to help the student make an evaluation of the complete farm business using the various factors previously presented.

PART II. The Lesson

Attention Focuser

Display a quart jar each of ground corn and soybean meal in the front of the room. Ask the class what the cost of the protein in each is on a per pound basis using present prices. Write their answers on the board until you get a consensus.

Point out that in most livestock enterprises feed is the major cost and by analyzing carefully kept records, we can determine the returns over feed cost as well as other profit measures. These figures are already available in the analysis and this session will be spent helping them to interpret the relationship of the information to the profitability of the business.

KEY QUESTION 1. What are the common measures of profitability of livestock enterprises?

These are measures which are common to all of the livestock enterprises. These measures can be calculated for each enterprise by varying the unit of production.

A. Level of production or net increase

1. Rates of production per unit

2. Quality of production
   a. milk test
   b. weight of market livestock sold
   c. grade of livestock products produced

B. Feed consumed per unit of production

1. Amount of corn and small grain

2. Amount of purchased feed

3. Amount of supplement

4. Amount of roughages

5. Balance of the ration

C. Feed cost per unit of production

1. Price of feed

2. Least cost rations

D. Return over feed per unit of production

E. Return in relation to feed cost

1. Return for $100 of feed

2. Index of return for $100 of feed

F. Supplemental costs

1. Miscellaneous livestock expense

2. Veterinary expense

3. Custom work

4. Special hired labor

G. Profit of enterprise

NI = (SP - C) Q /Net Income = (Selling Price - Cost) x Quantity/

Suggested Teaching Strategy

Discuss each of the items listed in Appendix A. Illustrate that it is necessary to evaluate livestock enterprises from a number of different viewpoints because of the variation of input costs between enterprises. Show briefly how net increases and/or total value produced is calculated. Emphasize why it was necessary to determine physical quantities and correct values at close out time to have an analysis capable of evaluating the production efficiency of each enterprise. Families should be cautioned that even though accuracy was stressed in completing the business record, they should not jump to conclusions about changes they should make on the basis of one analysis.

Refer to the analysis report to show that feed represents varying proportions of the total cost of production with different livestock enterprises. Supplemental and allocated cost should be considered to show what the return over all listed costs means. Consideration must be made for interest, insurance and labor which are not allocated to the individual enterprises when the evaluation is being made.

KEY QUESTION 2. What is the procedure for evaluating the Dairy and Other Dairy enterprises?

Steps	Key Points
1. Determine production	1.1 Pounds of butterfat per cow 1.2 Pounds of milk per cow 1.3 Percent of butterfat in milk
2. Compute the value of produce per cow.	2.1 Products sold 2.2 Products used in home 2.3 Milk fed to calves 2.4 Net increase in value of cows 2.5 Other misc. dairy income 2.6 Arrive at total value produced
3. Determine amount of feed per cow.	3.1 Corn 3.2 Small grain 3.3 Complete ration 3.4 Protein, salt, mineral 3.5 Legume hay 3.6 Other hay 3.7 Silage

Steps	Key Points
4. Compute the feed cost per cow	4.1 Grain 4.2 Complete ration 4.3 Protein, salt, mineral 4.4 Hay 4.5 Silage 4.6 Pasture
5. Compute the return over feed cost per cow	5.1 Deduct feed costs from total value produced 5.2 This shows what is left to pay other expenses
6. Determine supplemental (SC) and allocated (AC) costs per cow	6.1 Misc. livestock exp. (SC) 6.2 Veterinary exp. (SC) 6.3 Custom work hired (SC) 6.4 Special hired labor (SC) 6.5 Power and Mach. costs (AC) 6.6 Livestock equipment costs (AC) 6.7 Building and fences (AC)
7. Return over all listed costs.	7.1 Subtract supplemental and allocated costs from return over feed cost 7.2 This is the amount left for labor and management, to pay for interest on the investment, insurance and other items not listed directly in the analysis
8. Determine supplementary management information.	8.1 Return for $100 feed fed is found by dividing total value produced by dollars of feed fed. This is valuable for comparison to other dairy operations and for yearly progress 8.2 Total listed cost per cwt milk shows what the breakeven is for listed costs 8.3 Feed cost per lb. of butterfat and amount of milk per pound of concentrate are measures of returns for feed fed. They reflect production potential of the herd and balance of the ration for optimum production.
9. Size of enterprise.	9.1 If the enterprise is profitable on a per cow basis, the scope of the enterprise will influence labor earnings. 9.2 Measure in number of cows 9.3 Or total value produced

Steps	Key Points
10. Calculate death loss.	10.1 Percent death loss - total 10.2 Percent calf death loss

Suggested Teaching Strategy

Discuss the various items under steps and key points with the families following in their analysis reports. Point out the comparison is on the basis of cows, young stock and then the two combined.

Hand out the individual ranking tables, Appendix B, and let the families, when they have identified their farm, determine where they rank in comparison to other members of the class by charting the data on Appendix C. (New tables should be prepared each year based on the current analysis!) Show, by using the table, that high production coupled with reasonable feed cost gives the greatest returns above feed cost. Show what happens with moderate and low production when feed costs are high. This should lead into the question, "Why is one herd so much more profitable than the others?" Review briefly such topics as breeding and selection, culling practices, milking practices and any others the class seems willing to discuss. Appences D and D2 illustrate the rank of two farms, one high and one low in return over feed where production is moderate to high.

KEY QUESTION 3. What is the procedure for evaluating the complete hog enterprise?

Steps	Key Points
1. Determine production	1.1 Determine net increase in value per cwt 2.1 Determine total value produced which includes miscellaneous income
2. Determine amount of feed used per cwt produced	2.1 Amount of corn 2.2 Amount of small grain 2.3 Amount of complete ration 2.4 Amount protein salt, mineral and milk 2.5 Amount forages
3. Calculate cost of feed used to produce cwt of hogs	3.1 Grain 3.2 Complete ration 3.3 Protein, salt, mineral and milk 3.4 Forages 3.5 Pasture

Steps	Key Points
4. Determine return over feed cost per cwt produced.	4.1 Deduct feed costs from value produced 4.2 This remaining amount is what is left to pay non-feed costs and labor
5. Determine supplemental and allocated costs per cwt hogs produced.	5.1 Miscellaneous livestock expense (SC) 5.2 Veterinary expense (SC) 5.3 Custom work (SC) 5.4 Special hired labor (SC) 5.5 Power and machinery (AC) 5.6 Livestock equipment (AC) 5.7 Buildings and fences (AC)
6. Return over all listed costs	6.1 Subtract supplemental and allocated costs from return over feed cost 6.2 This remainder is the amount for labor and management and any unlisted costs
7. Determine supplementary management information	7.1 Return for $100 feed fed is found by dividing total value produced by dollars of feed. Since feed constitutes a large portion of expense in most hog operations, this is a valuable measure of profitability for this enterprise. 7.2 Price received per cwt--all animals and market animals is a method of comparing your marketing ability with that of others. Also handling and condition of breeding stock may influence the "all-animals figure" if a lot of hogs are shipped "subject." 7.3 Number of litters farrowed shows the size and intensity of the operation. 7.4 Number of pigs born per litter reflects the quality of the breeding program 7.5 Number of pigs weaned per litter reflects some prefarrowing management but primarily the quality of management after farrowing 7.6 Total listed costs, when combined with non-listed costs such as labor, insurance and interest, gives a break-even cost on a per cwt basis 7.7 Percent death loss in an efficiency factor which reflects foregone earnings. It costs nearly as much to produce a dead pig as a live one.

Suggested Teaching Strategy

Discuss the items listed in the steps and key points with the class while they follow along in their analysis. Point out the variations in the costs and returns from the high return group to the low return group. Have each family find their line on the individual ranking table, Appendix E, for complete hogs. Prepare a new table each year based on the latest analysis information. (The table included here is for illustration only). Point out the difference in the measures between the farm high in return over feed costs and the farm lowest in return over feed cost.

Display the overhead of Appendix F. Point out that for the last five years the farms high in return over feed costs had about the same or slightly lower feed costs than the average of all the farms while the farms low in return over feed costs had feed costs that were significantly higher than those of the average group. It should be clear that in this one measure, when feed is the largest single expense of the enterprise, a large portion of the profitability of the enterprise is determined.

Also, from the transparency, show that the high return farms produced more value per cwt produced than the average or low return groups. This reflects breeding and selection practices, farrowing management, health practices and marketing ability.

KEY QUESTION 4. What is the procedure for evaluating the other livestock enterprises?

The principles used in interpreting the returns and efficiencies for all enterprises are very similar to those for dairy cattle and hogs. For this reason, a detailed explanation is not given in the text. In each livestock enterprise the amounts and values of the various feeds (or feed substitutes as in the case of animals such as bees and earthworms) becomes the basis for the study. The proportion of total cost represented by feed is the main factor in determining the return needed for each $100 of feed to cover all costs. The size of the enterprise is very important when evaluating its effect on a total farm business. An extremely profitable small enterprise may not add as much to farm earnings as a larger enterprise of moderate profitability.

Suggested Teaching Strategy

Prepare a set of tables for each livestock enterprise for which you have 10 or more operators, as illustrated in Appendices B, C, E, G and H. The MECC computer system in many Minnesota schools can be used to prepare the table for you. Appendices G and H were prepared using the MECC system while Appendix E was prepared with paper and pencil. Regardless of the mechanisms used, the tables provide an excellent means

for farmers to compare with others in the same enterprises. The tables illustrate the range in factors from high to low as well as illustrate many important management practices and concepts when individual farms are charted.

Once the farmers have charted their livestock operations, it would be useful to distribute copies of the appropriate enterprise evaluation forms from Farm Management Enterprise Analysis and Evaluation.

PART IV. Summary

1. There are numerous measures of efficiency which are common to all livestock enterprises.

2. For each enterprise, each of these measures has a different level of importance in determining the profitability of that enterprise.

3. From an analysis of each enterprise, we can determine where weak points are that may need to be strengthened and points in which the operator excels.

PART V. At-The-Farm Activity

Review the families enterprise analysis for each class of livestock with them. Point out what their weak and strong points are compared to other farms on the ranking sheet. Ask them what changes they feel should be made to improve their ranking if they are low and how they can maintain it if they are high. At this point, give them a check list of approved practices developed from Farm Management Enterprise Analysis and Evaluation so they can list those items they need to improve upon.

Have them make a note of the date they put the practices into effect so they can determine if results occurred in a reasonable length of time.

Look over the livestock facilities with the operator. Discuss practices that seem to have evident need of improvement and question him to see what his thoughts are about the practices.

PART VI. Resources

Chalkboard/Overhead Projector
Transparencies of Appendices A, B, C, D, E
Class quantities of Appendices B, C and checklists from Enterprise Analysis and Evaluation
Farm analysis for individual families
Class quantities of Appendices E, B, H

PART VII. References

Painter, Charles. Using Farm Analysis Information. Austin, MN., Austin, AVTI, Revised 1972.

Herbst, J. H. Farm Management Principles, Budgets, Plans. Champaign, Ill, Stipes, 1975.

Francis, Eugene V. A Guide to On-farm Instruction in Farm Management and Farm Business Analysis. St. Paul, MN., Division of Agricultural Education, University of Minnesota, reprinted 1977.

Persons, Edgar and Marvin Kleene. Farm Management Enterprise Analysis And Evaluation. St. Paul, MN., Division of Agricultural Education, University of Minnesota, 1975.

Doanes Farm Management Guide. 12th ed. St. Louis, Mo., Doane Agricultural Service, 1978.

Farm Business Management Annual Report 1973-1977. Central Minnesota Area, Willmar, MN

Persons, Edgar. Documentation for Farm Business Analysis. St. Paul, MN., Division of Agricultural Education, University of Minnesota, 1977.

PART VIII. Appendices

A. Common Efficiency Measures for Livestock Enterprise
B. Individual Ranking Table-Dairy
C. Comparison Table-Dairy
D-1 Comparison Table Herd 1-Dairy
D-2 Comparison Table Herd 2-Dairy
E. Individual Ranking Table-Hogs, Complete
F. Returns over feed costs, Hogs, Complete
G. Individual Ranking Table-Beef Breeding
H. Comparison Table-Beef Breeding

APPENDIX A

Common Efficiency Measures For Livestock Enterprises

A. Level of Production or Net Increase

1. Rates of production per unit
2. Quality of production
   a. Milk test
   b. Weight of market livestock sold
   c. Grade of livestock products produced

B. Feed Consumed Per Unit of Production

1. Amount of corn and small grain
2. Amount of purchased feed
3. Amount of supplement
4. Amount of roughages
5. Balance of the ration

C. Feed Cost per Unit of Production

1. Price of feed
2. Least cost rations

D. Return Over Feed Per Unit of Production

E. Return in Relation to Feed Cost

1. Return for $100 of Feed
2. Index of return for $100 of feed

F. Supplemental Costs

1. Miscellaneous livestock expense
2. Veterinary expense
3. Custom work
4. Special hired labor

G. Profit of the Enterprise

$$NI = (SP-C)\ Q$$

[Net Income = (Selling Price - cost) X Quantity]

DAIRY COWS (PER HEAD) - ONE LINE = ONE FARMER

TABLE 12 DAIRY CATTLE

CODE#	LBS MILK /COW	LBS BF	TOTAL VALUE PROD	LBS CONC FED	LBS ROUGH DM	FEED COST	SUPP COST	ALLOC COSTS	RET OVR LISTED COSTS	(PER COW) RE / $100 FEED	FEED /CWT MILK	TABLE 14 PRICE /CWT MILK	NO. YOUNG STK /COW	TOTAL VALUE PROD	RET OV L ST COST
31	12057	424	1064	5560	12712	509	61	124	370	209	4.22	8.39	1.5	1215	49
42	13425	483	1269	4398	16720	498	105	47	619	255	3.71	8.97	1.5	1113	35
54	13973	480	1213	6785	9677	594	195	86	338	204	4.25	8.88	1.9	1492	36
57	16320	580	1345	5564	11531	580	108	175	483	232	3.55	8.80	1 0	1786	75
58	12327	433	1071	4687	8824	355	163	28	524	241	2.88	8.78	1.0	1216	61
62	10619	385	1002	5310	14620	513	59	89	342	195	4.83	8.95	.7	1182	39
76	11046	394	1003	3249	10451	401	80	88	434	250	3.63	8.85	1.3	1137	33
77	12962	481	1147	5461	8758	522	70	157	398	220	4.03	9.04	.8	1211	37
78	13059	465	1152	6991	8314	676	63	100	313	170	5.18	8.86	.7	1222	26
79	10283	364	867	7257	11030	598	89	62	119	145	5.82	8.44	1.7	1084	9
80	11670	388	945	5265	7651	503	121	42	278	188	4.31	8.32	.9	1155	30
81	13777	430	1149	5018	8778	492	97	86	474	234	3.57	8.52	1.7	1439	48
85	13210	472	1148	4974	8924	491	89	111	457	234	3.72	8.86	1.1	1271	46
86	8497	303	737	1901	7329	342	54	110	230	215	4.02	8.80	.1	770	25
88	10895	373	893	1824	11881	425	50	44	374	210	3.90	8.34	1.6	1146	38
89	8259	309	689	3398	6534	376	55	93	166	183	4.55	8.98	1.1	841	64
90	11844	415	969	6323	11028	647	119	129	74	150	5.46	8.73	.5	1074	12
91	15989	569	1413	5500	11759	583	143	155	531	242	3.65	8.95	.1	1454	561
92	14859	522	1269	6834	9353	559	124	138	449	227	3.76	8.75	1.0	1449	42
93	12414	437	1068	5826	11991	642	113	128	185	166	5.17	8.76	.8	1123	84
94	11221	384	971	5322	9886	512	62	128	270	190	4.55	8.95	1.2	1186	363
97	13693	478	1146	4767	8614	507	102	106	430	226	3.70	8.72	.6	1246	411
104	14818	516	1253	6470	10540	662	131	183	276	189	4.47	8.83	.8	1386	233
105	9898	345	798	6575	6846	507	108	135	47	157	5.12	8.74	.4	880	63
108	4279	197	378	2213	4841	277	45	50	6	136	6.47	9.41	1.4	486	-12
109	13574	447	1070	4705	9679	424	102	152	391	252	3.12	8.37	2.1	1427	430
112	14328	532	1247	5886	11980	580	63	132	472	215	4.05	8.98	.9	1434	533
114	9415	350	805	5550	9429	528	64	123	89	152	5.61	8.81	1.9	1192	199
116	11674	419	1036	4013	6892	477	152	109	298	217	4.09	8.95	1.1	1240	325
118	9379	314	786	3559	7714	391	51	77	267	201	4.17	8.23	1.4	960	237
121	13334	428	1074	4257	6681	375	70	83	546	286	2.81	8.11	1.4	1193	464
122	9752	323	746	4094	2868	243	47	88	364	307	2.49	8.35	.9	808	333
17	9877	409	903	5990	7293	470	105	355	-28	192	4.76	9.18	1.9	93	-48
20	4884	176	360	5352	10106	386	145	16	-188	93	7.90	9.24	1.9	94	44
11	15034	487	1272	8904	10660	751	180	124	217	170	5.00	8.59	1.0	137	47
10	14494	468	1215	5768	9654	533	111	140	431	228	3.68	8.46	2.1	141	432

TABLE 12 DAIRY CATTLE HIGH TO LOW COMPARISIONS

Appendix C

LBS MILK /COW	LBS BF	TOTAL VALUE PROD	LBS CONC FED	LBS ROUGH DM	FEED COST	SUPP COST	ALLOC COSTS	RET OVR LISTED COSTS	(PER COW) RET/ $100 FEED	FEED /CWT MILK	TABLE 14 PRICE /CWT MILK	NO. YOUNG STK/COW	TOTAL VALUE PROD	RET OVR LISTED COSTS
16320	580	1413	8904	16720	751	195	355	619	307	7.90	9.41	2.1	1786	754
15989	569	1345	7257	14620	676	180	183	546	286	6.47	9.24	2.1	1492	611
15034	532	1272	6991	12712	662	163	175	531	255	5.82	9.18	1.9	1454	561
14859	522	1269	6834	11991	647	152	157	524	252	5.61	9.04	1.9	1449	533
14818	516	1269	6785	11980	642	145	155	483	250	5.46	8.98	1.9	1439	489
14494	487	1253	6575	11881	598	143	152	474	242	5.18	8.98	1.9	1434	484
14328	483	1247	6470	11759	594	131	140	472	241	5.17	8.97	1.7	1427	464
13973	481	1215	6323	11531	583	124	138	457	234	5.12	8.95	1.7	1386	461
13777	480	1213	5990	11030	580	121	135	449	234	5.00	8.95	1.6	1271	432
13693	478	1152	5886	11028	580	119	132	434	232	4.83	8.95	1.5	1246	430
13574	472	1149	5826	10660	559	113	129	431	228	4.76	8.95	1.5	1240	426
13425	468	1148	5768	10540	533	111	128	430	227	4.55	8.88	1.4	1222	411
13334	465	1147	5564	10451	528	108	128	398	226	4.55	8.86	1.4	1216	399
13210	447	1146	5560	10106	522	108	124	391	220	4.47	8.86	1.4	1215	385
13059	437	1074	5550	9886	513	105	124	374	217	4.31	8.85	1.3	1211	376
12962	433	1071	5500	9679	512	105	123	370	215	4.25	8.83	1.2	1193	365
12414	430	1070	5461	9677	509	102	111	364	215	4.22	8.81	1.1	1192	363
12327	428	1068	5352	9654	507	102	110	342	210	4.17	8.80	1.1	1186	358
12057	424	1064	5322	9429	507	97	109	338	209	4.09	8.80	1.1	1182	333
11844	419	1036	5310	9353	503	89	106	313	204	4.05	8.78	1.0	1155	332
11674	415	1003	5265	8924	498	89	100	298	201	4.03	8.76	1.0	1146	325
11670	409	1002	5018	8824	492	80	93	278	195	4.02	8.75	1.0	1137	301
11221	394	971	4974	8778	491	70	89	276	192	3.90	8.74	1.0	1123	288
11046	388	969	4767	8758	477	70	88	270	190	3.76	8.73	.9	1113	254
10895	385	945	4705	8614	470	64	88	267	189	3.72	8.72	.9	1084	237
10619	384	903	4687	8314	425	63	86	230	188	3.71	8.59	.9	1074	233
10283	373	893	4398	7714	424	63	86	217	183	3.70	8.52	.8	960	199
9898	364	867	4257	7651	401	62	83	185	170	3.68	8.46	.8	880	125
9877	350	805	4094	7329	391	61	77	166	170	3.65	8.44	.8	841	90
9752	345	798	4013	7293	386	59	62	119	166	3.63	8.39	.7	808	84
9415	323	786	3559	6892	376	55	50	89	157	3.57	8.37	.7	770	64
9379	314	746	3398	6846	375	54	47	74	152	3.55	8.35	.6	486	63
8497	309	737	3249	6681	355	51	44	47	150	3.12	8.34	.5	141	47
8259	303	689	2213	6534	342	50	42	6	145	2.88	8.32	.4	137	44
4884	197	378	1901	4841	277	47	28	-28	136	2.81	8.23	.1	94	-12
4279	176	360	1824	2868	243	45	16	-188	93	2.49	8.11	.1	93	-48
AVERAGES														
11864	416	1013	5154	9487	498	97	110	306	205	4.34	8.75	1.2	1063	312

FARM NO 85

TABLE 12 DAIRY CATTLE HIGH TO LOW COMPARISIONS

Appendix D-1

LBS MILK /COW	LBS BF	TOTAL VALUE PROD	LBS CONC FED	LBS ROUGH DM	FEED COST	SUPP COST	ALLOC COSTS	RET OVR LISTED COSTS	(PER COW) RET/ $100 FEED	FEED /CWT MILK	TABLE 14 PRICE /CWT MILK	NO. YOUNG STK/COW	TOTAL VALUE PROD	RET OVR LISTED COSTS
16320	580	1413	8904	16720	751	195	355	619	307	7.90	9.41	2.1	1786	754
15989	569	1345	7257	14620	676	180	183	546	286	6.47	9.24	2.1	1492	611
15034	532	1272	6991	12712	662	163	175	531	255	5.82	9.18	1.9	1454	561
14859	522	1269	6834	11991	647	152	157	524	252	5.61	9.04	1.9	1449	533
14818	516	1269	6785	11980	642	145	155	483	250	5.46	8.98	1.9	1439	489
14494	487	1253	6575	11881	598	143	152	474	242	5.18	8.98	1.9	1434	484
14328	483	1247	6470	11759	594	131	140	472	241	5.17	8.97	1.7	1427	464
13973	481	1215	6323	11531	583	124	138	457	234	5.12	8.95	1.7	1386	461
13777	480	1213	5990	11030	580	121	135	449	234	5.00	8.95	1.6	1271	432
13693	478	1152	5886	11028	580	119	132	434	232	4.83	8.95	1.5	1246	430
13574	472	1149	5826	10660	559	113	129	431	228	4.76	8.95	1.5	1240	426
13425	468	1148	5768	10540	533	111	128	430	227	4.55	8.88	1.4	1222	411
13334	465	1147	5564	10451	528	108	128	398	226	4.55	8.86	1.4	1216	399
13210	447	1146	5560	10106	522	108	124	391	220	4.47	8.86	1.4	1215	385
13059	437	1074	5550	9886	513	105	124	374	217	4.31	8.85	1.3	1211	376
12962	433	1071	5500	9679	512	105	123	370	215	4.25	8.83	1.2	1193	365
12414	430	1070	5461	9677	509	102	111	364	215	4.22	8.81	1.1	1192	363
12327	428	1068	5352	9654	507	102	110	342	210	4.17	8.80	1.1	1186	358
12057	424	1064	5322	9429	507	97	109	338	209	4.09	8.80	1.1	1182	333
11844	419	1036	5310	9353	503	89	106	313	204	4.05	8.78	1.0	1155	332
11674	415	1003	5265	8924	498	89	100	298	201	4.03	8.76	1.0	1146	325
11670	409	1002	5018	8824	492	80	93	278	195	4.02	8.75	1.0	1137	301
11221	394	971	4974	8778	491	70	89	276	192	3.90	8.74	1.0	1123	268
11046	388	969	4767	8758	477	70	88	270	190	3.76	8.73	.9	1113	254
10895	385	945	4705	8614	470	64	88	267	189	3.72	8.72	.9	1084	237
10619	384	903	4687	8314	425	63	86	230	188	3.71	8.59	.9	1074	233
10283	373	893	4398	7714	424	63	86	217	183	3.70	8.52	.8	960	199
9898	364	867	4257	7651	401	62	83	185	170	3.68	8.46	.8	880	125
9877	350	805	4094	7329	391	61	77	166	170	3.65	8.44	.8	841	90
9752	345	798	4013	7293	386	59	62	119	166	3.63	8.39	.7	808	84
9415	323	786	3559	6892	376	55	50	89	157	3.57	8.37	.7	770	64
9379	314	746	3398	6846	375	54	47	74	152	3.55	8.35	.6	486	63
8497	309	737	3249	6681	355	51	44	47	150	3.12	8.34	.5	141	47
8259	303	689	2213	6534	342	50	42	6	145	2.88	8.32	.4	137	44
4884	197	378	1901	4841	277	47	28	-28	136	2.81	8.23	.1	94	-12
4279	176	360	1824	2868	243	45	16	-188	93	2.49	8.11	.1	93	-48
AVERAGES														
11864	416	1013	5154	9487	498	97	110	306	205	4.34	8.75	1.2	1063	312

FARM NO. 90

TABLE 12 DAIRY CATTLE HIGH TO LOW COMPARISIONS

Appendix D-2

LBS MILK /COW	LBS BF	TOTAL VALUE PROD	LBS CONC FED	LBS ROUGH DM	FEED COST	SUPP COST	ALLOC COSTS	RET OVR LISTED COSTS	(PER COW) RET/ $100 FEED	FEED /CWT MILK	TABLE 14 PRICE /CWT MILK	NO. YOUNG STK/COW	TOTAL VALUE PROD	RET OVR LISTED COSTS
16320	580	1413	8904	16720	751	195	355	619	307	7.90	9.41	2.1	1786	754
15989	569	1345	7257	14620	676	180	183	546	286	6.47	9.24	2.1	1492	611
15034	532	1272	6991	12712	662	163	175	531	255	5.82	9.18	1.9	1454	561
14859	522	1269	6834	11991	647	152	157	524	252	5.61	9.04	1.9	1449	533
14818	516	1269	6785	11980	642	145	155	483	250	5.46	8.98	1.9	1439	489
14494	487	1253	6575	11881	598	143	152	474	242	5.18	8.98	1.9	1434	484
14328	483	1247	6470	11759	594	131	140	472	241	5.17	8.97	1.7	1427	464
13973	481	1215	6523	11531	583	124	138	457	234	5.12	8.95	1.7	1386	461
13777	480	1213	5990	11030	580	121	135	449	234	5.00	8.95	1.6	1271	432
13693	478	1152	5886	11028	580	119	132	434	232	4.83	8.95	1.5	1246	430
13574	472	1149	5826	10660	559	113	129	431	228	4.76	8.95	1.5	1240	426
13425	468	1148	5768	10540	533	111	128	430	227	4.55	8.88	1.4	1222	411
13334	465	1147	5564	10451	528	108	128	398	226	4.55	8.86	1.4	1216	399
13210	447	1146	5560	10106	522	108	124	391	220	4.47	8.86	1.4	1215	385
13059	437	1074	5550	9886	513	105	124	374	217	4.31	8.85	1.3	1211	376
12962	433	1071	5500	9679	512	105	123	370	215	4.25	8.83	1.2	1193	365
12414	430	1070	5461	9677	509	102	111	364	215	4.22	8.81	1.1	1192	363
12327	428	1068	5352	9654	507	102	110	342	210	4.17	8.80	1.1	1186	358
12057	424	1064	5322	9429	507	97	109	338	209	4.09	8.80	1.1	1182	333
11844	419	1036	5310	9353	503	89	106	313	204	4.05	8.78	1.0	1155	332
11674	415	1003	5265	8924	498	89	100	298	201	4.03	8.76	1.0	1146	325
11670	409	1002	5018	8824	492	80	93	278	195	4.02	8.75	1.0	1137	301
11221	394	971	4974	8778	491	70	89	276	192	3.90	8.74	1.0	1123	268
11046	388	969	4767	8758	477	70	88	270	190	3.76	8.73	.9	1113	254
10895	385	945	4705	8614	470	64	88	267	189	3.72	8.72	.9	1084	237
10619	384	903	4687	8314	425	63	86	230	188	3.71	8.59	.9	1074	233
10283	373	893	4398	7714	424	63	86	217	183	3.70	8.52	.8	960	199
9898	364	867	4257	7651	401	62	83	185	170	3.68	8.46	.8	880	125
9877	350	805	4094	7329	391	61	77	166	170	3.65	8.44	.8	841	90
9752	345	798	4013	7293	386	59	62	119	166	3.63	8.39	.7	808	84
9415	323	786	3559	6892	376	55	50	89	157	3.57	8.37	.7	770	64
9379	314	746	3398	6846	375	54	47	74	152	3.55	8.35	.6	486	63
8497	309	737	3249	6681	355	51	44	47	150	3.12	8.34	.5	141	47
8259	303	689	2213	6534	342	50	42	6	145	2.88	8.32	.4	137	44
4884	197	378	1901	4841	277	47	28	-28	136	2.81	8.23	.1	94	-12
4279	176	360	1824	2868	243	45	16	-188	93	2.49	8.11	.1	93	-48
AVERAGES														
11864	416	1013	5154	9487	498	97	110	306	205	4.34	8.75	1.2	1063	312

FARIBAULT F&H ANALYSIS - COMPLETE HOG ENTERPRISE PERFORMANCE, 1977 - BY FARMS

	Return Over Feed Cost	Farm Grains	Per cwt. Hogs Produced: Comm. Feed	Total Conc.	Feed Cost	Total Cost Listed	Price Rec.	Net Inc.	Return /$100 Feed	Pigs Born Per Litter	Weaned Per Litter	Weight /Mkt. Hog Sold	Price /cwt. Ration
1.	26.27*	397	116	513	29.39	39.86	69.11	60.69	206.51	10.7	8.9	78.5	5.74
2.	25.77**	174	71	244	16.73	21.64	41.84	42.50	254.04	10.3	8.4	222.4	6.85
3.	25.44	295	41	336	16.78	20.01	41.38	42.22	251.61	12.8	9.8	229.6	4.98
4.	25.09*	312	60	372	19.78	27.02	43.03	44.87	226.85	8.9	7.3	170.8	5.32
5.	24.97	282	64	345	17.95	25.29	42.28	42.92	239.10	8.9	7.4	209.7	5.20
6.	23.67*	312	71	383	22.52	27.87	43.26	46.19	205.12	10.6	9.5	163	5.88
7.	23.33	339	65	404	41.77	27.55	41.31	45.10	207.16	9.4	7.9	230	5.39
8.	22.40	270	93	363	22.40	26.31	41.50	44.80	200.02	10.	9.	210	6.17
9.	20.84*	685	103	789	39.63	48.10	53.27	60.47	152.58			100.4	5.02
10.	20.80	402	28	430	19.30	27.45	40.67	40.10	207.78	7.3	4.9	230.6	4.46
11.	20.55*	398	86	484	25.48	32.21	44.98	46.03	180.67	7.9	7.6	133.4	5.26
12.	29.84	292	71	363	20.62	32.31	41.63	40.46	196.20	10.0	8.5	220.8	5.69
13.	19.21	365	121	485	26.76	33.55	42.48	45.97	171.80	8.4	7.3	202.5	5.52
14.	19.19	306	94	400	22.96	32.03	30.27	42.15	183.59	11.2	8.8	206.1	5.74
15.	18.99	283	97	380	22.27	29.56	42.32	41.26	185.27	11.6	7.9	218	5.86
16.	18.77	312	88	400	21.43	28.36	41.86	40.20	187.59	9.3	7.5	206	5.35
17.	18.72#	330	73	403	21.77	25.40	42.21	40.49	186.01	9.6	7.6	223.1	5.34
18.	18.72	305	23	328	15.36	17.78	40.49	34.08	221.89	8.2	5.7	228.5	4.69

* Significant number of feeder pigs sold
** Feed allocation questioned
*** Less than 30,000 lbs pork produced
\# Purchased significant number of feeder pigs

FARIBAULT F&H ANALYSIS - COMPLETE HOG ENTERPRISE PERFORMANCE, 1977 - BY FARMS

Return Over Feed Cost	Per cwt. Hogs Produced: Farm Grains	Comm. Feed	Total Conc.	Feed Cost	Total Cost Listed	Price Rec.	Net Inc.	Return /$100 Feed	Pigs Born Per Litter	Weaned Per Litter	Weight /Mkt. Hog Sold	Price /cwt. Ration
19. 17.85	409	72	481	23.80	27.38	40.77	41.65	175.00	8.1	6.6	227.2	4.95
20. 16.45	433	76	509	25.48	32.54	41.83	41.93	164.57	9.2	7.5	224.0	5.01
21. 16.08	409	61	469	22.78	26.15	40.43	38.86	170.60	8.5	5.7	227.8	4.85
22. 16.00	361	87	448	24.88	31.45	41.65	40.88	164.29	8.1	7.1	203.7	5.56
23. 15.47	340	108	448	24.72	31.51	42.04	42.89	156.44	8.9	6.2	240.9	6.12
24. 14.45	465	43	508	24.60	48.13	39.32	39.05	158.76	8.3	6.8	249.2	4.84
25. 13.57	442	53	495	25.16	27.84	39.00	38.73	153.95	9.3	6.7	231.6	5.08
26. 13.20	319	73	393	21.26	26.86	39.61	34.46	162.08	8.2	5.9	230.4	5.41
27. 10.86	340	82	422	23.46	26.78	34.80	34.32	146.30	13.8	8.3	253.0	5.56
28.(-10.64)***	779	149	928	48.65	52.80	39.94	38.19	78.49	8.1	3.6	226.8	5.19

* Significant number of feeder pigs sold
** Feed allocation questioned
*** Less than 30,000 lbs. pork produced
\# Purchased significant number of feeder pigs

Appendix F

Returns Over Feed Costs Complete Hogs, 1973-1977*

	Average Farms			High Profits			Low Profits		
	Total Value Produced	Feed Cost	Return over Feed Cost	TV Produced	F.C.	ROFC	TV	FC	ROFC
1977	43.64	25.07	18.57	57.40	23.75	33.65	37.77	34.63	3.14
1976	37.28	25.69	9.37	47.55	21.07	24.05	29.19	37.54	(-10.32)
1975	53.53	28.76	24.77	73.43	26.32	47.11	46.05	38.36	7.69
1974	34.07	26.55	7.52	43.88	21.41	22.47	28.65	37.24	(-8.59)
1973	43.50	20.37	23.37	49.15	17.83	31.32	39.76	23.88	15.88

* Adapted from, Farm Business Management Annual Reports 1973-1977. West Central Minnesota Area Willmar, Minnesota.

BEEF COWS (PER HEAD) - ONE LINE = ONE FARMER

BEEF BREEDING CATTLE T. 15A

CODE#	NO OTHER AN/COW	LBS BEEF PROD/ COW	NET INC IN VALUE/COW	LBS CONC FED	LBS HAY FED	LBS SILAGE FED	TOT FEED COST	SUPP COST	ALLOC COSTS	(PER COW) RET OVR LISTED COSTS	RET $100 FEED	PRICE /CWT SOLD	AVE WT /HEAD SOLD	% BEAT. LOS.
33	1.1	593	248	2242	3125	9115	270	34	15	-71	92	42.43	576	3.40
34	1.4	502	331	2871	2154	5813	236	61	35	0	140	43.38	1068	9.20
37	.8	455	182	0	8781	0	163	17	14	3	112	.00	0	5 30
47	.6	347	142	27	2798	6108	77	3	3	59	184	42.00	450	9.30
48	.6	343	144	722	1785	3571	129	2	61	-48	112	40.00	375	.00
50	.5	331	143	312	6447	2589	177	7	4	-45	81	42.07	579	1.20
51	.5	605	297	26	7709	12206	285	5	33	-27	104	.00	0	7.60
59	1.1	462	268	987	1537	8695	193	70	21	-15	139	.00	0	4.60
61	.7	0	82	89	2478	3540	130	2	6	-56	63	40.00	375	.00
65	.9	369	145	0	3578	3144	106	0	28	10	137	.00	0	2.60
66	1.1	511	222	1000	1543	8724	178	9	6	29	125	.00	0	.00
72	1.2	229	68	36	4762	8730	275	13	45	-266	25	26.53	648	5.70
83	1.1	421	171	4	6088	18501	322	4	32	-188	53	.00	0	5.50
84	.7	512	269	7	6720	17333	271	2	39	-42	99	34.11	950	5.90
99	.8	358	162	396	5321	0	143	14	20	-14	114	40.13	476	6.20
101	.6	409	148	26	3313	3352	92	5	27	24	161	36.00	349	2.00
103	.7	691	192	313	3498	10381	190	14	21	-33	101	37.21	558	4.20
106	.9	423	172	429	4285	9651	195	2	27	-52	88	38.02	439	3.80
107	1.1	641	270	723	6779	10623	296	23	27	-77	91	36.80	703	3.10
120	1.1	575	272	2773	6127	7265	378	8	19	-134	72	37.57	598	3.10
8	.5	303	124	0	6315	3909	268	0	10	-155	46	40.00	401	9.60
16	1.4	656	204	0	15299	0	368	13	19	-195	56	.00	0	.00
9	.5	597	252	36	3254	3116	178	11	32	31	141	44.00	1075	.00
24	.8	253	120	269	7022	0	135	7	15	-36	89	35.00	400	6.80
12	1.6	491	8	4075	11886	0	320	2	48	-361	22	.00	0	24.00
6	.8	393	145	123	3948	3379	182	11	41	-88	80	38.00	1073	3.20
15	1.0	720	106	26	9117	3569	183	1	13	-91	58	.00	0	1.40

BEEF BREEDING CATTLE T. 15A

HIGH TO LOW COMPARISIONS

NO OTHER AN/COW	LBS BEEF PROD/ COW	NET INC IN VALUE/COW	LBS CONC FED	LBS HAY FED	LBS SILAGE FED	TOT FEED COST	SUPP COST	ALLOC COSTS	(PER COW) RET OVR LISTED COSTS	RET $100 FEED	PRICE /CWT SOLD	AVE WT /HEAD SOLD	% DEATH LOSS
1.6	720	331	4075	15299	18501	378	70	61	59	184	44.00	1075	24.00
1.4	691	297	2871	11886	17333	368	61	48	31	161	43.38	1073	9.60
1.4	656	272	2773	9117	12206	322	34	45	29	141	42.43	1068	9.30
1.2	641	270	2242	8781	10623	320	23	41	24	140	42.07	950	9.00
1.1	605	269	1000	7709	10381	296	17	39	10	139	42.00	703	7.60
1.1	59	268	987	7022	9651	285	14	35	3	137	40.13	648	6.80
1.1	593	252	723	6779	9115	275	14	33	0	125	40.00	598	6.20
1.1	575	248	722	6720	8730	271	13	32	-14	114	40.00	579	5.90
1.1	512	222	429	6447	8724	270	13	32	-15	112	40.00	576	5.70
1.1	511	204	396	6315	8695	268	11	28	-27	112	38.02	558	5.50
1.0	502	192	313	6127	7265	236	11	27	-33	104	38.00	476	5.30
.9	491	192	312	6088	6108	195	9	27	-36	101	37.57	450	4.60
.9	462	172	269	5321	5813	193	8	27	-42	99	37.21	439	4.20
.8	455	171	123	4762	3909	190	7	21	-45	92	36.80	401	3.80
.8	423	162	89	4285	3571	183	7	21	-48	91	36.00	400	3.40
.8	421	148	36	3948	3569	182	5	20	-52	89	35.00	375	3.20
.8	409	145	36	3578	3540	178	5	19	-56	88	34.11	375	3.10
.7	393	145	27	3498	3379	178	4	19	-71	81	26.53	349	3.10
.7	369	144	26	3313	3352	177	3	15	-77	80	.00	0	2.60
.7	358	143	26	3254	3144	163	2	15	-98	72	.00	0	2.00
.6	347	142	26	3125	3116	143	2	14	-91	63	.00	0	1.40
.6	343	124	7	2798	2589	135	2	13	-134	58	.00	0	1.20
.6	331	120	4	2478	0	130	2	10	-155	56	.00	0	.00
.5	303	106	0	2154	0	129	2	6	-188	53	.00	0	.00
.5	253	82	0	1785	0	106	1	6	-195	46	.00	0	.00
.5	229	68	0	1543	0	92	0	4	-266	25	.00	0	.00
.5	0	8	0	1537	0	77	0	3	-361	22	.00	0	.00
AVERAGES													
.9	451	181	648	5395	6048	212	12	24	-68	95	25.68	410	4.73

UNIT II - 10

EVALUATION OF THE FARM BUSINESS

PART I. Student Objectives

A. The farmers will identify the strong points of their business.

B. The farmers will identify the weak points in their business.

C. The farmers will complete the evaluation checklist of their business.

D. The farmers will list alternative methods of taking advantage of strong points and strengthening weak points.

PART II. Transition of Units

The previous lesson dealt with the efficiencies of the various livestock enterprises and methods for analyzing these efficiencies.

This unit will deal with the evaluation of the total farm business based on the factors and measures that were arrived at in the previous lessons. The student will have an opportunity to rate himself on these factors and then use them as a follow-up evaluation of changes made. He should recognize from this evaluation those areas which need immediate attention.

The lessons which follow are the tax management and close out lessons. Class members should be encouraged at this session to have all entries posted in the farm record book by the time of the next class session.

PART III. The Lesson

Attention Focuser

Ask each member to write down on a piece of paper the number of hours on his two largest tractors. Ask him then to write down how many hours it had on at its last oil change and routine maintenance period. Ask them if they would be willing to let this $10 to 50.M investment go without regular maintenance. Ask if they would let a $100.M to $400.M investment go without maintenance. Point out that the farm business is very similar to that tractor. Unless they know where they are now by the business analysis (which could be compared to the tachometer-hour meter) and then evaluate this against some bench mark such as the area average or an earlier analysis (which could be compared to the maintenance log) they do not know if their business is operating at peak efficiency or if it is breaking down due to lack of maintenance.

KEY QUESTION 1. How can we identify strong points and weak points in our farm business?

An evaluation of the various measures in the business analysis is necessary for the operator to identify those parts of the business which are strong and those which are weak. Without making a specific point by point evaluation of the analysis, much of the information it contains may be overlooked or meaningless. When making an evaluation, the operator must have some basis for comparison. To do this, area and local averages serve a very useful purpose. These averages allow the operator to see what various groups of farmers in the area are doing without the need to "dig into" any specific person's business and also to see how successful the farm operation was compared to these groups. When several analyses of the business are available, the operator will be able to see how effective the changes were that were made on the basis of this evaluation.

Because of the nature of the analysis, some of the information may point to general areas or factors of concern rather than the specific solutions to remedy the problem. For example, low fertilizer costs could be linked to low yields while the problem may lie in the fact that lime may be needed before more fertilizer would be effective. However, it will help the operator to identify those areas in which he differs from the average or high earnings group and then allow him to decide if these differences may be causes for high or low returns.

Such an evaluation leads the operator to the next step in the problem solving sequence by helping him to set goals or objectives based on the information he has in front of him or related information he has obtained earlier. He may go as far as considering alternative courses of action at this point.

Suggested Teaching Strategy

After opening the discussion with the attention focuser, ask the class if they have any general questions on the interpretation of the analysis. After any discussion that may follow, hand out the evaluation checklists found in the appendix. Allow sufficient time for each family to go through the checklist and complete each section that applies to their operation. Explain that in addition to comparing themselves to the groups, they should note how they rank themselves on each measure.

KEY QUESTION 2. How can we take advantage of the strong points of the business and strengthen the weak points?

When the operator has identified an apparent area of concern he must look at alternatives which will help to eliminate the problem. Even the strengths will have to be examined to determine if the operation can take advantage of them to return even more to the profitability of the

business. The operator must also decide which problem should be considered first or which problems should be considered together. He must evaluate what he has done in the past to correct these problems and how successful these efforts have been. When this evaluation has been completed he can look at his resources and the available information on each of the alternatives and consider possible consequences and outcomes of each.

Suggested Teaching Strategy

When the families have completed the evaluation checklist, hand out the worksheet "first things first". Ask them to list from the checklist those items which they feel are the major points of strength and those that are major weaknesses which need immediate attention. They should then list efforts they have made in the past toward these points and what future efforts they might make. This exercise is in effect an attempt to introduce farmers to management by objectives. By establishing objectives based on identification of problems and establishing a priority attack list, the farmer is on the way to a good management scheme.

PART IV. Summary

1. Each part of the business must be evaluated against a standard or benchmark.

2. Strong and weak points should be identified.

3. Recommendations for change should be made and the change which follows should be evaluated.

PART V. At-The-Farm Activity

The checklist which the families completed in class should be reviewed. the instructor should bring information to the families that will help them make decisions on the various alternatives. Care must be taken at this point since the instructor is not in a position to make the decision for the family although they may press him to do so. The instructor should inspect with the family any part of the physical plant which is listed as needing improvements.

PART VI. Resources

Class quantities - Checklist for Evaluating the Farm Business and
First Things First from Appendix
Individual Family Farm Business Analysis
Chalkboard/Overhead Projector

PART VII. References

Hopkin, Barry Baker. Financial Management in Agriculture. The Interstate, 1973.

Persons, Edgar. Documentation for Farm Business Analysis. St. Paul

Painter, Charles. Using Farm Analysis Information, rev. 1972. Austin, Minnesota, Austin AVTI, 1972.

PART VIII. Appendices

A. Checklist for Evaluating the Farm Business
B. First Things First

EVALUATION CHECKLIST

The following checklist has been developed to help you evaluate areas in your farm business which may need improving. From your analysis report check the column in which you rank compared to the local averages. Then, circle the number from 1 to 5 indicating the degree of attention the item should receive.

Table	Line	Measure	Above Average	Below Average	Immediate Attention		Undecided		Satisfactory Performance
1	1	Size-Total Acres			1	2	3	4	5
	2	-Tillable Acres			1	2	3	4	5
	3	-Work units-Crops			1	2	3	4	5
	4	-Livestock			1	2	3	4	5
	5	-Other			1	2	3	4	5
	6	-Total work units			1	2	3	4	5
	7	-Number of workers			1	2	3	4	5
	8	-Farm Capital Investment/worker			1	2	3	4	5
	18	-Total Productive Livestock Dec. 31			1	2	3	4	5
	19	-Crop, Feed & Seed Dec. 31			1	2	3	4	5
	26	-Total Power, Mach. & Equip.Dec. 31			1	2	3	4	5
	29	-Total Farm Capital			1	2	3	4	5
2A	17	Sales-Total Productive Livestock			1	2	3	4	5
	30	Sales-Total Crops			1	2	3	4	5
	37	Sales-Total Farm			1	2	3	4	5
	38	Increase in Farm Capital			1	2	3	4	5
2B	15	Feed Bought **			1	2	3	4	5
	33	Total Cash Operating Expense **			1	2	3	4	5
	46	Labor Earnings-Whole Farm **			1	2	3	4	5
3	15	Net Increases-Livestock **			1	2	3	4	5
	17	Return over Feed from Livestock **			1	2	3	4	5

* Operators Share
** Whole Farm Basis

Table	Line	Measure	Above Average / Below	Immediate Attention		Undecided		Satisfactory Performance
3	18	Crop, Seed and Feed **		1	2	3	4	5
	37	Total Expenses **		1	2	3	4	5
	38	Number of Operators		1	2	3	4	5
4	23	Total Cash and Non-cash Expenses *		1	2	3	4	5
5	1-3	Working Capital-Total *		1	2	3	4	5
	6	Total Farm Capital *		1	2	3	4	5
	11-13	Short Term Debt*		1	2	3	4	5
	15	Net Worth *		1	2	3	4	5
	18	Operators Labor Earnings *		1	2	3	4	5
	19	Return to Capital and Family Labor *		1	2	3	4	5
	28	Ratio Total Farm Expenses to Tot.FarmReceipts		1	2	3	4	5
	29	Ratio Total Assets to Tot. Liabilities(Trend)*		1	2	3	4	5
	30	Ratio Non-real Est. Assets to Non-RealEst.Liab. (Trend) *		1	2	3	4	5
	34	Ratio Total Farm Receipts to Aver.FarmCapital *		1	2	3	4	5
6A	37	Total Sales *		1	2	3	4	5
6B	35	Total Cash Operating Expense *		1	2	3	4	5
8	2	Crop Yield Index		1	2	3	4	5
	3	% Land in High-return Crops		1	2	3	4	5
	4	Gross return/tillable Acre		1	2	3	4	5
	5	Return $100 Feed Fed/Productive Livestock		1	2	3	4	5
	7	Size of Business-Work Units		1	2	3	4	5
8	8	Work Units per Worker		1	2	3	4	5
	9	Power Mac. Equip. Expense/Work Unit		1	2	3	4	5
	10	Farm Capital Investment/Worker		1	2	3	4	5
	11	Index Return $100/feed from Beef Cows		1	2	3	4	5
		Beef Feeders		1	2	3	4	5
		Dairy		1	2	3	4	5
		Other Dairy		1	2	3	4	5
		Hogs Comp.		1	2	3	4	5
		Hogs-finishing		1	2	3	4	5
		Other		1	2	3	4	5

* Operators Share

** Whole Farm Basis

Table	Line	Measure	Above Average	Below	Immediate Attention		Undecided		Satisfactory Performance
8		Expenses Per Work Unit			1	2	3	4	5
	36	Tractor & Crop Machinery			1	2	3	4	5
	37	Farm Share Truck & Auto			1	2	3	4	5
	39	Livestock Equipment			1	2	3	4	5
	40	Building, Fence and Tiling			1	2	3	4	5

10 - _____ Crop_____

	Above Average Below			Immediate Attention		Undecided		Satisfactory Performance
1. Acres				1	2	3	4	5
2. Yield				1	2	3	4	5
6. Total Crop Return				1	2	3	4	5
8. Fertilizer				1	2	3	4	5
9. Chemicals				1	2	3	4	5
10. Seed and Other				1	2	3	4	5
11. Special Hired Labor				1	2	3	4	5
12. Custom Work Hired				1	2	3	4	5
14. Total Supplemental Costs				1	2	3	4	5
17. Farm Power & Machine - Ownership				1	2	3	4	5
18. Farm Power & Machine - Operation				1	2	3	4	5
19. Irrigation Equipment				1	2	3	4	5
20. Land Costs				1	2	3	4	5
23. Total Allocated Costs				1	2	3	4	5
24. Return over all Costs				1	2	3	4	5
28. Listed Cost Per Unit of Production				1	2	3	4	5
30. Break Even Yield				1	2	3	4	5

11 - A Complete Hogs *

		Above Average	Below	Immediate Attention	Undecided	Satisfactory Performance
2.	Net Increase in Value			1 2	3	4 5
4.	Total Value Produced			1 2	3	4 5
6.	Lbs. Corn			1 2	3	4 5
7.	Lbs. Small Grain			1 2	3	4 5
8.	Lbs Complete Ration			1 2	3	4 5
9.	Lbs. Protein, Salt & Mineral			1 2	3	4 5
10.	Total Concentrates			1 2	3	4 5
	Feed Costs			1 2	3	4 5
13.	Grain			1 2	3	4 5
14.	Complete Ration			1 2	3	4 5
15.	Protein, Salt & Mineral			1 2	3	4 5
18.	Total Feed Costs			1 2	3	4 5
21.	Miscellaneous Livestock Expense			1 2	3	4 5
22.	Veterinary Expense			1 2	3	4 5
25.	Total Supplemental Costs			1 2	3	4 5
31.	Total Allocated Costs			1 2	3	4 5
32.	Return over all listed Costs			1 2	3	4 5
34.	Return for $100/Feed Fed			1 2	3	4 5
36.	Price received per cwt/Market Animals			1 2	3	4 5
38.	Pigs Born Per Litter			1 2	3	4 5
39.	Pigs Weaned per litter			1 2	3	4 5
40.	Percent death loss			1 2	3	4 5
46.	Total Listed Costs/cwt					

* cwt basis unless otherwise noted

11 - B	Hog Finishing*	Above Average Below	Immediate Attention		Undecided	Satisfactory Performance	
1.	Average Number of Pigs - Herd		1	2	3	4	5
3.	Net Increase in Value of Hogs		1	2	3	4	5
7.	Lbs. Corn		1	2	3	4	5
8.	Lbs. Small Grain		1	2	3	4	5
9.	Lbs. Complete Ration		1	2	3	4	5
10.	Lbs. Protein, Salt & Mineral		1	2	3	4	5
11.	Total Concentrates		1	2	3	4	5
	Feed Cost		1	2	3	4	5
14.	Grain		1	2	3	4	5
15.	Complete Ration		1	2	3	4	5
16.	Protein, Salt & Mineral		1	2	3	4	5
19.	Total Feed Costs		1	2	3	4	5
22.	Miscellaneous Livestock Expense		1	2	3	4	5
23.	Veterinary Expense		1	2	3	4	5
26.	Total Supplemental Costs		1	2	3	4	5
32.	Total Allocated Costs		1	2	3	4	5
35.	Return for $100 Feed Fed		1	2	3	4	5
36.	Price Received Per cwt		1	2	3	4	5
37.	Average Weight Pig Sold		1	2	3	4	5
38.	Average Price Pig Bought		1	2	3	4	5
44.	Percent Death Loss		1	2	3	4	5
47.	Effective Daily Gain Points/Day/Pig		1	2	3	4	5

* cwt basis unless otherwise noted

11 - C	Weaning Pigs *	Above Average	Below	Immediate Attention	Undecided	Satisfactory Performance
2.	Net Increase in Value of Hogs			1	2 3 4	5
4.	Total Value Produced			1	2 3 4	5
6.	Lbs. Corn			1	2 3 4	5
7.	Lbs. Small Grain			1	2 3 4	5
8.	Lbs. Complete Ration			1	2 3 4	5
9.	Lbs. Protein, Salt & Mineral			1	2 3 4	5
10.	Total Concentrates			1	2 3 4	5
	Feed Cost			1	2 3 4	5
13.	Grains			1	2 3 4	5
14.	Complete Ration			1	2 3 4	5
15.	Protein, Salt & Mineral			1	2 3 4	5
18.	Total Feed Costs			1	2 3 4	5
21.	Misc. Livestock Expense			1	2 3 4	5
22.	Veterinary Expense			1	2 3 4	5
25.	Total Supplemental Costs			1	2 3 4	5
31.	Total Allocated Costs			1	2 3 4	5
34.	Return for $100/Feed Fed			1	2 3 4	5
36.	Average Price Per Pig Sold			1	2 3 4	5
93.	Number Pigs Born Per Litter			1	2 3 4	5
40.	Number Pigs Weaned Per Litter			1	2 3 4	5
41.	Percent Death Loss			1	2 3 4	5
45.	Total Listed Costs Per Litter.			1	2 3 4	5

* Per litter basis unless otherwise noted

Table 12 Dairy Cows*

		Above Average Below	Immediate Attention		Undecided		Satisfactory Performance
2.	Pounds of Milk		1	2	3	4	5
3.	Pounds of Butterfat		1	2	3	4	5
4.	% Butterfat in Milk		1	2	3	4	5
11.	Total Value Produced		1	2	3	4	5
13.	Lbs. Corn		1	2	3	4	5
14.	Lbs. Small Grain		1	2	3	4	5
15.	Lbs. Complete Ration		1	2	3	4	5
16.	Lbs. Protein, Salt & Mineral		1	2	3	4	5
17.	Total Concentrates		1	2	3	4	5
18.	Legume Hay		1	2	3	4	5
20.	Silage		1	2	3	4	5
	Feed Costs		1	2	3	4	5
22.	Grains		1	2	3	4	5
23.	Complete Ration		1	2	3	4	5
24.	Protein, Salt & Mineral		1	2	3	4	5
25.	All Hay and Dry Roughage		1	2	3	4	5
26.	Silage		1	2	3	4	5
28.	Total Feed Costs		1	2	3	4	5
31.	Miscellaneous Livestock Expense		1	2	3	4	5
32.	Veterinary Expense		1	2	3	4	5
35.	Total Supplemental		1	2	3	4	5
41.	Total Allocated		1	2	3	4	5
44.	Return for $100 Feed Fed		1	2	3	4	5
45.	Feed Cost Per cwt Milk		1	2	3	4	5
46.	Feed Cost Per Pound Butterfat		1	2	3	4	5
48.	Average Price Per cwt Milk Sold		1	2	3	4	5
50.	Total Listed Costs Per cwt Milk Produced		1	2	3	4	5

* Per cow basis unless otherwise noted

Table 13 Other Dairy Cattle*

		Above Average	Below	Immediate Attention	Undecided	Satisfactory Performance		
2.	Net Increase in Value			1	2	3	4	5
4.	Total Income			1	2	3	4	5
6.	Lbs. Corn			1	2	3	4	5
7.	Lbs. Small Grain			1	2	3	4	5
8.	Lbs. Complete Ration			1	2	3	4	5
9.	Lbs. Protein, Salt & Mineral			1	2	3	4	5
10.	Lbs. Hay and Dry Roughage			1	2	3	4	5
11.	Silage			1	2	3	4	5
	Feed Costs			1	2	3	4	5
14.	Grain			1	2	3	4	5
15.	Complete Ration			1	2	3	4	5
16.	Protein, Salt & Minerals			1	2	3	4	5
17.	Hay and Dry Roughage			1	2	3	4	5
18.	Silage			1	2	3	4	5
21.	Total Feed Costs			1	2	3	4	5
24.	Miscellaneous Livestock Expense			1	2	3	4	5
25.	Veterinary Expense			1	2	3	4	5
28.	Total Supplemental Costs			1	2	3	4	5
29.	Total Allocated Costs			1	2	3	4	5
35.	Return Over All Listed Costs			1	2	3	4	5
37.	Return for $100 Feed Fed			1	2	3	4	5
38.	Percent Death Loss			1	2	3	4	5
39.	Percent Calf Death Loss			1	2	3	4	5
40.	Total Listed Costs			1	2	3	4	5

Table 15 A Beef Breeding Cattle *

		Above Average Below	Immediate Attention	Undecided	Satisfactory Performance
3.	Pounds Beef Produced - Head Total		1 2	3	4 5
4.	Net Increase in Value		1 2	3	4 5
6.	Total Value Produced		1 2	3	4 5
8.	Lbs. Grain		1 2	3	4 5
9.	Lbs. Protein, Salt & Mineral		1 2	3	4 5
10.	Lbs. Legume Hay		1 2	3	4 5
11.	Lbs. Other Hay & Roughage		1 2	3	4 5
12.	Lbs. Silage		1 2	3	4 5
	Feed Cost		1 2	3	4 5
14.	Grain		1 2	3	4 5
15.	Protein, Salt & Mineral		1 2	3	4 5
16.	Legume Hay		1 2	3	4 5
17.	Other Hay & Roughage		1 2	3	4 5
18.	Silage		1 2	3	4 5
20.	Total Feed Costs		1 2	3	4 5
23.	Miscellaneous Livestock Expense		1 2	3	4 5
24.	Veterinary Expense		1 2	3	4 5
27.	Total Supplementary Costs		1 2	3	4 5
33.	Total Allocated Costs		1 2	3	4 5
34.	Return Over All Listed Costs		1 2	3	4 5
36.	Return for $100 Feed Fed		1 2	3	4 5
38.	Price Per cwt Calves Sold		1 2	3	4 5
40.	Average cwt Per Calf Sold		1 2	3	4 5
42.	% Calf Crop - Herd		1 2	3	4 5
43.	Total Listed Costs Per Cow		1 2	3	4 5

* Per cow basis unless otherwise noted.

Table 15 B Feeder Cattle*

		Above Average		Below	Immediate Attention		Undecided		Satisfactory Performance
2.	Lbs. of Beef Produced - Herd Total				1	2	3	4	5
3.	Net Increase in Value				1	2	3	4	5
5.	Total Value Produced				1	2	3	4	5
7.	Lbs. Grain				1	2	3	4	5
8.	Lbs. Proteins, Salt & Mineral				1	2	3	4	5
9.	Lbs. Legume Hay				1	2	3	4	5
10.	Lbs. Other Hay & Roughage				1	2	3	4	5
11.	Lbs. Silage				1	2	3	4	5
	Feed Cost				1	2	3	4	5
13.	Grain				1	2	3	4	5
14.	Protein, Salt & Mineral				1	2	3	4	5
15.	Legume Hay				1	2	3	4	5
16.	Other Hay and Roughage				1	2	3	4	5
17.	Silage				1	2	3	4	5
19.	Total Feed Cost				1	2	3	4	5
22.	Miscellaneous Livestock Expense				1	2	3	4	5
23.	Veterinary Expense				1	2	3	4	5
26.	Total Supplemental Costs				1	2	3	4	5
32.	Total Allocated Costs				1	2	3	4	5
33.	Return Over Listed Costs				1	2	3	4	5
35.	Return for $100 Feed Fed				1	2	3	4	5
36.	Price Per cwt Sold				1	2	3	4	5
37.	Average Weight Per Head Sold				1	2	3	4	5
38.	Price Per cwt Bought				1	2	3	4	5
41.	% Death Loss				1	2	3	4	5
42.	Effective Daily Gain				1	2	3	4	5
43.	Total Listed Cost Per cwt Produced				1	2	3	4	5

* cwt basis unless otherwise noted

Table_____ _____Livestock Enterprise

	Above Average	Below	Immediate Attention	Undecided	Satisfactory Performance
_____ Net Increase in Value			1	2 3	4 5
_____ Total Value Produced			1	2 3	4 5
_____ Lbs. Grain			1	2 3	4 5
_____ Lbs. Protein, Salt and Mineral			1	2 3	4 5
_____ Lbs. Legume Hay			1	2 3	4 5
_____ Lbs. Other Hay			1	2 3	4 5
_____ Lbs. Silage			1	2 3	4 5
_____ Lbs. Other Feed or Media			1	2 3	4 5
Feed Cost			1	2 3	4 5
_____ Grain			1	2 3	4 5
_____ Protein, Salt and Mineral			1	2 3	4 5
_____ Legume Hay			1	2 3	4 5
_____ Other Hay and Roughage			1	2 3	4 5
_____ Miscellaneous Livestock Expense			1	2 3	4 5
_____ Veterinary Expense			1	2 3	4 5
_____ Total Supplemental			1	2 3	4 5
_____ Total Allocated			1	2 3	4 5
_____ Return Over Listed Costs			1	2 3	4 5
_____ Return For $100 Feed Fed			1	2 3	4 5
_____ Price Per Unit Sold			1	2 3	4 5
_____ Number Young Born/Female			1	2 3	4 5
_____ Replacement Cost Per Unit			1	2 3	4 5
_____ % Death Loss			1	2 3	4 5
_____ Total Listed Cost Per Unit			1	2 3	4 5

APPENDIX B

F I R S T T H I N G S F I R S T

1. What are the major strong points of our business?

   1.

   2.

   3.

   4.

   5.

   6.

   7.

   8.

   9.

   10.

2. What are the major weak points in our business which need immediate attention? - (List in order of priority)

   1.

   2.

   3.

   4.

   5.

   6.

   7.

   8.

   9.

   10.

A. What have we done in the past to strengthen or eliminate them?

B. What can we do in the future?

3. What other changes in practices, enterprises or machinery and equipment utilization did your analysis report indicate should be done? Should not be done?

Should	Should not

4. Were there any unusual circumstances which would make last years analysis an untrue picture of your farm business?

UNIT II - 11

INCOME TAX PLANNING AND MANAGEMENT

PART I. Student Objectives

A. The student will complete a tax estimate for his current year's operation.

B. The student will compare the estimate with previous year's tax returns and expected future income.

C. The student will plan the best course of action to maximize average after tax income.

PART II. Transition of Units

The previous unit described methods for evaluating the farm operation and procedures to strengthen points which were identified as problems and to capitalize on the identified strengths of the business.

Since income tax has become a problem for many farmers due to the inflationary nature of the tax structure, a tax management session should be considered before the close of each business year so after-tax income can be maximized. This session is very similar to session 12 in the Farm Management Course of Study, Volume I.

The following session will be on the close out of the farm accounts for analysis. Having the records up to date for the tax management is invariably helpful for a rapid and accurate closeout of the records.

PART III. The Lesson

Attention Focuser

Place the formula $V = P(1 + i)^N$ on the chalkboard. Ask the class what $100 saved in taxes this year would be worth at the end of one year if it was put into a hog operation which was returning 10% per year. $100(1 + 10)^1 = \$110$. Ask what that same $100 would be worth if it continued to return 10% for the next 20 years. $100(1 + .10)^{20} = 100 \times 6.727 = \$672.70$. If $100 is paid in taxes, it has a potential of generating 0 income for the operation in one year or 20 years. Point out that with income in the $20,000 to $30,000 bracket that the marginal tax rate for state and federal could be as high as 50%. Thus, for every $200.00 that income is leveled off, $100 of tax would be saved.

KEY QUESTION 1. How can we best estimate our income and expenses for the year?

Sources of information for the tax estimate should be the family's Account Book, including inventories on hand and also the cash flow budget that was established earlier in the year and which has been updated each month.

A comparison of actual income this year with the prior years business records will provide a means to determine the trends and variations in annual earnings. Calculating current income is simple. The Account Book contains the income and expenses to date. If there is a little difference between the current years actual and budgeted cash flow accounts, the cash flow budget may be used as as estimator of income and expense between the time of the estimate and the end of the business year. This estimate must be tempered with knowledge of inventories on hand which will or could be sold before the end of the year. Accounting for inventories is especially important if the actual and budgeted accounts are very different as may occur on cash grain farms where products can be stored.

A listing of all income and expense totals to date from the Account Book is necessary. The worksheet included in the Appendix lists these totals on a page by page basis so none will be omitted. When the total of current and potential farm income has been determined, the farmer is in a position to compare this to previous years and what he might estimate for future years and make tax management decisions accordingly.

Suggested Teaching Strategy

Have each family enter on the work sheet the totals from their farm account book. As was mentioned in the previous session, they should have their books up to date and possibly subtotaled before they come to class. Also, inventories of remaining grain and livestock which could be sold before the end of the year as well as operating accounts and expenses which must be paid should be brought in.

A review of the publication Income Tax Management for Farmers, highlighting the key areas and a brief review of the methods of depreciation will be useful to the students. Current tax information is also available in the IRS publication, the Farmers Tax Guide.

Once the class has completed the first section of the worksheet they will have questions about the types of maneuvers which can be made to level off income. Since each person's business differs from the next persons, only general principles should be discussed. Postpone specifics until the At-The-Farm activity.

KEY QUESTION 2. What methods can be used to maximize average after-tax income?

The operator's goal should not be to pay the least amount of taxes in any given year but to level off income between years so a relatively equal amount of tax will be paid resulting in an overall lower tax obligation than that created by fluctuating income.

Once the operator has completed the worksheet to determine his income at the time of the tax estimate, he must then consider what his income has been in previous years and what it might be in future years. The former is easy to determine since this information is available in the previous year's records. The latter, because of uncertainty in markets, production, weather, financial arrangements and many other factors, is not as easy to estimate. However, it is essential he review his goals and trends in his business to obtain an estimate of whether income is likely to be higher or lower in future years.

Once the operator has determined if this is a peak year for him, or a year in the middle of an upward trend or a year when income is much lower than normal, he can take the appropriate action to balance net farm income to maximize long term after tax income. Guidelines for the various courses of action can be found in the publication Income Tax Management for Farmers and also in Doanes Farm Management Guide.

Suggested Teaching Strategy

Review with the class the tax consequences of having a widely fluctuating income versus a level or upward trending income. Pass out to each student the publication Income Tax Management for Farmers. Discuss the section under Tax Management Tips. The section in Doanes listed under End of Year Tax Management gives additional information about the IRS view of various tax moves.

PART IV. Summary

1. The goal of every family should be to maximize after tax income.

2. A worksheet showing the present status of income and expense should be completed early enough to allow end of the year buying and selling to be advantageous.

3. Comparisons should be made with previous year's tax returns and expected future income.

4. The plan of action formulated should stabilize income over the years and reduce wide fluctuations which impose high tax rates in peak income years.

PART V. At-The-Farm Activities

The instructor should go over the worksheet with the family and estimate what the tax bill will be if no action is taken. Help the family to recognize what alternatives are available after evaluating inventories on-hand, trends in income over the past years and what their goals for the business are. The tax situation should be estimated again after the family selects the apparent "best" course to see what the tax and other management implications are.

PART VI. Resources

Chalkboard/Overhead Projector, Calculators
Transparencies of Appendices A, B
Class quantities of Appendix B, Tax estimating worksheet
Families Account Book, Cash Flow Sheet
Class quantities - Income Tax Management for Farmers
Class quantities - Farmers Tax Guide

PART VII. References

Doane's Farm Management Guide. 12th ed. Doane Agricultural Service, Inc., St. Louis, Mo., 1978

Hopkin, Barry Baker. Financial Management in Agriculture. Danville, Ill., The Interstate, 1973.

Weigle, Brown, Smith. Income Tax Management for Farmers. North Central Regional Extension. Publication No. 2. Agriculture Extension Service, current year.

The Farmer's Tax Guide. Publication 225. Washington, D. C.: Internal Revenue Service, current year.

PART VIII. Appendices

A. $100 Saved

B. Tax estimate worksheet

APPENDIX A

$100 Saved

$$V = P (1 + i)^N$$

$$100 (1 + .10)^{20}$$

$$=$$

$$100 (6.727)$$

$$=$$

$$\$672.79$$

INCOME TAX WORKSHEET
Montevideo Agri-Business Dept.
Farm Management: Rev. 11/78

Name _____

Year _____

FARM INCOME:

Dairy Products, p. 2, col. 11 _____

Other Dairy Cattle Sold, p. 9, col. 25 (if held less than 24 months) _____

Market Hogs Sold, p. 17, col. 14 _____

Sheep Sold, p. 19, col. 24 (if held less than 12 months) _____

Wool Sold and government wool payments, p. 19, col. 31 _____

Eggs Sold, p. 21, col. 27 _____

Chickens Sold, p. 21, col. 20 _____

Crops Sold, p. 37, col. 26 (includes gains from sealed grains, hail insurance adjustments, Gain or Loss from Hedging Transactions, etc.) _____

ASC Diverted Acre Payments, Federal Crop Ins. Income, p. 37, col. 26 _____

Gas Tax Refunds, p. 45, col. 35 _____

Work off the farm by Operators Labor and Machinery, p. 55, col. 16 (do not include wage income from full or part time jobs) _____

Coop Dividends, p. 55, col. 3 (do not include REA dividends) _____

Miscellaneous Farm Income, p. 55, col. 11 (include grain storage, conservation payments received, insurance settlements, etc.) _____

Other Farm Income (describe) _____

A. Total Cash Farm Income -(A)$_____

B. Sales of Livestock Purchased for Resale (feeder cattle, feeder pigs, feeder lambs, etc.)

Description	Date Bought	Gross Sales	Purchase Cost	Profit

Total Profit from Sales of Purchased Livestock - - - - - - - -(B)$_____

C. Total Cash Income: (Cash Farm (A) + Purchased Livestock (B) = C)- - - - - - - - - - - - -(C)$_____

FARM EXPENSES:

Chickens bought, p. 20, col. 26 _____

Veterinary and Medicine, p. 25, col. 16 _____

Miscellaneous Livestock Supplies, p. 25, col. 16 (include dairy supplies, advertising, and insurance from page 3, milk check expenses) _____

Feed Bought, p. 28-31 (include sealed or CCC grains bought back for feed) _____

Fertilizer, p. 38, col. 5 _____

Chemicals, p. 38, col. 5 _____

Other crop expenses, p. 39, col. 19 (include seed, twine, hail ins., acreage measurements, L.O. Gas for crop drying) _____

Custom work hired, p. 40, col. 3 (include also milk hauling from p. 2, and trucking and commissions transfered from the livestock pages) _____

Livestock equipment repair, p. 51, col. 72 _____

Real estate repair and upkeep, p. 41,col. 13 (farm share only) _____

Real estate and property taxes, p. 43, col. 12 _____

Cash rent, p. 43 col. 18 _____

Gas, Oil & Grease, p. 45 col. 20 farm share (make allowance for difference if mileage rates are taken for farm auto and pickup) _____

Farm Truck Expense, p. 51, col. 66 (farm share only) _____

Auto & Pickup Expense, p. 51, col. 67, 68, 69 (farm share of actual expense or mileage rate for farm use of auto/pickup.) _____

Repair and operation of tractor and crop machinery, p. 51, col. 71 _____

Farm supplies, p. 51, col. 70 (this may be included in repair and operation of machinery if not kept separate) _____

Farm wages, p. 53, col.6 (include wages paid to dependent children) _____

Meals and room for hired help, p. 53, col. 31 _____

Electricity Expense, p. 54, col. 12 (farm share only) _____

Telephone Expense, p. 54, col. 16 (farm share only) _____

Farm insurance (farm liability, fire, wind) p. 54, col. 3 _____

Fees and dues, p. 54, col. 3 _____

Farm magazines and papers, p. 54, col. 3 _____

Gen. Miscellaneous p. 54, col. 3 (lock box rent, overnight business expense, et.) _____

Interest Expense, p. 56, col. 12 _____

Other Farm Expense (describe) _____

D. TOTAL CASH FARM EXPENSE - (D) $_____

E. DEPRECIATION (use last years depreciation adjusted for current year purchases - (E) _____

F. Other Farm Deductions (describe) - - - - - - - - - - - - - - - - - (F) _____

G. Total Farm Expense (D + E + F) - - - - - - - - - - - - - - - - - - (G) _____

H. Net Farm Profit (Total Income C minus Total Expense (G) - - - -(H)$ _____

I. Social Security (Net farm profit x .081, maximum is $1393.20 -(I)$ _____

J.*Income from the sale of breeding livestock eligible for capital gains treatment.

Description	Date Bought	(1) Sale Value	(2) Cost	(3) Depreciation Claimed	(4) Adjusted Basis	(5) NetGain or Loss	(6) Ordinary Income	(7) Cap. Gain or Loss
						Totals		

K.* Income from sale of machinery, equipment, real estate, etc. Qualifying for capital gains treatment

Description	Date Bought	(]) Sale Value	(2) Cost	(3) Depreciation Claimed	(4) Adjusted Basis	(5) NetGain or Loss	(6) Ordinary Income	(7) Cp. Gain or Loss
						Totals		

*(4) Adjusted basis = (2) - (3)
(5) Net Gain = (1) - (4)
(6) Ordinary Gain = Smaller of (3) or (5)
(7) Capital Gain = (5) - (6)

L. Gain or loss from sale of breeding stock or other capital assets not qualifying for long term capital gains.

Description	Date Bought	Sale Value	Cost	Depreciation Claimed	Adjusted Cost	Net Gain or Loss
					Total Net Gain or Loss	

Net Farm Profit (H) -$_____

Taxable profit/long term breeding stock sale (J) Ordinary J-Col.6 _____
Cap.Gain40%-Col.7 _____

Gain or Loss on Machinery Sales (K) - - - - - - Ordinary K-Col.6 _____
Cap.Gain40%-Col.7 _____

Taxable profit from short term breeding stock sales (L) - - - - - _____

Investment Income (M) p. 57 - - - - - - - - - - - - - - - - - - - _____

Non-farm Income (wages, tips, etc, wife's income) (N) p. 58 - - - _____

O. TOTAL ADJUSTED GROSS INCOME (H + J + K + L + M + N) - - - - - - - _____

Standard Deduction: Flat amount for 1978 (single taxpayers is $2200.00, Married taxpayers filing Jointly is $3200.00) - - - - _____

Minus exemptions for dependents ($750 x number of dependents) - - _____

Taxable Income (Adjusted gross (O) minus standard deductions minus dependents) - _____

Total Tax from tax tables - _____

Minus (-) Investment Credit - _____

Plus (+) investment credit repay (recapture) - - - - - - - - - - - _____

Plus (+) social security from (I) - - - - - - - - - - - - - - - - - _____

Minus (-) Federal gas tax credit - - - - - - - - - - - - - - - - - _____

Minus (-) General tax credit ($35.00 per Dependent or 2% of adjusted Gross income up to $180.00 maximum on Joint Return - - - - - - - _____

Equal Total Estimated Federal Income Tax - - - - - - - - - - - - - _____

CAPITAL ASSETS Purchased in 1978 (includes machinery, equipment, auto, truck, land buildings, depreciable livestock), from page 42.

DATE BOUGHT	DESCRIPTION	CASH PAID	SALES TAX	ITEM TRADED

Unit II - 12

CLOSING THE ACCOUNT BOOK FOR ANALYSIS

PART I. Student Objectives

A. Given the list of items which are prerequisties of closing the farm account book for analysis and an explanation of each item, the families will be able to identify the importance of each item to the closing procedure.

B. Given the Checklist For Closing The Farm Account Book the Livestock Report (F.A. 12), the Crop and Feed Check, the Cash Check, and the Supplementary Information Form (F.A. 51), the families, with a considerable amount of assistance from the instructor, will be able to accurately and completely close the account book for analysis.

PART II. Transition of Units

The previous unit assisted families in making an estimate of their income tax liability for the year. With two years of good business records, this task should have been fairly simple. If account books were up to date, this months session should be easy for farmers to complete.

This session is the same as Year I-15. A new checklist has been provided which corresponds to The Account Book, 5th edition. Since the accuracy of the analysis depends on the accuracy of the close-out procedure, the instructor should use every precaution to make sure all entries are accurate and complete. Because of the accuracy needed, the instructor may wish to offer this session several times over a period of two weeks and allow members of all groups to attend any sessions. This encourages attendance since there is less chance of conflicts for all people on all of the nights. Also, it is helpful to the new student since some of the long time participants may have questions on problems the newer students are unaware of.

The unit which follows will again address family goals. Two years have transpired since families were encouraged to establish a written set of goals. During that time a number of changes should have occurred in each business. Families will be especially interested in checking their progress toward goals and adjusting goals to refect new directions for the family and the farm.

PART III. The Lesson

Attention Focuser

As families arrive, hand each a packet or folder that contains all of the information needed to close out the account book for the year. Ask each family to complete the family information portion of FA 51-Supplementary Information form, and compute the adult equivalents in the family.

KEY QUESTION 1. What forms or data are necessary to close the account book for analysis?

1. End-of-the-Year Inventories
2. Checklist for Closing The Farm Account Book
3. Livestock Report, F.A. 12
4. Crop and Feed Check
5. Cash Check
6. Supplementary Information Form, F.A. 51

Suggested Teaching Strategy

Families should each have their account book, End-of-the-Year Inventories, Checklist for Closing the Account Book (Appendix B; this unit), Livestock Report, F.A. 12 (Appendix of Unit I-8), Crop and Feed Check (Appendix of Unit I-9), Cash Check (Appendix C; this unit), and the Supplementary Information Form, F.A. 52 (Appendix D; this unit). Give a brief explanation of the importance each item holds for the close-out procedure.

KEY QUESTION 2. How do you accurately and completely close the account book for analysis?

The Checklist for Closing the Account Book has been designed to cover both major and minor points in closeouts. However, since the checklist only includes the most frequently missed items you, of course, should complete any other items in the book that are obvious.

Suggested Teaching Strategy

Have each family follow the checklist as they check their Farm Account Book for completeness and accuracy. Lead the class through the checklist -- making appropriate references to the other closeout forms and the account book -- and answer questions as they occur. It will not be possible to complete all of the closeout documents in class, but many questions can be answered for the benefit of all.

Appendix C, "Making a Cash Check of Your Accounts" is a valuable tool in determining the cash reliability of the account book. It has been said that a "difference" between receipts and expenses of 1% of gross

receipts is excellent. When the families have their account books totalled you should recommend that they complete a cash check utilizing this form.

Since this is a work session, families should be encouraged to begin the systematic closing of their account while in class. They should be directed to complete the close-out forms in the same order they are listed in Key Question 1. Special emphasis should be placed on the tolerance for error in the various close-out forms. Remind families that all livestock and all crop, seed and feed should be accounted for. While there is some tolerance in the cash check, accuracy is important. Each family should establish their own error level and try to account for as much cash as possible.

KEY QUESTION 3. How do you use PCAF, BCAF & ECAF designations, and what effect do they have on the analysis?

Power Cost Allocation Factor. Each enterprise table reports the power and machinery costs allocated to each crop or livestock enterprise. The basic unit for making the allocation is the work unit listed in the master crop list and the master livestock list. Studies have proven that in very typical farm operations where the common agronomic crops are grown and common livestock enterprises are raised under intensive conditions, this procedure works very well. However, on farms where the power and machine use is atypical or where the crop is unusual, the work unit method of allocation is not as effective as it should be. Likewise, livestock enterprises that are not common or are raised under less intensive conditions may require modification of the allocation process by use of the PCAF. The power cost allocation factor is for the purpose of modifying the work unit for use in the allocation process.

Values for the power cost allocation factor (PCAF) can range from 10.00 to .01. Thus a crop of livestock enterprise can be charged with as much as 10 times the power and machine cost as the work unit indicates or as little as 1/100 of the normal work unit allocation. (In some cases PCAF can be .00 when no costs should be charged.)

Instructors and their clients must decide for each farmer and for each enterprise if the work unit is a good representation of the power and machine cost to be allocated. If they decide that the work unit as defined in the master crops list and master livestock list is appropriate, then the PCAF should be reported as 1.00. If it is not a good allocation factor in comparison to other enterprises grown by that farmer, the PCAF must be either greater or less than 1.00.

Examples of when the PCAF should be less than 1.00 (Not all inclusive).

Custom Work Used to Harvest Crop. If custom hire was used to harvest the crop, the PCAF should reflect the proportion of the total machine use completed by custom hire. For example, if the farmer determined that custom harvest accounts for 20% of the total machine use on a particular crop, he would report a PCAF of .80.

Reduced Harvest. If normal practice is to take three cuttings of alfalfa, and the farmer only takes 2 cuttings, he may decide that his power and machine cost should be reduced by 10 percent. He would then report a PCAF of .90.

Crop with High Labor-Low Machine Inputs. If the farmer grows strawberries, for example, which carries a work unit designation of 35 per acre, he may decide that the acre of berries required only 7 hours of machine time or only 2% of the time designated by the work unit. He then would assign a PCAF of .02 to the strawberries.

Double Cropping. When the same land is used to produce two crops in the same year, it is unlikely that the full range of tillage operations would be performed on the second crop. In that event, the PCAF would be reduced to reflect lower costs.

Extensive Livestock Enterprise. A beef cow herd raised under range conditions may make little use of power and crop machinery. Thus the PCAF may be adjusted downward to reflect less use than would be assigned if the work unit designation were not adjusted by PCAF.

Caution. Reducing the PCAF on selected crops and livestock enterprises will increase the dollars assigned to power and machinery costs to the other crops and livestock. If the PCAF is reduced by the same proportion on all crops and livestock the dollars assigned to power and machinery will be the same as if no modification was made in the work unit. The PCAF should be less than 1.00 only when there is a logical reason for making the reduction and then it should be done only on selected crop and livestock enterprises.

Examples of when the PCAF should be greater than 1.00 (Not all inclusive).

Unusual Tillage Practice. Acts of God. When a crop required an unusual tillage operation, for example, replanting due to freezeout or wind damage, the PCAF may be increased to reflect the added expense. If harrowing and seeding were required for the second time, the farmer may decide to increase the power allocation by 15%. Thus the PCAF would be reported as 1.15.

Unusual Tillage - Soil Conditions. If the soil type is unusual so that it requires measurably more tillage than would normally be required, the PCAF should reflect the increased machine use. For example, if the field required 2 additional tillage operations the farmer may choose to record an additional 18% power and machine cost to that crop; thus he would record a PCAF of 1.18.

Additional Harvest. When crop residue is harvested for forage or bedding, the PCAF may be adjusted to reflect a greater power and machine cost than that recorded for crops where residue is not harvested. This factor is important when the value of crop residue harvested is included in the other crop income as a means offsetting the added income.

Livestock. In some instances, a livestock enterprise may utilize an inordinate amount of power and machine expense. In these cases, the PCAF should be adjusted upward. Users should be reminded that livestock work units are assessed only 1/10 - 1/12 the amount of power and machine costs assigned to crop work units.

Caution. Increasing the PCAF on selected crop and livestock enterprises will reduce the dollars assigned to other crops and livestock. Increasing the PCAF proportionately on all crops and livestock to reflect excess machine use on the farm will result in the same power and machinery charges that would have been listed had the PCAF been recorded as 1.00.

BCAF - Building Cost Allocation Factor. Serves to adjust the allocation of the net costs of owning and operating buildings between the two general categories of "crops" and "livestock" and further to allocate building costs among the livestock enterprises.

BCAF must be assigned to each livestock reported for analysis and to the crop category. The values are reported in whole numbers ranging from 0 to 10. BCAF modified the work unit as an allocation factor and serve to stimulate thought on its proper use.

Example: Net costs of owning and operating buildings, fences and tiling from Table 3 in the Farm Business Analysis, is $2100.

Enterprises	Total W.U. Assigned	$ Assignment W/O BCAF
Dairy	100	700
Other Dairy	50	350
Complete Hogs	50	350
Crops	100	700

If the farmer, in assessing his building determined that the hog and crop facilities contributed proportionately more to costs than did the dairy facilities, he may adjust the allocation by using the BCAF factor on a scale of one to ten.

	Values	Dairy	Other Dairy	Hogs	Crops
High	9-10				9
Above Average	7-8			7	
Average	4-6	5			
Below Average	2-3		3		
Low	0-1				

The building costs would be assigned as follows.

Enterprises	Total W.U.	BCAF	Adjusted W.U.		Cost/Enterprise
Dairy	100	5	500	(1)	552.63
Other Dairy	50	3	150	(2)	165.78
Complete Hogs	50	7	350	(3)	386.85
Crops	100	9	900	(4)	994.74
			1900		2100.00

(1) $\frac{500}{1900} \times 2100 = 552.63$

(2) $\frac{150}{1900} \times 2100 - 165.78$

(3) $\frac{350}{1900} \times 2100 = 386.85$

(4) $\frac{900}{1900} \times 2100 = 994.74$

The BCAF information for completing the data sheets should be taken from the supplementary information form. It must be recorded in whole numbers only. A BCAF must be assigned to crops.

ECAF. The ECAF allocation process is identical to that used for building costs except that crops are not considered in allocating livestock equipment costs. The same 0-10 scale applies and is determined in the same manner as previously illustrated for building costs.

Failure to record a BCAF or ECAF value will result in no allocation of buildings and equipment costs to livestock. If the column is left blank, a zero will automatically be input at the computer center.

Suggested Teaching Strategy

Use the narrative under this Key Question to explain the PCAF, BCAF and ECAF designators. Utilize Appendix E to show the effect of a BCAF modification on enterprise analysis. Bring in examples from last year's analysis to illustrate the effect of assigning an appropriate cost evaluation factor.

PART IV. Summary

A. It is important for families to familiarize themselves with the necessary preparation for closing the Minnesota Farm Account Book for Analysis.

B. It is essential that a systematic closing procedure is followed by families to assure accuracy and completeness. This can best be done by using the Checklist for Closing The Farm Account Book.

PART V. At-The-Farm Activity

It may take more than one visit to accomplish the final closeout of the account book and additional forms to be forwarded to the analysis center. Some instructors have utilized a procedure of having "small group" closeout sessions. This can work well for families that need moderate or little direct assistance, and can work well with just a few instructions.

The final closing sessions should be devoted to attaining the highest degree of accuracy possible with the farm account. Follow a step-by-step procedure of closeout to insure that no important information is overlooked. The final closeout should include the completion of Checklist for Closing the Farm Account Book, the Crop and Feed Check, the Livestock Report (F.A. 12) and Supplementary Information Form (F.A. 51). It would also be desirable to complete a Cash Check as a measure of record accuracy.

PART VI. Resources

Overhead Projector & Chalkboard
Handout of Appendices A, B, C, D, E
Handouts of Livestock Report Form, F.A. 12 (Appendix; Unit I-8)
Handout of Crop and Feed Check (Appendix; Unit I-9)

PART VII. References

Checklist for Closing The Farm Account Book
Supplementary Information, F.A. 51
Minnesota Farm Account Book, Burgess Publishing Co., Minneapolis, MN
Livestock Report, F.A. 12
Crop and Feed Check

PART VIII. Appendices

A. Necessary Prerequisites to Closing the Account Book for Analysis
B. Checklist for Closing The Farm Account Book
C. Making A Cash Check of Your Accounts
D. Supplementary Information Form
E. BCAF Adjustment Example
F. Crop and Feed Check
G. Livestock Report

APPENDIX A

NECESSARY PREREQUISITES TO CLOSING THE ACCOUNT BOOK FOR ANALYSIS

1. End-of-the-Year Inventories
2. Checklist for Closing the Minnesota Farm Account Book
3. Livestock Report, F.A. 12
4. Crop and Feed Check
5. Making a Cash Check of your Accounts
6. Supplementary Information Form, F.A. 51

1978

Name _____

Date _____

CHECKLIST FOR CLOSING THE FARM ACCOUNT BOOK

"Closing" the Farm Account Book is the term that is used in making the final entries in the book at the end of the year in preparation for a farm business analysis. In addition to the "closed" account book three forms are completed and turned in with your book. These are the "Crop and Feed Check," Form F.A. 11; the "Livestock Report," F.A. 12; and the "Supplementary Information," F.A. 51. These forms are used to check on the completeness and accuracy of various sections of the records. Care should be taken that all figures used on these forms are taken directly, and exactly from the farm account book. If this is not done, the forms do not serve the purpose of promoting accuracy. Also, make CERTAIN that beginning inventories of all items - Livestock Feed and Non Farm Assets - is exactly the same as the ending from last year. If a change has been made, please explain.

It is not a difficult job to "close" the Farm Account Book, but it does take time. The main deficiency is not usually incorrect entries, but rather missing items. For this reason, the following checklist has been prepared to help you check on the completeness of your book.

Read each of the items on the checklist as you are going through your account book. If you have the page or item complete, place a check (x) in that blank space. If the item does not apply to your business, place a zero (0) in the blank space. For example: if you don't have dairy cows, place a zero for pages 2-3, 4-5, 6-7, 8-9. When you have every blank space filled, the book should be complete. Since this list only includes the most frequently missed items you, of course, should complete any other items in the book that are obvious.

Pages 2-3 -- Dairy

Have you entered:

_____ Milk and cream used in the home - Cols. 2-3. Is milk in quarts? Cream in pints?

_____ Milk fed to calves - Cols. 4-5. Is milk recorded in gallons?

_____ Amount (Cols. 8 & 10) and value (Col. 11) before any deductions from milk sold.

_____ Landlord's share of milk sold (Col. 13).

_____ Have you entered hauling expense and other deductions (Col. 14, Page 2 through Col. 12, Page 3) for each pay period of the year? Is each deduction clearly identified?

Pages 4-5 -- Dairy

_____ Number, weight and value of all COWS butchered?

_____ Does Item 1, Col. 7, Page 4, agree with Col. 8 total, Page 5?

_____ Does Col. 18 (last line), Page 4, agree with Col. 13 total, Page 5?

_____ Number and value for heifers freshened, Col. 2-3, Page 5.

_____ Number, WEIGHT, and value for transferred, Col. 4-5-6, Page 5.

_____ Dates, number and value of cows bought, Col. 19-24, Page 4.

_____ Dates, number and value of cows sold, Col. 17-28, Page 5.

_____ Number, total value, operator's and landlord's share beginning inventory of dairy cows, Col. 7-11, Page 5.

_____ Number, total value, operator's and landlord's share end of year inventory of dairy cows, Col. 12-16, Page 5.

Pages 6-7 -- Dairy

_____ These pages are for your personal record of individual cows. Have you transferred these TOTALS to Page 5?

Pages 8-9 -- Other Dairy

_____ Number, weight and value of other dairy (Not Cows) butchered, Cols. 3-5.

_____ Heifers fresh, number and value (Cols. 7-8). Does this agree with Cols. 2-3, Page 5?

_____ Transferred to feeders NUMBER, WEIGHT, and value, Cols. 9-11.

_____ Do Cols. 13 (Page 8) + 16 (Page 9) + calves born (Line 3, Page 9) = Cols. 22 (Page 9) + 7 (Page 8) + Col. 9 (page 8) + calves died (Line 8, Page 9) + others died (Line 9, Page 9) + Col. 3 (Page 8) + Col. 19 (Page 8)?

Pages 10-11 -- Beef Breeding

_____ Are all entries complete with Number, Weight and Value?

Pages 12-13-14-15 -- Feeders

_____ Do you have Number, Weight and Value for all entries?

Pages 16-17 -- Hogs

_____ Cols. 1-5, Page 16, hogs butchered - number, live weight and value.

_____ Col. 18, Page 16, number farrowing each month.

_____ Col. 19, Page 16, number born each month.

_____ Cols. 20-21, Page 16, number died each month (except breeding stock over six months of age).

_____ Cols. 7-9, Page 16, Number, weight and value of hogs on beginning inventory.

_____ Cols. 12-14, Page 16, number, weight and value of hogs on ending inventory.

_____ Cols. 36-41, Page 16, number, WEIGHT and value of pigs bought.

_____ Are breeding hogs sold shown in Cols. 3-8 (Page 17) (including number, weight and value)?

_____ Are market hogs sold shown in Cols. 11-16 (Page 17) (including number, live weight and value)?

Pages 18-19 -- Sheep

_____ Are Cols. 6-8, Page 18, complete?

_____ Are inventories complete with number, weights and values?

_____ Pounds of wool sold, Col. 30, Page 19.

Pages 20-21 -- Chickens

_____ Number and value of birds on beginning and ending inventories.

_____ Hens butchered, (Cols. 13-14-15, Page 20).

_____ Other chickens butchered, (Cols. 16-17-18, Page 20).

_____ Eggs used (Cols. 19-20, Page 20).

_____ Chickens sold, number and value (Cols. 16-20, Page 21). (Are they identified as hens or others?)

_____ Do you have dozens indicated for all egg sales?

Pages 24-25 -- Misc. Livestock Expense

_____ Have sub-totals been carried over from Page 3?

_____ Are livestock enterprises identified on top of sections? Are other dairy expenses separated from cow expenses?

_____ Are veterinary expenses clearly identified? "V"

Pages 26-27 -- Feed Records

_____ Have you entered number of head on pasture and days on pasture according to percent of roughage from pasture?

_____ Are all farm grown feeds allocated to livestock in the proper columns?

Pages 28-31 -- Feed Bought

_____ Are amounts and values of feed bought shown for each entry?

_____ Are commercial feeds, amount and value, shown separately from farm grains?

_____ Is the cost of grinding and other feed processing subtracted and recorded under custom work hired (Page 40)?

_____ Are feeds for various enterprises separated and identified?

_____ Are Column totals from Pages 28-31 carried to the proper place on the bottom Page 31, Columns 54-56?

Page 32 -- Crops

_____ Crops used in house, description and VALUE before processing.

Page 32 - Crop Data

_____ Does Col. 2 add up to be the actual owned acres in your farm?

_____ Does Col. 8 add up to be the actual acres rented?

_____ Is total production shown in Col. 4?

_____ Is total production including Landlord's share shown in Col. 10?

Hay in tons ___ Corn Silage in tons ___ Corn & Small Grains in bushels ___
Canning Crops in dollars ___ Diverted Acres in dollars ___

Pages 34-35 -- Crop, Seed and Feed Inventories

_____ Are amounts and values shown for each item for both beginning and end of year (including undivided share of landlord)?

Pages 34-35 -- Crops, Seed and Feed Inventories

_____ Are commercial feeds on inventory identified for enterprise: That is Dairy; Other Dairy; Hogs; Beef Breeding; Beef Feeders; etc?

Pages 36-37 -- Crops Sold

_____ Is each crop sold identified, and quantity -- hay in tons, corn and grain in bushels, canning crops in dollars -- given as well as total value?

_____ Are diverted acre payments for both operator and landlord shown in the designated place?

Pages 38-39 -- Crop Expenses

_____ Are fertilizers, crop chemicals and other crop expenses each put in the designated place in the book?

_____ Page 38, Do Cols. 8 + 9 + 10 + 11 + 12 + 13 + 14 = 5? Do Cols. 6 + 7 = 5?

_____ Page 39, Do Cols. 22 + 23 + 24 + 25 + 26 + 27 + 48 = 19? Do Cols. 20 + 21 = 19?

_____ Are expenses for corn silage separate from corn for grain?

Page 40 -- Custom Work Hired

_____ Is each job clearly identified?

_____ Do Cols. 6 + 7 + 8 + 9 + 10 + 11 + 12 = 3? Do Cols. 4 + 5 = 3?

_____ Is each Column 6-12 identified as to enterprise, NOT job done?

_____ Has milk hauling been transferred here from Cols. 14-16, Page 2?

Page 41 -- Repairs and Upkeep, Real Estate

_____ Are only real estate repairs on this page? (Supplies go on Pages 24-25)

_____ Are landlord's actual or estimated real estate repairs entered?

Page 42 -- Machinery Equipment and Real Estate Bought

_____ Is every depreciable item purchased during the year listed here?

Page 43 -- Machinery, Equipment & Real Estate Sold, Taxes & Rent

_____ Is every depreciable item sold during the year listed here?

Page 43 -- Machinery, Equipment & Real Estate Sold, Taxes & Rent (Cont.)

_____ Have you shown both 1st and 2nd half taxes?

_____ Have you shown landlord's real estate taxes (actual or estimated) on all partnerhsip and rented land?

_____ Has the household share of taxes been identified?

_____ Have you shown all cash rent expense Paid & Due for the current year?

_____ Pasture rent should be in feed bought section, Pages 28-31. Is it there?

Pages 44-45 -- Gas, Oil and Grease

_____ Is Federal gas tax credit taken on last year's tax shown as this year's income in Col. 35?

_____ Are all truck items listed in total value and also under Tractor & Machinery, Truck or Auto?

_____ Are gallons of gasoline shown for all purchases?

_____ Do Cols. 24 + 26 + 28 + 30 + 32 = 20? Do Cols. 8 + 10 + 12 + 14 + 16 = 4?

_____ Do Cols. 21 + 22 = 20? Do Cols. 48 + 49 = 47? Do Cols. 5 + 6 = 4?

Pages 46-51 -- Repair & Operation - Tractors, Crop Machinery, Trucks, Auto & Livestock Equipment

_____ Are all items shown in total value and again in Tractor, Crop Machinery, Truck, Auto or Livestock Equipment?

_____ Does the total of Col. headed Tractor, Crop Machinery, Truck, Auto and Livestock Equipment equal the Col. Total Value on all pages?

_____ Does the total of Col. headed Operators Share and Landlords Shares equal the Col. Total Value on all pages?

_____ Have the totals from Pages 46-50 been carried to Page 51, subtotal section?

Pages 52-53 -- Wages, Electricity, Telephone, Unpaid Family Labor

_____ Are hours, days or months worked clearly shown?

_____ Have you shown days of unpaid labor in Col. 27 and 30, Page 53?

_____ Days of labor boarded in Col. 28 and 31, Page 53?

_____ Is enterprise to which labor should be charged clearly shown?

_____ Have Cols. 18 + 22 + 25, Page 53 been added to Col. 10, Page 53?

Pages 54-55 -- Miscellaneous Categories

_____ Is insurance clearly identified in general farm expense?

_____ Have you clearly identified job done for "Custom and Other Farm Labor Income?"

_____ For co-op refunds have you shown total value and cash and equity?

_____ Have you deducted personal share of refunds for tax purposes? (No provision in the book for this)

_____ Have you shown % or dollars of telephone and electricity for farm business?

Pages 56-57 -- Borrowed-Debts-Assets

_____ Does Col. 3 (Page 56) + Col. 4 (Page 57) = Col. 4 (Page 56) + Col. 11 (Page 56)? (See check on Page 56)

_____ Does Col. 4 (Page 56) show everything that you owe to everyone as of December 31st?

_____ Is Interest Paid total in Col. 12 (Page 56)?

Pages 57-58 -- Non-Farm Income, Investment and Income Taxes

_____ Are both beginning and ending non-farm assets completed (Page 59)?

_____ Is all income from non-farm sources (including gifts) shown for both spouses (Page 59)?

_____ Are all life insurance premiums paid during the year in Col. 3 (Page 58)?

_____ Are income taxes, Federal, Social Security and State paid for this year shown (Page 59)?

_____ Are incomes tax refunds shown (Page 59)?

_____ Is investment income recorded (Page 59)?

Pages 59-64 -- Personal

_____ Are drugs shown separately from other medical expenses?

Yes _____ No _____ Are your personal spending accounts fairly complete?

Four Year Depreciation Schedule - (Those on Computerized Depreciation may skip this section and check only the section below)

_____ Have you entered depreciation charges this year for every item and subtracted it from the beginning value to get ending value?

_____ Has every item purchased on Page 42 been entered in your depreciation schedule with only its remaining value entered for Jan. 1 of the next year?

Four Year Depreciation Schedule (Cont.)

_____ Have you entered bare land value for your land and rented land?

_____ Have you estimated the value and depreciation of landlord's building?

Computerized Depreciation Schedule Participants

_____ Have you checked your report forms to make sure that all depreciable items purchased this year have been reported to the computer?

Yes ____ No ____ Would you be willing to keep more detailed accounts if the analysis would give you more information?

What additional information would you like your analysis to give you?

F.A. 51 (Revised 1/79) Record Year _____

SUPPLEMENTARY INFORMATION FORM

Operator's Name _____ Age _____ Address _____

Wife's Name _____ School _____

I. Family information (include operator and wife)

Members of Family	No. of Persons		Adult Equiv. Per Person		Adult Equivalent
Children Under 7 yrs.	_____	x	.4	=	_____
Children 7-12 yrs	_____	x	.6	=	_____
Girls 13-18 yrs.	_____	x	.8	=	_____
Boys 13-18 yrs.	_____	x	.9	=	_____
Woman	_____	x	.8	=	_____
Men	_____	x	1.0	=	_____
TOTAL:	_____		TOTAL:		_____

II. Farm Labor Information

Days of hired labor, day labor _____ days
Months of labor hired, monthly basis _____ months
Hired labor boarded by operator @$2.00/day $_____
Hired labor boarded by partners @$2.00/day $_____
Unpaid family labor, ____days @ $10.00 $_____
Unpaid family labor, ____months @ $250.00 $_____
Number of operators or partners _____
Number of months each partner worked (25 days per month) _____
Number of months others were boarded not including hired help. _____ months

III. Information For Crop Analysis

Land charge to be used for crop summaries (if the charge is different for each crop, please specify details on crop data page in the account book). $_____ per acre

Production Cost Allocation Factor if different than 1.00
(PCAF may range from 10.00 to .01)

Crop	PCAF	Enterprise	PCAF	ECAF	
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

TOTAL CROP BCAF: _____

IV. Status of Operator

In what year did you start farming? _____
Check each of the following that applies to you this year.
Owner _____, Partnership (own land in partnership) _____,
Cash renter _____, Crop share renter _____,
Part owner (owner renting additional land _____,
Describe your lease arrangement: _____

1978 Name _____

Date _____

MAKING A CASH CHECK OF YOUR ACCOUNTS

A. Kind of Receipt	From Page	Operator's Share	B. Kind of Expense	From Page	Operator's Share
Milk & Cream sold	2	$	Dairy cows bought	4	$
Dairy cows sold	5		Other dairy cattle bought	9	
Other dairy cattle sold	9		Beef breeding cattle bght	11	
Beef breeding cattle sold	11		Feeders bought	13	
Feeders sold	13		Feeders bought	14	
Feeders sold	14		Feeders bought	15	
Feeders sold	15		Hogs bought	16	
Hogs sold	18		Sheep bought	19	
Sheep & wool sold	19		Chickens bought	20	
Chickens sold	21		Horses bought	23	
Eggs sold	22		Misc. livestock expense	25	
Horses sold	23		Feed bought	31	
Crops sold	37		Misc. crop expense	39	
Mach.,Equip. & Real Estate sold	43		Custom work hired	40	
Gas sales & tax refunds	45		Repair & upkeep of Real Estate	41	
Income from work off farm	55		Mach,Equip, Real Estate bought	42	
Misc. farm income	55		Taxes	43	
Co-op refunds (cash)	55		Cash expense - rent	43	
TOTAL FARM RECEIPTS		$	Gas, Oil & grease	45	
			Repair & operation of tractor, crop machinery, trucks, autos & lvstk eqp	51	
Unpaid accounts for current year*	57		Hired Labor	53	
Money borrowed	57		Telephone (total operator's share)	54	
Savings account 1-1-7__	58		Electricity (total operator's share)	54	
Cash in bank 1-1-7__	58		General farm expense	54	
Cash on hand 1-1-7__	58				
Investment Income	59		TOTAL FARM PURCHASES		$
Other non-farm income**	59				
Income tax refunds	59		Interest paid	56	
			Paid on debts	56	
			Investments	58	
			Savings acc't 12-31-7__	58	
			Cash in bank 12-31-7__	58	
			Cash on hand 12-31-7__	58	
			Income & self employment tax paid	59	
			Household & personal expense	60-73	
GRAND TOTAL (A)		$	GRAND TOTAL (B)		$
Difference (A-B)***					

*Include only items purchased during the year which has been recorded as purchased elsewhere in the book and not yet paid for.

**Include cash gifts from others.

***If no household cash and personal records are kept, an accurate cash balance cannot be made.

The difference under receipts, as shown above, may be assumed to be personal spending.

BCAF ADJUSTMENT EXAMPLE

Net Cost of owning and operating buildings, fences and tiling from Table 3, in the Farm Business Analysis, is $2100.

If the farmer, in assessing his building determined that the hog and crop facilities contributed proportionately more to costs than did the dairy facilities, he may adjust the allocation by using the BCAF factor on a scale of one to ten.

$ Assigned Without BCAF Adjustment

Enterprise	Total W.U. Assigned	$ Assignment W/O BCAF
Dairy	100	700
Other Dairy	50	350
Complete Hogs	50	350
Crops	100	700

BCAF Adjustment

	BCAF Values	Dairy	Other Dairy	Hogs	Crops
High	9-10				9
Above Average	7-8			7	
Average	4-6	5			
Below Average	2-3		3		
Low					

The building costs would now be assigned as follows.

Enterprises	Total W.U.	BCAF	Adjusted W. U.		Cost/Enterprise
Dairy	100	5	500	(1)	552.63
Other Dairy	50	3	150	(2)	165.78
Hogs, Complete	50	7	350	(3)	386.85
Crops	100	9	900	(4)	994.74
			1900		2100.00

(1) $\frac{500}{1900} \times 2100 = 552.63$

(2) $\frac{150}{1900} \times 2100 = 165.78$

(3) $\frac{350}{1900} \times 2100 = 386.85$

(4) $\frac{900}{1900} \times 2100 = 994.74$

CROP AND FEED CHECK

Name: _____ County: _____

Crop or Feed		Corn											
Unit of Measure		Tons, Bu., Lbs.		Value		Tons, Bu., Lbs.		Value		Tons, Bu., Lbs.		Value	
WHERE FEED CAME FROM	Purchases, Pgs. 32-36												
	TOTAL PURCHASES												
	Beg. Inventory, Pgs. 30-31												
	Crops Raised, pg. 29												
	A. TOTAL SUPPLY												
SALES SEEDED WASTE ENDING INVENTORY	Sales pg. 37												
	TOTAL SALES												
	Seeded, pg. 29												
	Ending Inventory, pgs. 30-31												
	B. TOTAL												
C. Difference (A-B = C)													

FED		Reported	Adjusted	Value		Reported	Adjusted	Value		Reported	Adjusted	Value	
FEED USED BY LIVE-STOCK (Totals from pages 26-27)	Dairy Cows												
	Other Dairy Cattle												
	Beef Breeding Herd												
	Feeder Cattle												
	Hogs												
	Sheep Farm Flock												
	Chickens												
D. Total Feed Used (D must equal C)													

LIVESTOCK REPORT

Name _____ County _____ Year _____

Dairy Milk Cows

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
First of month												
Purchased												
Heifers Fresh												
Sold												
Died												
Transferred Out												
Butchered												
End of Month												

Dairy Herd Bull

First of Month												
Purchased												
Transferred in												
Sold												
Died												
Butchered												
End of Month												

Other Dairy Cattle

First of Month												
Purchased												
Calves Born												
Sold												
Died												
Butchered												
Heifers Fresh												
Trans.toFeeders												
End of Month												