

Farm Financial Management

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FARM MANAGEMENT SPECIALISTS
DEPARTMENT OF AGRICULTURAL ECONOMICS
UNIVERSITY OF MISSOURI - COLUMBIA

Farm Financial Management is a teaching guide to be used in assisting farm managers to better use financial tools.

This teaching guide was prepared by the Extension Farm Management Staff, University of Missouri at Columbia in May, 1968.

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PREFACE

The farm management lessons in this publication are designed as teaching aids in educational programs. They are aimed at improving the decision-making ability of commercial farmers, particularly in decisions involved in making additional long-range investments in the farm business.

These lesson plans do not include much of the basic educational material which a farm manager might use in planning his everyday farm business. Planning of this kind would be preceded by lessons on cost concepts and planning changes in farm practices which would require enterprise budgeting but little or no long-time investment money. This publication is on making long-range investments for farm expansion. When a change in the farm plans is called for, it is assumed that enterprise budgets have been developed and that alternative plans have been considered.

The material is prepared for the most part in narrative form with tables for use in the presentation of the material, and worksheets for student participation. Instructors are encouraged to substitute, or add, any informative teaching material which they believe will be helpful.

The first lesson deals specifically with two aspects of farm financial management. The first section discusses some of the important financial management tools and how they can be applied to the business. The second part discusses the need for, and the importance of, increasing amounts of capital needed in the farm business. The figures showing the growth in size of Missouri farms, the output per farm and per farm worker, the returns to the farm manager's labor and management, the amount of credit used, etc. are taken from the Missouri Mail-In Record program.

Farm managers of growing commercial farms will be interested in knowing why they need to continue to expand, how much they need to grow, and who is supplying the growth capital. The material in Lesson I helps in thinking through these questions.

Lesson II deals with a discussion of some of the desirable and undesirable features of using credit. It includes how to figure interest rates, what these interest costs include, the ability to bear risk, the primary factors affecting risk bearing, and an evaluation of long-term loan payments.

Lesson III is primarily a case study of how investments of a substantial amount can affect the farm business. Instructors may want to spend more than one session on the principle of cash flows after studying and adapting these lesson materials. If so, this session can also take up part of the time allotted for lessons II and IV.

Lesson IV deals with borrower-lender communication. A brief review of how to use an even payment amortization table is followed by an explanation of what the lender expects the borrower to do; and what the borrower expects of the lender. The importance of past performance and progress, as measured by the manager's farm records, his ability and integrity, his past borrowing habits, his repayment ability, and his repayment history are given priority treatment in this discussion.

It is anticipated that throughout the presentation of this material the instructor will encourage audience participation. He may also wish to prepare handouts of some of this material, or related educational material.

TABLE OF CONTENTS

	<u>Page</u>
<u>LESSON I: Economic Consequences of Investment Decisions and Quality of Farm Capital Requirements</u>	
Farm Financial Tools	1
Economic Feasibility of Capital Commitments	2
Growth of Farm Capital Requirements	3
The Hidden Multiplier	3
Credit Instead of Savings	5
Value of Production Per Farm Worker	6
Amount of Credit Used by Farmers	6
Summary	11
<u>LESSON II: The Pleasures and Problems of Credit</u>	
Figuring Interest Rates	14
Risk-Bearing Ability	15
Long-Term Loan Payments	17
An Amortization Plan	18
Annual Principal & Interest Payment Per \$1.00 Borrowed	19
Summary	21
<u>LESSON III: Repayment Capacity</u>	
A Farm Situation	23
Cash Flow Projections	25
Cumulative 5 Year Totals of Cash Remaining & Machinery & Building Depreciation	31
Projected Net Worth	32
Annual Principal Payments & Interest Payments	33
<u>LESSON IV: Lender-Borrower Communication</u>	
Managerial Requirements & The Use of Records	35
A Three-Year Record of Missouri Farms	37
A Two-Year Record of Two Missouri Farms	40
Other Credit Considerations	41
Summary	42
References	43

LESSON I

ECONOMIC CONSEQUENCES OF INVESTMENT DECISIONS AND GROWTH OF FARM CAPITAL REQUIREMENTS

Objectives

Lesson I is actually an introductory session for the four lessons. It "sets the table" for the meal which follows. Specifically, the objectives are:

- (1) To gain a better understanding of the primary tools in farm financial management and how they can be utilized.
- (2) To fully understand the "why" of the growth of farm capital requirements.
- (3) To gain a better understanding of the need for credit.
- (4) To study the "growth of commercial farms" from the standpoint of volume of production per worker, and the amount of credit used.

Proposed Audiences

The primary audience will be younger commercial farmers who for a variety of reasons (family goals and needs, ambition of the operator, etc.) see the need for expanding the farm business in the future. The material in this lesson can also provide the basic information for talks to groups interested in the changes which are occur-

ring in agriculture.

These groups might include:

- (1) Farm organizations
- (2) Community organizations
- (3) Civic clubs, etc.

Teaching Aids

- (1) Blackboard--Each instructor will want to develop additional material based on the prepared material.
- (2) Overhead View-Graph Machine--For prepared acetates.

LESSON I

ECONOMIC CONSEQUENCES OF INVESTMENT DECISIONS AND GROWTH OF FARM CAPITAL REQUIREMENTS

"The first half of life consists of the capacity to enjoy without the chance; the last half consists of the chance without the capacity."

Mark Twain

Farm financial management is an attempt by the farm manager to control as best he can, the flow of dollars in and out of his business. A few years ago this was not so difficult. Before 1940 most farms were relatively small businesses, and most of the inputs were provided by the business itself. Labor was furnished by the family. Feed for livestock (including workstock) was mainly produced on the farm. Seed and fertilizer were obtained from the granary and the barn, and the family food supply was provided by home butchering and gardening.

Consequently, the flow of money in and out of the business was small, and the necessity for the farmer to be an expert in financial management simply did not exist.

But the large increase in the size of farm businesses and the large number of purchased inputs (which will be explored later) have resulted in a totally different picture, and if the manager is to succeed and survive financially during the coming years he must gain unusual expertise in financial management. He will need to become familiar with, and use, the tools that have proven helpful. Some of these "helpful tools" include:

- (1) Farm plan--plans for farm organization (both short run and long run) are helpful in giving guidance and direction.
- (2) Annual budget--the budget that allows the manager to pull his production plans and annual cash-flow analysis together.

- (3) Partial budget--for making specific decisions.
- (4) Cash-flow budgets--to evaluate major investment decisions.
- (5) Farm records--cash receipts and expenses, inventories, net worth statements, enterprise records, etc., enable the manager to evaluate his past performance.
- (6) Balance sheet analysis--to determine the financial position and progress of the business.
- (7) Cost analysis and control--to know the business costs (fixed, variable, marginal, opportunity, etc.).
- (8) Credit--for an important source of acquiring adequate financial resources.

Time will not permit discussing or illustrating the use of each of these financial management tools in these lessons. But, they are important management instruments in a business which may represent several hundred thousand dollars. One machine may require an investment of \$10,000, or \$15,000, or even \$20,000. The need for \$25,000 or \$30,000 of annual operating funds is not unusual. Haphazard and spur-of-the-moment decisions in handling investment capital and financial transactions of this magnitude may unduly jeopardize the success and solvency of the entire farm business operation.

While good judgment must be exercised in the use of funds for current

farming operations, the most vulnerable--and perhaps the most neglected--aspect of financial management is the commitment of new capital to the farm business in the form of additional land, machinery, buildings, and other facilities. An error in committing operating funds for the year may reduce current profits but an unwise decision in the commitment of investment capital may lead to financial disaster. Hence, most of our discussion today will relate to investment decisions.

One approach to economic analysis, and often a desirable first step, is to pose a series of questions to delineate the problem more clearly and to bring the economic feasibility and consequences into sharper focus. With reference to some new facilities under consideration, one first might ask questions such as the following:

- (1) Will it work on my farm?
- (2) What is required?
- (3) Will this investment necessitate others?
- (4) Will it PAY--and how well?
- (5) Will something else pay better?

If answers to these general questions appear favorable, one may proceed with more specific questions about the economic desirability of the capital commitment. Some of the following may be appropriate:

- (1) What is the nature of the new investment under consideration? Does it contribute to the farm business working capital, fixed capital assets, or family use and consumption?
- (2) How much total capital is necessary to make the contemplated change?

- (3) What effect will the investment have on farm earnings--this year, next year, and in the long-run?
- (4) What are the opportunity costs for using the capital for this purpose? What would these dollars earn if invested in their best alternative use?
- (5) What is the rate of turn-over of capital invested in this way? How does this compare with alternative uses for the capital?
- (6) How much flexibility is represented in the investment under consideration? If circumstances dictate changes in the system of operation, what are the opportunities for shifting the use of the facility to other profitable uses? How much will it add to the sale value of the farm?
- (7) How much risk and uncertainty is involved in this investment? How does it compare in these respects with other uses for the same amount of capital? How do the alternative uses relate to changes in equity position?
- (8) Do I have the necessary skill, knowledge, and interest in the enterprise to "cash-in" on the potential represented in this investment?
- (9) Is this investment appropriate for the future potential of this farm from the standpoint of external conditions--general demand, market outlets, etc.? How soon will it become obsolete? Will it improve the quality of production?
- (10) How much labor will be saved? Can this labor be used profitably elsewhere?
- (11) Will the investment ease the role of management? Will it add to the

comfort and ease of getting the job done? Can I afford this ease and comfort?

- (12) What is the prestige value of the investment? What is it worth as a status symbol? Can I afford it?

These and other kinds of questions might help clarify the situation for a particular investment.

The top farm manager of the future, then, will be an astute financial manager. His financial decisions will be right more often if he follows these basic principles of farm finance:

- (1) BE COST CONSCIOUS--Know the different kinds of costs and the impact each has on his farm earnings and repayment capacity.
- (2) OBSERVE THE OPPORTUNITY COST PRINCIPLE--Invest money, whether owned or borrowed, where it will pay the

highest return.

- (3) TAKE TIME TO FIGURE AND ANALYZE--Make the mistakes on paper before the capital commitment is made.
- (4) KEEP ADEQUATE RECORDS--Sufficient to check on annual performance, cash flow over time, financial position, and financial progress.
- (5) HIRE EXTRA CAPITAL--Use credit to expand if past records and forward planning and analysis give reasonable assurance that it will enhance the business earnings and if the anticipated cash-flow will permit repayment of principal without undue hardship.

The good manager can apply some of the "tools" of financial management to alleviate the impact of uncertainties on farm earnings and financial stability. In the process he also improves his competitive advantage over those who continue to conduct their financial affairs in a haphazard manner.

Growth of Farm Capital Requirements

The large increases which have occurred in agricultural production and in labor efficiency have been generated primarily by increasing the amounts of capital employed in agriculture. The increased productivity of land and livestock can be attributed to improved seeds, feeds, breeding livestock, more and better fertilizers, insecticides, increased use of electricity, more and

bigger and better machinery, etc. The use of added capital for these inputs has greatly increased the number of acres and animal units a man can handle. But we need to look closely at why these expenditures for purchased inputs are occurring, the rate at which they are happening, and how they are affecting the agricultural production picture.

The Hidden Multiplier

The increased use of purchased inputs creates an ever increasing demand for both operating and long-time investment funds. For example, consider the farm manager who makes the decision to trade tractors. Invariably he purchases a larger one, and, as a result,

he is provided motivation to acquire more land to spread fixed machinery costs. The rental or purchase of additional land results in an increase of operating money and, if the land is purchased, an increase in investment money.

Or consider the manager who is producing 300 market hogs a year. He decides to build a slatted floor finishing house which will enable him to produce more volume. The result is more investment money for buildings and livestock and more operating money for feed, veterinary, and other items.

Because of the large investment in the farm business, production assets on U.S. farms have gone from about \$95 billion in 1950 to over \$200 billion in 1967.

This more than doubling of total farm production assets has occurred at the same time that farm numbers have drastically declined. And much of this growth has come about as a result of the so-called "cost-price" squeeze. Prices received by farmers continue to lag behind the prices paid by farmers. The result is more units produced per farm at a reduced net income per unit.

Not too many years ago the farm manager needed answers to two basic questions:

1. What will grow on my farm?
2. How do I grow it?

The answers to these questions were not difficult, at least in retrospect. And the need for large, high speed machinery, for highly specialized farm buildings, and for additional acreages of land were largely non-existent.

The work was hard and monotonous, but it was not hectic or meaningless. It provided a living for the family. Any debts which the family had accumulated were, for the most part, kept as a highly guarded secret. Because the rate of technological change was very slow, there were few early pacesetters. Those who were anxious to try new ideas were impeded by customs, by fear of criticism, by the lack of

of money and by a phobia about using credit.

What caused the magnitude of the changes when they did come to farms? First, during and after World War II, the farm cost-price situation changed drastically from what it had been prior to that time. Farm managers made more money. Secondly, farm youth returning from war service saw many opportunities for removing much of the drudgery from farm work. By applying the technology which had been gathering for a decade, the old ideas associated with farming were made obsolete almost over-night. As the momentum of technological changes increased, the momentum of application of these changes increased. Pacesetters and innovators, heretofore almost non-existent, were to be found in large numbers.

As these changes in technology were instituted, the previous questions of what to grow and how to grow it became less important. To pay for these purchased inputs (machinery, specialized buildings, fertilizers, etc.), the questions changed to questions such as: What can I grow for the highest profit per unit; or what enterprises are likely to pay off these investments that we are making? How many investments should I make?

Farmers enrolled in the University of Missouri record program in 1956 had investment in land, improvements, livestock, machinery, feed, seed and supplies amounting to \$44,249. A decade later (1966) the average investment per farm for these same assets of land, machinery, etc. totaled \$171,010. Total acres of cropland and open pasture per farm business was 222 acres in 1956, compared to 486 acres in 1966.

It is well to keep in mind that these are not necessarily the same farms. Some of them are being operated by the same farm manager, but the business itself

has undergone such changes that it would be difficult to recognize it as the same. Most of the farms enrolled in the record programs of 1956 and 1966 however, were probably representative of growing commercial farms of those dates.

The same comparative analysis shows that total cash receipts have increased about four times from 1956 to 1966. Cash expenses rose about four and one-half times. Cash balance doubled.

Year	Cash Receipts Per Farm	Cash Expense Per Farm	Cash Balance Per Farm
1956	\$12,827	\$ 9,822	\$3,005
1966	\$53,171	\$46,986	\$6,185

The large cash expenditures, about \$47,000 per farm in 1966, demonstrate the need for sharp decision-making tools if the business is to be properly financed. These business costs, along with sharply rising costs of family living, have resulted in more and more farm managers using more and more credit in an attempt to "make ends meet."

Thus, we find the questions of the farm manager changing again--from the how to grow it to what should I grow

for the highest profit per unit to how many units must I grow of the most profitable enterprise or enterprises to pay my debts, my operating costs, my family living costs, and provide for myself and my wife in old age? Since most of the gains from mechanization and automation accrue to the manager because they allow him to handle larger volume, rather than because they lower per unit operating costs, this means that the management level must be high. If not, losses will be multiplied by more units.

Credit Instead of Savings

Why are growing commercial farms turning more and more to the use of credit for expanding the farm business? It becomes simply a matter of the rate-of-growth. The average capital managed per farm in the record program has in-

creased \$12,676 per year for the past ten years ($\$171,010 - \$44,249 \div 10$). Since 1960, the average return to operator's labor and management has been less than 43 percent of this \$12,676 per year or \$5,402.

Return to Operator's Labor and Management

1960	\$3,516	1964	\$ 1,526
1961	\$4,107	1965	\$13,013
1962	\$3,403	1966	\$ 9,540
1963	\$2,712	7 Year Average	\$ 5,402

How much of the annual \$12,676 increase in capital managed is due to increased land prices in the inventories? Record keepers in 1956 inventoried their crop and open pasture acres at \$241 per acre. Without this increase in per acre land values, the capital managed per farm would have increased \$4,833 annually, instead of the \$12,676.

More realistically, if the 1956 acreage (222 acres per farm) was left at the \$128 per acre rate, and the 264 acres added per farm since that time were inventoried at the 1966 rate of \$241, then the average capital invested per farm would have increased \$10,119 annually. And so, while part of the large increase in capital managed per farm is the result of the surge in land prices, it must be remembered that only part of the returns to the operators'

labor and management are available for farm expansion. Debt repayments, family living, etc. must be met before farm growth can occur.

Thus it becomes obvious that many commercial family farms are not able to generate internally the necessary capital required to raise and educate a family, pay off existing debts, and keep up the rate of expansion necessary to keep the farm competitive. Output per farm worker in the United States has increased at an annual rate of more than 6 percent for the past decade. If the Missouri farm manager is going to hold his own, he must increase his output by at least this amount. It has been estimated that about half of this increase can occur by increased yields and efficiency, but the other half will need to come from farm enlargement.

Value of Production Per Farm Worker

How has the Missouri farm worker progressed in comparison with the U.S. average increase in output of 6 percent annually in recent years?

In 1960 the value of production per farm worker in the Mail-In Record Program was \$10,288. (See Table 1.) By 1966, this value of production per man had increased to \$16,794, based on 1960 prices (\$37,868 reduced by 11.3 percent which was the percent increase in prices received by farmers in the two comparative years \div 2 man years of labor used; or \$33,589 \div 2.) (See Table 2.)

If we look at the value of production per man based on constant 1960 prices, we find that the annual increase has almost doubled the 6 percent. But the increase has been erratic. (See Table 2.)

A large part of the irregular production per worker (with constant prices) can be attributed to crop yields. (See Table 3.) The best crop yields occurred in 1961, 1963, and 1965, the only years showing an increase in the production per man. Since price has been eliminated as a variable, this kind of a crop production pattern would be expected.

Amount of Credit Used by Farmers

If it is true, then, that many, if not most commercial family farms cannot generate the capital needed to meet family needs, pay operating costs, pay off indebtedness, and expand the business to attain necessary volume, means other than savings must be found

for acquiring money for investment.

For this presentation we will not consider such possibilities as inheritance, marriage, partnerships, and corporations. We will confine our alternatives to renting and borrowing.

TABLE 1 - VALUE OF PRODUCTION PER MAN
AND PER FARM; 1960-1966

	1960	1961	1962	1963	1964	1965	1966
Man Years of Labor Used	1.6	2.0	2.4	1.9	1.9	2.0	2.0
Value of Production per Farm	\$16,461	\$23,428	\$26,841	\$25,240	\$24,082	\$38,788	\$37,868
Value of Production per Man	\$10,288	\$11,714	\$11,184	\$13,284	\$12,674	\$19,394	\$18,934
Value of Production per Farm (Constant 1960 Prices)	\$16,461	\$23,241	\$26,268	\$24,811	\$24,275	\$37,170	\$33,589

TABLE 2 - VALUE OF PRODUCTION PER MAN BASED ON 1960 PRICES

	1960	1961	1962	1963	1964	1965	1966
Value of Production per Man (Constant 1960 Prices)	\$10,288	\$11,620	\$10,945	\$13,058	\$12,776	\$18,585	\$16,794
Percent Increase in Production/Man	---	12.9	-5.8	19.3	-2.1	54.7	-9.9

Average annual increase in production per worker = 11.5 percent.

TABLE 3 - AVERAGE YIELDS OF MAJOR CROPS; MISSOURI; 1960-1966

	1960	1961	1962	1963	1964	1965	1966
Yield of corn/acre	62 bu.	77 bu.	71 bu.	72 bu.	58 bu.	83 bu.	71 bu.
Yield of soybeans/acre	21 bu.	26 bu.	24 bu.	27 bu.	20 bu.	29 bu.	27 bu.

The methods of financing of the Mail-In Record cooperators in 1966 show some interesting figures. For example, the group as a whole provided slightly over half of the capital managed per farm with their own money, or about \$92,500 of the total of \$171,010. Another 17 percent, or \$29,000 of the capital managed came from borrowed funds while 29 percent, or \$49,600 came from the capital provided by others, mostly in the form of rented land.

These figures (Table 4) varied greatly among types of farms. For example, the grain farmers provided only 34 percent of the total capital managed with their own money, and only 14 percent with borrowed money. Comparable figures for the dairy farms were 61 percent and 24 percent. So the grain farmers are providing 48 percent of the capital in their businesses compared with 85 percent for the dairymen. While we probably would have predicted these trends, perhaps the magnitude of the figures is surprising.

If nothing else, it shows that one of the more attractive alternatives to

the use of credit might well be the renting of land. Grain farms as a group consistently rank high in many of the earnings categories. They seem to be achieving these earnings with no less risk than others.

The same analysis applied to a breakdown of the grain and grain-hog farms (See Table 4) reveals the top earning farms (as measured by returns to labor and management) have:

1. A larger business (as measured by total capital managed).
2. A smaller percent of operators own capital is being used.
3. More capital provided by others.

So while title to the land he operates has been the ambition of most farmers throughout the entire history of the United States, perhaps an excellent alternative is to rent extra land.

In terms of total dollars, farm managers in the record program have been using increasing amounts of credit. The average amount of interest paid per farm has increased more than 46 percent since 1963.

Year	1963	1964	1965	1966
Interest paid	\$ 1,187	\$ 1,366	\$ 1,678	\$ 1,739
Number of dollars borrowed at 6%	\$19,783	\$22,767	\$27,967	\$28,983

The amount of money borrowed as a percent of the total capital managed has

changed very little since 1963. The figures for 1963 through 1966 are:

	1963	1964	1965	1966
Borrowed money as a percent of total capital managed	14.8	16.9	17.6	16.9

TABLE 4

METHODS OF FINANCING OF MAIL-IN RECORD COOPERATORS — 1966

	All	Grain	Grain Hog	Hog	Grain Beef	Dairy	General
Capital provided by operator's own money	\$ 92,417	\$ 85,368	\$103,296	\$ 79,134	\$141,824	\$ 70,335	\$ 93,780
Capital provided by operator --Borrowed money	\$ 29,000	\$ 34,330	\$ 24,216	\$ 20,966	\$ 52,300	\$ 27,916	\$ 26,900
Capital provided by others --- rented	\$ 49,593	\$131,768	\$ 33,896	\$ 37,024	\$ 43,192	\$ 16,663	\$ 32,080
Total capital managed in the business	\$171,010	\$251,466	\$161,408	\$137,124	\$237,316	\$114,914	\$152,760
Percent capital provided by operator (own money)	54%	34%	64%	58%	60%	61%	61%
Percent capital provided by operator (borrowed) and others (rented)	46%	66%	36%	42%	40%	39%	39%
Percent operator's equity in his own business	76%	72%	81%	76%	73%	72%	78%
Percent operator's equity in the entire business	54%	33%	64%	58%	68%	61%	61%
Interest paid by operator	\$ 1,740	\$ 2,060	\$ 1,453	\$ 1,258	\$ 3,138	\$ 1,675	\$ 1,614

TABLE 4 (CONTINUED)

METHODS OF FINANCING OF MAIL-IN RECORD COOPERATORS -- 1966
AS MEASURED BY RETURNS TO LABOR AND MANAGEMENT

	Grain		Hog & Grain Hog	
	Top Half	Lower Half	Top Half	Lower Half
Capital provided by operators own money	\$ 79,852	\$ 91,535	\$ 92,874	\$ 91,176
Capital provided by operator borrowed money	\$ 40,966	\$ 28,033	\$ 17,066	\$ 28,366
Capital provided by others	\$154,534	\$109,270	\$ 50,188	\$ 20,730
Total capital managed in the business	\$275,352	\$228,838	\$160,128	\$140,272
Percent of capital provided by operator owned	29%	40%	58%	65%
Percent of capital provided by operator borrowed	15%	12%	11%	20%
Percent of capital provided by others	56%	48%	31%	15%
Percent of operators equity in his own business	66%	77%	84%	76%
Percent of operators equity in the entire business	29%	40%	58%	65%
Interest Paid	\$ 2,458	\$ 1,682	\$ 1,024	\$ 1,702

SUMMARY

The reasons for increased use of credit or borrowed capital are:

1. Rapid increases in the use of purchased inputs.
2. Relatively low profit margins which force farm managers to increase the size of their business in an attempt to earn a satisfactory income.
3. Inability of the farm business to generate enough internal capital to enlarge operations at the rate necessary for efficiency.

And so the preceding discussion emphasizes that the pace is fast and the capacity to "just keep even" requires a thorough knowledge of the financial management tools and how they can best be used.

LESSON II

THE PLEASURES AND PROBLEMS OF CREDIT

Objectives

- | | |
|--|---|
| (1) Give a brief review of the need for credit by most farm managers. | it costs to borrow money," and what interest costs include. |
| (2) Describe how the use of modern technology can, and quite often does, increase the asking price for productive resources. | (4) Provide a better appreciation of the difference between "risk-bearing ability" and "risk reduction." |
| (3) Provide an understanding of how interest rates are figured, "what | (5) Increase knowledge of farm managers about the different long-term loan plans, and how the length of loan affects the amount of interest paid. |

Proposed Audience

Managers of growing commercial farms, particularly those who are

contemplating added investments with borrowed capital.

Teaching Aids

Same as for Lesson I.

LESSON II

THE PLEASURES AND PROBLEMS OF CREDIT

"There is no magic about credit. It is a powerful agency for good in the hands of those who know how to use it. So is a buzz saw. They are about equally dangerous in the hands of those who do not understand them."

Unknown

Lesson I dealt with the increase in inputs of capital required to carry on a growing farm business. The number of loans to individual commercial farmers will probably be fewer in the future. This is because many older farmers, who are past their period of high family expenditure, will not choose to take on the responsibilities of expanding their business. But those farm businesses which will grow and expand, will be borrowing larger amounts of

money than before. We can be sure that technological developments will continue; and at a very high rate. These developments will probably be applied at a high enough rate that land prices for example, will rise, even after charges to management and labor are increased.

It might be worthwhile to take a look at some of the figures from the 1967 St. Charles Corn Profit Program. (Table 5).

TABLE 5
COST AND PROFIT FIGURES ON FIVE CONTESTANTS
IN 1967 ST. CHARLES CORN PROFIT PROGRAM

ITEM	CONTESTANT				
	1	2	3	4	5
Seed	\$ 4.46	\$ 4.15	\$ 5.33	\$ 6.60	\$ 4.25
Chemicals	\$ 1.60	\$ 1.60	\$ 2.63	\$ 1.75	\$ 2.43
Lime & Fertilizer	\$ 14.91	\$ 14.57	\$ 14.50	\$ 25.44	\$ 13.80
Machine Cost*	\$ 38.14	\$ 37.25	\$ 35.77	\$ 36.55	\$ 35.95
Land Charge**	\$ 65.19	\$ 62.46	\$ 58.93	\$ 64.20	\$ 55.08
Crop Insurance	----	----	----	\$ 2.40	----
TOTAL COSTS PER ACRE	\$124.30	\$120.03	\$117.16	\$136.94	\$111.51
Yield Per Acre	184.5	176.8	166.8	181.7	155.9
Profit Per Acre	\$ 71.27	\$ 67.33	\$ 59.64	\$ 55.66	\$ 53.74

* Machine costs figured on a custom rate basis.

** Land charges figured as 1/3 of the gross.

From the looks of the yields, 1967 was a very good year in St. Charles County. But it takes little imagination to see what effect consistently high yields might have on land prices, even with a continuing, less favorable cost-price structure. Contestant #5,

with his return to labor and management of \$53.74 per acre, could pay \$527 per acre for this land if he amortized the cost for 20 years and paid an interest rate of 8 percent.* So again, the multiplication of expenses goes on, and the need for more credit goes along with it.

Figuring Interest Rates

In one way or another most Americans, whether farmers or townspeople, owe money. The debt is likely to be on their land, or their house, incurred to cover the children's college education, or to purchase goods and services on time. And certainly in the case of many farm managers, it has enabled them to buy a farm, livestock, machinery, or other items which they could not have otherwise purchased.

Because he uses credit extensively, it becomes important that the farm manager knows what he is paying for the use of credit, and while this is not necessarily true of farmers, it is amazing how bad our arithmetic can be. A recent article in a widely read magazine

reported on a survey of 800 families who estimated their finance charges to be 8.3 percent, whereas the average rate was actually 24 percent. When a manager of any business is faced with a dizzying array of carrying charges and compound interest rates, it is an "easy-out" to merely judge whether the business can afford the monthly or quarterly or yearly payments. The often used example of the family who bought the television set on monthly payments of \$17.50 per month is a classic. By the time they finished paying for it two years later, they had paid \$420 for a \$123 set.

And so it is important for every farm manager to figure the interest rate that he is paying for the use of credit.

To Figure Annual Interest Rate
Use This Formula

$$\text{Rate} = \frac{\text{Total Interest Charge}}{\frac{1}{2} \text{ of Original Loan}} \times \frac{\text{Number of Payments}}{\text{Number of Years}} \times \frac{1}{\text{Number of Payments} + 1}$$

Note: Those who enrolled in the course should figure the interest rate, if \$12,000 is borrowed for 12 years with 12 equal annual payments of \$1,720 each.

Answer = 11.076 percent.

* Using the method explained by George McCollum in his November 1966 newsletter. The method is explained on Page 20 of this lesson.

After establishing the interest rate, it's important to remember that this is only a part of the story. An excellent source of credit at 7 percent interest may be too high for some investments, while a 15 percent rate may well be within the tolerable limits of another investment. The rate of interest that is reasonable may well be one that will allow the user of the borrowed funds to "make money." [It goes without saying that this discussion is concerned only with the use of productive credit (used in production) and not consumptive credit (used in consumption).]

The farm manager who uses the farm financial tools that were discussed in Lesson I (several will be discussed in detail in Lessons III and IV) will be in a much better position to predict what his net worth and his equity position will be at some future date --- and how much he actually is paying for the use of credit --- and the degree of risk involved in the new investment. Thus, if he bases his credit needs on a combination of past performance and realistic forward planning, he can expect this to be a very valuable management tool.

What Do Interest Costs Include?

Generally speaking, interest charges include payments for three things.

to be high, for any of a variety of reasons, the interest rate will also be high.

(1) Payment for the use of the money.

This is referred to by some as pure interest, such as the rate paid on government bonds where there is a minimum of risk or other costs involved.

(3) Management and service costs in making and maintaining the loan.

Often the interest rates on small loans are higher than on larger loans. The main reason is that the management and service costs can be as high on the small loan as on the large loan; and on a dollar-loaned-basis they run much higher on smaller loans.

(2) Risk of losing the money loaned.

If the lender believes the risk

Risk-Bearing Ability

Often the ability to bear risk becomes confused with reducing the risk involved in borrowing money. But these are two entirely different things.

Risk-bearing ability in this discussion means the ability to withstand unexpected reverses --- lower yields, lower prices, higher costs, etc. --- and to be able to continue to farm when they do occur.

Reducing risk means to plan and carry on a business conservatively, including borrowing habits. For example, if the farm manager were primarily concerned with reducing the risks in-

involved in livestock production he would tend to confine his production to those enterprises which have the smallest annual income variations. Thus, he might well lean to dairying, a laying flock, and a beef cow herd. But, if the manager has the ability and nerve to bear more risk he might well choose one of the riskier enterprises, such as cattle feeding.

Table 6 shows the variation in stability of income from various enterprises. A low "coefficient of variation," such as the 12.17 for dairying, means the income from that enterprise is relatively stable.

TABLE 6

INCOME VARIATIONS OF LIVESTOCK ENTERPRISES
(year to year)

Activity or Enterprise	Coefficient of Variation
Dairy	12.17
Laying Hens	14.19
Beef Cow Herd (sell feeder calves)	21.49
Beef Cow Herd (fatten calves)	24.95
Hogs	25.28
Choice Calves	27.70
Fed Yearling Steers	36.31
Fed 2 Year Old Cattle	37.41

Factors Affecting Risk-Bearing Ability

- (1) Owner Equity --- the amount of his own capital the operator has in his business --- is the backbone of risk-bearing ability. If the farm manager is able to withstand loss of income and keep operating, it's obvious that he is in a position to take some chances that are not possible for others.
- (2) Ability to borrow in good and bad times --- in some respects this factor is closely allied with #1 above. But the difference may lie in the fact that he has a lender who will "stay with" him.
- (3) Stability and reliability of income ---this factor was illustrated in the example of the amount of annual variation in income with the various livestock enterprises. Enterprises that are of a higher risk nature (cattle feeding, production of crops on land that is frequently flooded, etc.) cause income to fluctuate widely.
- (4) Ability to make and save money --- To recover from an unexpected loss takes a man who can make money rather consistently. If, with average conditions, his income is at a level where he is able to save and reinvest part of his income in the business, he will be able to withstand adversity without a serious threat to the business.
- (5) Ability to reduce operating costs and living expenses in low-income periods --- This is one of the most difficult factors to achieve. Reduction of business operating costs must be done with extreme caution. The farm manager must avoid "cost-cutting" that is likely to reduce income or it will be self-defeating. Also, few young families can realistically forego current consumption

for growth in later years. But some possibilities do remain within or with individual families to reduce costs.

- (6) Personal characteristics of the operator --- honesty, responsibility,

ity, dependability and integrity are ingredients which are important factors in risk-bearing. Creditors are likely to go much further with those who demonstrate their willingness to "go the last mile."

Long-Term Loan Payments

The four plans (with variations) most commonly used in repaying long-term loans are:

- 1. Straight-end payment plan
- 2. Partial payment plan
- 3. Decreasing amortization payment plan
- 4. Even amortization payment plan

Only a brief word of explanation is needed for the first three plans. The fourth plan is used by most lenders in long-term payment plans and will be discussed in more detail.

- (1) Straight-end payment: Sometimes referred to as the lump-sum plan because it calls for payment of the entire loan at the expiration of the term. Historically, the period was for five years, and the borrower paid the interest, and whatever principal he could, and then renewed or refinanced or paid off the remaining debt.
- (2) Partial payment plan: A loan featuring small fixed principal payment or installments during the period of the loan. At the end of the loan period, the balance is due, sometimes referred to as a "balloon" payment.
- (3) Decreasing amortization payment plan: This plan provides for

fixed principal payments and declining interest payments on the outstanding balance. This plan has some appeal when the borrower is able to pay the higher initial installments and the lender has doubts about future income. But it is usually more difficult for the borrower to meet the first several years payment than later payments.

- (4) Even amortization payment plan: Perhaps this loan plan is the most used of all plans when borrowing or lending money for long-term investments. Basically the plan calls for equal payments each year, with a larger proportion of each payment reducing the principal and a smaller proportion being paid in interest.

Table 7 shows an even-payment amortization plan, with a \$10,000 principal, interest rate of 7 percent, 20 years, and annual installments. (See Table 7)

Table 8 shows how the total annual payments are calculated. For example, the \$944 total annual payment in Table 8 is found at the intersection of the 20 year line and the 7% column. (See Table 8)

It is quite obvious that with this even-payment amortization plan, the first several years payments go primarily toward paying the interest. The interest charges in our example were higher than

TABLE 7

AMORTIZATION PLAN FOR A \$10,000 PRINCIPAL

Years	Total Annual Payment	Principal Payment	Interest	Unpaid Balance
				\$10,000
1	\$944	\$244	\$700	9,756
2	944	261	683	9,495
3	944	279	665	9,216
4	944	299	645	8,917
5	944	320	624	8,597
8	944	392	552	7,497
10	944	449	495	6,629
15	944	630	314	3,867
19	944	825	119	878
20	939	878	61	0

TABLE 8

ANNUAL PRINCIPAL AND INTEREST PAYMENT PER \$1.00 BORROWED

NUMBER OF YEARS	ANNUAL INTEREST RATE			
	5.0	6.0	7.0	8.0
1	1.0500	1.0600	1.0700	1.0800
2	.5378	.5454	.5531	.5608
3	.3672	.3741	.3811	.3880
4	.2820	.2886	.2952	.3019
5	.2310	.2374	.2439	.2505
6	.1970	.2034	.2098	.2163
7	.1728	.1791	.1856	.1921
8	.1547	.1610	.1675	.1740
9	.1407	.1470	.1535	.1601
10	.1295	.1359	.1424	.1490
15	.0963	.1030	.1098	.1168
20	.0802	.0872	.0944	.1019
25	.0710	.0782	.0858	.0937
30	.0651	.0726	.0806	.0888
35	.0611	.0690	.0772	.0858
40	.0583	.0665	.0750	.0839

the principal payments the first half of the life of the loan. The entire interest charge on this 20-year, \$10,000 loan (rounding the figures throughout to the nearest dollar) was \$8,875. Using the same even payment amortization plan, but for a 10-year repayment plan, the interest charges on a \$10,000 loan would be \$4,257.

Thus there are problems associated with the use of credit. And several illustrations in Lesson III will point out some of these problems more vividly. In summation, the disadvantages of using large amounts of credit are:

- (1) Fear of debt --- For generations many farmers felt that debt was something to be avoided at all costs. Some still hold to this conviction, preventing them from using credit as an important management tool. Their fear of the use of credit, in this context, was mostly a fear of having neighbors and friends pin a "failure-label" on them.
- (2) Risk of loss --- The risks involved in "going-broke" as a result of, or in spite of the use of credit are of prime concern to many farmers. Because many factors affecting the farm business are decisions that are made beyond the boundary of the farm or the county, or the state, and because conditions such as weather and prices are beyond the managers' control, many farm managers have been hesitant to go very far out on the credit limb.
- (3) Trying to decide the degree of risk, or testing for accuracy of budgeting --- As we have seen, borrowing large amounts of money involves repaying not only the principal, but large amounts of interest. Unless net income is

increased at least enough to cover the interest, the money must be raised from other sources. Because of this degree of risk it becomes extremely important that the lender be fully informed, that budgets and projections be as accurate as possible, and that cash flows be estimated just as accurately.

It was mentioned earlier that the farm manager who secured a 20-year even-payment loan at 8 percent interest could afford to pay \$527 per acre for the land if returns to labor and management were \$53.74 per acre per year. The step by step procedure for figuring the answer as developed by George McCollum is as follows:

- Step I: The amount that can be used for interest and principal payments is \$53.74.
- Step II: Length of loan is 20 years and interest rate is 8 percent.
- Step III: The appropriate figure to use from the amortization table is .1019, found at the intersection of the 20-year line and the 8 percent column.
- Step IV: Divide the per acre returns to labor and management (\$53.74) by .1019 and the answer is \$527

From Lesson I, it is obvious that crop yields vary from year to year and that payments for this land must be acquired from other enterprises if a reduction in yields or prices, or an increase in costs occurs. Too, it is extremely important to recall, that in the example, all profits for the first 20-years will be used for making payments and will contribute nothing toward possible increased family living costs, paying other debts, or for firm expansion.

SUMMARY

- (1) Know what you want to do and where you want to go financially. (A projected flow of anticipated funds will assist.)
- (2) Be realistic in making planning estimates.
- (3) Know yourself --- your capabilities.
- (4) Understand about risk and risk-bearing ability.
- (5) Fit the type of loan to the purpose for which it is used. It is foolish to try to meet an unreasonable repayment schedule which makes "life not worth living."
- (6) Be sure to understand the terms of the loan contract and what your credit actually costs --- regardless of what the cost is.
- (7) Establish a clear picture of what credit can and cannot do --- that it can be a useful management tool, much like machinery or fertilizer or a new feed additive --- that it can contribute to greater security and assist in the attainment of family goals. But if improperly or unwisely used it can be a threat to the financial future of the user.
How Credit Is Used Is More Important Than Whether It Should Be Used.

LESSON III

REPAYMENT CAPACITY

Objectives

- | | |
|---|---|
| <p>(1) To study several alternative plans for a farm involving the borrowing of \$15,000. Varying crop yields will be used. A cash-flow analysis is budgeted or programmed for each system that shows:</p> <ul style="list-style-type: none">(a) Annual principal payments.(b) Annual interest payments.(c) Annual net worth.(d) Cash remaining at end of each year. | <ul style="list-style-type: none">(e) Annual depreciation charges.(f) Total capital invested.(g) Annual fixed cash costs.(h) Cash income over variable costs.(i) Debt remaining by years. <p>(2) To increase the ability to make sound investment decisions based on the above information.</p> |
|---|---|

Proposed Audience

Same as for Lesson II.

Teaching Aids

Same as for Lesson II.

LESSON III

REPAYMENT CAPACITY

"We should be concerned with the future because we will have to spend the rest of our lives there."

Charles F. Kettering

Farm managers who are making decisions regarding the use of credit must expect to present to the potential lender a plan which includes the "ability to repay." There are few reasons to believe that the loan will be made unless the plan appears to the lender to be a sound one.

In discussions with the lender the farm manager must communicate to him:

- (1) The nature of the investment under consideration.
- (2) The total capital requirements.
- (3) The effects the investment will have on earnings:
 - (a) with yield variations.
 - (b) with price variations.
- (4) The repayment schedule, etc.

The lender must decide whether the loan should be made. In this lesson a farm situation is assumed to be as follows.

The farm consists of 500 acres, 350 of which are now and can continue to be planted in continuous corn. The remaining 150 acres is pasture land which is supporting 50 beef cows. The value of the land on today's market is \$160,000. Buildings and other improvements are valued at \$20,000. Machinery and other equipment is also carried on the books at a \$20,000 value. Livestock inventory shows a \$10,000 value on the 50 cows.

Corn yields average 80 bushels per

acre and the income over variable costs is \$61.00 per acre. The farm manager averages a 90 percent calf crop, sells the calves as fall feeders at a 450 pound average, and realizes a return over variable costs of \$28 per cow.

The farm has a real estate mortgage of \$60,000 which was refinanced this year for 20 years at 6 percent interest. Except for a few small charges, this is the only debt.

As stated in Lesson I, the material in these lesson plans does not include the typical farm planning of developing budgets. But it is assumed that the manager has considered the alternatives and has made the decision that one of the most attractive alternatives to him is to go to narrow row corn planting (from 38" to 20") and to purchase 12 additional beef cows. The increased forage needs of these added cows will come from a pasture fertilization program which can be financed from current funds. Also, he anticipates that spring and summer product sales of corn now on hand will purchase and pay for operating costs, family living, etc. until fall.

He will need to borrow \$3,000 for the 12 beef cows and the machinery dealer has offered to trade him the necessary planting, cultivating, spraying and harvesting machinery for narrow row equipment for \$12,000 boot. The manager asks that the livestock and machinery loan be for a four-year period. The lender informs him that the loan will have to be an eight percent amortized loan if it is made. His present planter, picker head, etc. are about four years old. If the loan is not made, the

manager believes the present planting and harvesting machinery will last another four years.

He believes that his corn yields will average 90 bushels per acre with narrow row planting.

It is anticipated that land values will increase by \$5,000 two years from now and another \$5,000 four years from now. Hired labor costs will rise from \$5,000 in the current year to \$5,200 in two years and \$200 each year thereafter. Family living expenses are anticipated to be \$5,000 this year, \$5,200 the next two years, \$5,400 the fourth year and

\$5,600 the fifth year. Non-farm income of \$2,000 annually is expected to continue.

Incomplete records for the past five years indicate the business has been only fairly successful. Costs seem to be in line with production. But there seems to have been little progress.

Do you think the lender should make the loan? (Insofar as possible, eliminate your own biases.) Do you believe the loan will be helpful to the farm manager, even though it may seem to be a good and safe loan for the lender?

Work Session

Tables 9 and 10 give a rough idea of the flow of funds of the business at the end of each of four years if the organization is not changed and the present 80 bushel of corn per acre can be maintained. Blank forms are available for analyzing the cash flow of any projected changes.

Tables 11 and 12 show the cash flow of the business when the proposed changes are made and the changes result in a constant 90 bushel per acre annual yield.

Tables 13 and 14 show the same cash flow but with varying annual corn yields.

TABLE 9 - SHOWING CAPITAL INVESTED, CASH INCOME OVER VARIABLE COSTS, FIXED CASH COSTS, NET CASH FARM INCOME ABOVE CASH EXPENSE, AND TOTAL ANNUAL DEPRECIATION. (With no changes in farm organization, and constant corn yields of 80 bushels per acre.)

Item	Current Year	First Year With No Changes	Second Year With No Changes	Third Year With No Changes	Fourth Year With No Changes
CAPITAL INVESTMENTS*					
1. Land	\$160,000	\$160,000	\$165,000	\$165,000	\$170,000
2. Buildings & other improvement	20,000	19,000	18,050	17,150	16,290
3. Machinery & equipment	20,000	17,000	14,450	12,280	10,438
4. Livestock	10,000	10,000	10,000	10,000	10,000
5. Total capital invested	210,000	206,000	207,500	204,430	206,728
CASH INCOME OVER VARIABLE COSTS**					
6. Crop	21,350	21,350	21,350	21,350	21,350
7. Livestock	1,400	1,400	1,400	1,400	1,400
8. Total Cash Income Over Variable Costs	22,750	22,750	22,750	22,750	22,750
FIXED CASH COSTS					
9. Taxes, insurance, and building repair (line 5 x 1.5%)	3,150	3,090	3,112	3,066	3,100
10. Hired labor	5,000	5,000	5,200	5,400	5,600
11. Total fixed cash costs	8,150	8,090	8,312	8,466	8,700
12. Net cash farm income above cash expense (line 8 - line 11)	14,600	14,660	14,438	14,284	14,050
DEPRECIATION					
13. On buildings (5% of line 2)	1,000	950	900	858	815
14. On machinery (15% of line 3)	3,000	2,550	2,168	1,842	1,566
15. Total Annual Depreciation	4,000	3,500	3,071	2,700	2,381

* From farm records

** From Farm Business Planning Guide

TABLE 10 - SHOWING TOTAL CASH INCOME, FAMILY LIVING EXPENSES, NET CASH AVAILABLE, PRINCIPAL AND INTEREST PAYMENTS AND CASH REMAINING. (With no changes in farm organization and constant corn yields of 80 bushels per acre.)

Item	Current Year	First Year With No Changes	Second Year With No Changes	Third Year With No Changes	Fourth Year With No Changes
NET CASH AVAILABLE					
1. Net cash income above cash expenses (line 12, table 1)	\$14,600	\$14,660	\$14,438	\$14,284	\$14,050
2. Other farm cash income	----	----	----	----	----
3. Non-farm cash income	2,000	2,000	2,000	2,000	2,000
4. Total cash income	16,600	16,660	16,438	16,284	16,050
5. Family living expense	5,000	5,200	5,200	5,400	5,600
6. Net cash available (line 4 - line 5)	11,600	11,460	11,238	10,884	10,450
DEBT OBLIGATIONS					
7. Principal & interest on Real Estate	5,232	5,232	5,232	5,232	5,232
8. Principal & interest on livestock	-----	-----	-----	-----	-----
9. Principal & interest on machinery	-----	-----	-----	-----	-----
10. Total principal and interest payments	5,232	5,232	5,232	5,232	5,232
11. Cash remaining (line 6 - line 10)	6,368	6,228	6,006	5,652	5,218

TABLE 11 - SHOWING CAPITAL INVESTED, CASH INCOME OVER VARIABLE COSTS, FIXED CASH COSTS, NET CASH FARM INCOME ABOVE CASH EXPENSE, AND TOTAL ANNUAL DEPRECIATION. (With proposed changes in farm organization, and constant corn yields of 90 bushels per acre.)

Item	Current Year	First Year After Changes	Second Year After Changes	Third Year After Changes	Fourth Year After Changes
CAPITAL INVESTMENT*					
1. Land	\$160,000	\$160,000	\$165,000	\$165,000	\$170,000
2. Buildings & other improvements	20,000	19,000	18,050	17,150	16,290
3. Machinery and livestock	20,000	29,000	24,650	20,955	17,810
4. Livestock	10,000	13,000	13,000	13,000	13,000
5. Total capital invested	210,000	221,000	220,700	216,105	217,100
CASH INCOME OVER VARIABLE COSTS**					
6. Crop	21,350	23,800	23,800	23,800	23,800
7. Livestock	1,400	1,736	1,736	1,736	1,736
8. Total cash income over variable cost	22,750	25,536	25,536	25,536	25,536
FIXED CASH COSTS					
9. Taxes, insurance, and building repair (line 5 x 1.5%)	3,150	3,315	3,310	3,242	3,256
10. Hired labor	5,000	5,000	5,200	5,400	5,600
11. Total Fixed Cash Costs	8,150	8,315	8,510	8,642	8,856
12. Net cash farm income above cash expense (line 8 - line 11)	14,600	17,221	17,026	16,894	16,680
DEPRECIATION					
13. On Buildings (5% of line 2)	1,000	950	900	860	815
14. On machinery (15% of line 3)	3,000	4,350	3,697	3,143	2,671
15. Total annual depreciation	4,000	5,300	4,597	4,003	3,486

* From farm records

** From Farm Business Planning Guide

TABLE 12 - SHOWING TOTAL CASH INCOME, FAMILY LIVING EXPENSES, NET CASH AVAILABLE, PRINCIPAL AND INTEREST PAYMENTS, AND CASH REMAINING. (With proposed changes in farm organization and constant corn yields of 90 bushels per acre.)

Item	Current Year	First Year After Changes	Second Year After Changes	Third Year After Changes	Fourth Year After Changes
NET CASH AVAILABLE					
1. Net cash income above cash expenses (line 12, table 1)	\$14,600	\$17,221	\$17,026	\$16,894	\$16,680
2. Other farm cash income	----	----	----	----	----
3. Non-farm cash income	2,000	2,000	2,000	2,000	2,000
4. Total cash income	16,600	19,221	19,026	18,894	18,680
5. Family living expense	5,000	5,200	5,200	5,400	5,600
6. Net cash available (line 4 - line 5)	11,600	14,021	13,826	13,494	13,080
DEBT OBLIGATIONS					
7. Principal & interest on real estate	5,232	5,232	5,232	5,232	5,232
8. Principal & interest on livestock	----	906	906	906	906
9. Principal & interest on machinery	----	3,623	3,623	3,623	3,623
10. Total principal & interest payments	5,232	9,761	9,761	9,761	9,761
11. Cash remaining (line 6 - line 10)	6,368	4,260	4,065	3,733	3,319

TABLE 13 - SHOWING CAPITAL INVESTED, CASH INCOME OVER VARIABLE COSTS, FIXED CASH COSTS, NET CASH FARM INCOME ABOVE CASH EXPENSES AND TOTAL ANNUAL DEPRECIATION. (With proposed changes in farm organization, and varying corn yields of 100 bushels per acre the first year, 60 bushels per acre the second year, 110 bushels per acre the third year and 80 bushels per acre the fourth year.)

Item	Current Year	First Year After Changes	Second Year After Changes	Third Year After Changes	Fourth Year After Changes
CAPITAL INVESTMENT*					
1. Land	\$160,000	\$160,000	\$165,000	\$165,000	\$170,000
2. Buildings & other improvements	20,000	19,000	18,050	17,150	16,290
3. Machinery and equipment	20,000	29,000	24,650	20,955	17,810
4. Livestock	10,000	13,000	13,000	13,000	13,000
5. Total capital invested	210,000	221,000	220,700	216,105	217,100
CASH INCOME OVER VARIABLE COSTS**					
6. Crop	21,350	25,900	16,100	28,000	21,350
7. Livestock	1,400	1,736	1,736	1,736	1,736
8. Total cash income over variable costs	22,750	27,636	17,836	29,736	23,086
FIXED CASH COSTS					
9. Taxes, insurance, & building repair (line 5 x 1.5%)	3,150	3,315	3,310	3,242	3,256
10. Hired labor	5,000	5,000	5,200	5,400	5,600
11. Total fixed cash costs	8,150	8,315	8,510	8,642	8,856
12. Net cash farm income above cash expense (line 8 - line 11)	14,600	19,321	9,326	21,094	14,230
DEPRECIATION					
13. On buildings (5% of line 2)	1,000	950	900	860	815
14. On machinery (15% of line 3)	3,000	4,350	3,697	3,143	2,671
15. Total annual depreciation	4,000	5,300	4,597	4,003	3,486

* From farm records

** From Farm Business Planning Guide--used \$80 per acre income over variable costs on 110 Bu. corn yield.

TABLE 14 - SHOWING TOTAL CASH INCOME, FAMILY LIVING EXPENSES, NET CASH AVAILABLE, PRINCIPAL AND INTEREST PAYMENTS, AND CASH REMAINING. (With proposed changes in farm organization and varying corn yields)*

Item	Current Year	First Year After Changes	Second Year After Changes	Third Year After Changes	Fourth Year After Changes
NET CASH AVAILABLE					
1. Net cash income above cash expenses (line 12, table 1)	\$14,600	\$19,321	\$ 9,326	\$21,094	\$14,230
2. Other farm cash income	----	----	----	----	----
3. Non-farm cash income	2,000	2,000	2,000	2,000	2,000
4. Total cash income	16,600	21,321	11,326	23,094	16,230
5. Family living expense	5,000	5,200	5,200	5,400	5,600
6. Net cash available (line 4 - line 5)	11,600	16,121	6,126	17,694	10,630
DEBT OBLIGATIONS					
7. Principal & interest on real estate	5,232	5,232	5,232	5,232	5,232
8. Principal & interest on livestock	----	906	906	906	906
9. Principal & interest on machinery	----	3,623	3,623	3,623	3,623
10. Total principal & interest payments	5,232	9,761	9,761	9,761	9,761
11. Cash remaining (line 6 - line 10)	6,368	6,360	(3,635)	7,933	869

* Corn yields were 100 bushel per acre for the first year after changes were made, 60 bushels per acre the second year, 110 bushels per acre the third year and 80 bushels per acre the fourth year.

TABLE 15 - SHOWING THE CUMULATIVE "CASH-REMAINING" AND THE CUMULATIVE "MACHINERY AND BUILDING DEPRECIATION" AT THE END OF EACH YEAR; AND THE CASH REMAINING OVER THE DEPRECIATION AT THE END OF THE FIVE YEAR PERIOD.

Year	No Changes		With Changes----- 90 Bushels Corn Yield		With Changes----- Varying Corn Yield	
	Cumulative Cash Remaining	Cumulative Machinery & Bldg. Depreciation	Cumulative Cash Remaining	Cumulative Machinery & Bldg. Depreciation	Cumulative Cash Remaining	Cumulative Machinery & Building Depreciation
Current	\$ 6,368	\$ 4,000	\$ 6,368	\$ 4,000	\$ 6,368	\$ 4,000
Year 1	12,596	7,500	10,628	9,300	12,728	9,300
Year 2	18,602	10,571	14,693	13,897	9,093	13,897
Year 3	24,254	13,271	18,426	17,900	17,026	17,900
Year 4	29,482	15,652	21,745	21,386	17,895	21,386
Cash remaining over depreciation	\$13,830		\$ 359		(\$3,491)	

Since social security payments, income taxes and some miscellaneous expenses have not been considered, it is obvious that the farm manager could not have replaced the building and

machinery depreciation as it occurred if the change to narrow row equipment had taken place. However, as can be seen by the next table, his net worth increased.

TABLE 16 - SHOWING THE FARM MANAGERS PROJECTED NET WORTH AT END OF THE CURRENT YEAR AND AT THE END OF EACH OF THE NEXT FOUR YEARS, STARTING WITH YEAR 1. (Net worth determined by total capital invested, minus liabilities, plus or minus cash remaining.)

	With No Changes	Change to Narrow Row Equipment With Consistent Yields of 90 Bushels Corn	Change to Narrow Row Equipment with Varying Yields--100 Bu. 1st Yr., 60 Bu. 2nd yr., 110 Bu. 3rd Yr. and 80 Bu. 4th Year.
End Current Year	\$158,000	\$158,000	\$158,000
End of First Year	155,630	156,951	159,051
End Second Year	158,702	161,885	154,185
End Third Year	157,222	162,785	166,985
End Fourth Year	161,146	169,619	167,169

While it's obvious that the business must survive in the short run, the ultimate test of the value of an investment with borrowed funds over time, is how it affects the net worth of the business during the length of the planning horizon (four years in this example). It is well to keep in mind that while the "cash remaining" to take care of any unforeseen and unpredictable expenses declined when the changes in the farm organization were initiated, the net

worth of the business increased substantially. Saying it another way, profits are not necessarily the same as cash in the bank.

The net worth of the farm manager increased by \$8,473 or \$2,118 per year by borrowing the money to add the extra cows and the narrow row machinery when yields of corn were increased by 10 bushels per acre.

TABLE 17 - SHOWING ANNUAL PRINCIPAL PAYMENTS AND INTEREST PAYMENTS, AND DEBT REMAINING AT THE END OF EACH YEAR UNDER VARIOUS TYPES OF FARM ORGANIZATION AND VARIOUS CORN YIELDS.

Year	With no changes in farm organization and with consistent corn yields*			Change to narrow row corn planting, cultivating and harvesting equipment with consistent corn yields**			Change to narrow row corn planting, cultivating and harvesting equipment with variable corn yields***		
	Principal Payment	Interest Payment	Debt Remaining	Principal Payment	Interest Payment	Debt Remaining	Principal Payment	Interest Payment	Debt Remaining
Current	\$1,632	\$3,600	\$58,368	\$1,632	\$3,600	\$58,368	\$1,632	\$3,600	\$58,368
Year 1	1,730	3,502	56,638	5,059	4,702	68,309	5,059	4,702	68,309
Year 2	1,834	3,398	54,804	5,429	4,332	62,880	5,429	4,332	62,880
Year 3	1,944	3,288	52,860	5,827	3,934	57,053	5,827	3,934	57,053
Year 4	2,060	3,172	50,800	6,254	3,507	50,800	6,254	3,507	50,800

* Corn yields - 80 bushels per acre

** Corn yields - 80 bushels per acre current year--90 bushels per acre thereafter

*** Corn yields - 80 bushels per acre current year--100 bushels per acre in year 1, 60 bushels per acre in year 2--110 bushels per acre in year 3--and 80 bushels per acre in year 4.

As a result of the shift to narrow row machinery and equipment (with borrowed funds) the annual principal and interest payments increased from \$5,232 to \$9,761. And when the yield of corn dropped to 60 bushels per acre the second year after the change was made, the cash available was not sufficient to meet principal and interest payments.

This example of forward budgeting or cash flow programming demonstrates again, that in the short run, an investment of this type can severely limit the amount of cash available for any unforeseen emergencies. So while this would have been a profitable 4-year investment, there could be some lean periods during the intervening years when the much higher interest and principal payments must be met.

LESSON IV

LENDER-BORROWER COMMUNICATION

Objectives

To increase the understanding and
the ability to communicate between
borrower and lender, by the use of:

in Lesson III.

(a) Budgeting as demonstrated

(b) Records and record analysis.

(c) Open and frank discussions.

Proposed Audience

Same as Lesson II.

Teaching Aids

Same as Lesson II.

LESSON IV

LENDER-BORROWER COMMUNICATION

In his will, a businessman who had on several occasions gone bankrupt wrote, "I hereby name the following six bankers to be my pallbearers. Since they carried me for so long during my lifetime, they might as well finish the job now."

Unknown

Would you make the loan?

Perhaps most of us would have a difficult decision to make if we were asked to make the loan requested in Lesson III. Would you, as a lender, have made it? If not, why not?

Before you gave an answer you probably would want much more information about the borrower. It was mentioned earlier that his past business records were not adequate for judging his past performance. Has the manager

much expectation of receiving the loan without this information? Suppose he had asked for a \$30,000 or \$40,000 or \$50,000 loan. Certainly at some point the lender would ask for an accounting of what has happened in the past. Since it is the borrower's responsibility to convince the lender that he has the necessary managerial requirements (skill, knowledge, ability, interest) to make the business a successful one, he must be able to communicate what has happened and why it happened.

Managerial Requirements and the Use of Records

Lesson III demonstrated how the use of one financial tool, forward budgeting, can be used to project how a change in the organization of the business (an investment) will affect the cash flow of that business. But the lender is equally interested in the manager's past performance. In this section the use of farm records and analysis as another financial tool will be discussed.

To help assess the growth and progress (or why it did not occur) of a business, the lender must have meaningful records to examine. In an era when most farm businesses are valued at \$100,000 up, it is not realistic to expect the lender to make a large loan because the borrower says the

weather was "not right." He will want to look at the business records over a period of several years in an attempt to evaluate longer time trends.

Specifically, what will the records reveal to the lender which will help the "communication problem" and make for a mutually profitable loan? (Remember the lender has a limited amount of money to lend and he cannot be criticized for seeking the best loan.)

A complete business analysis will allow him to know much about the business. He wants to know the size of the business (from the standpoint of the total capital managed), the percent return on capital, the return to management, the operator's net worth and equity, and in general,

the kind and size and returns of the different enterprises. The three-year record of a Missouri farm business on page 37 would be an excellent farm financial management tool for the borrower to use to convince the lender that the loan could be mutually profitable. This is an actual three-year record from a Mail-In Record cooperator who is 55 years old. You will notice that 1965 was an excellent year, 1966 was a poor year (due, primarily, to greatly reduced crop yields), and 1967 was a horrible year (due, mostly, to crop yields being extremely low). The low crop yields in 1966 and 1967 were due to almost impossible weather conditions.

This kind of a three-year record should provide the potential borrower a basis for an excellent discussion with a lender. (Incidentally, this manager would like to build a \$10,000 to \$12,000 swine finishing building this year with borrowed capital. This implies that he will expand the hog business. Also, he may well be asking for \$10,000 or \$15,000 operating loan.)

Would you, as a lender be willing to lend to this farm manager, based on his past performance, \$20,000 or \$25,000 now, for an operating and building loan?

Actually, a more appropriate question for discussion will probably be "how much would you, as a lender, lend to this manager?"

Particularly helpful is the three-year continuous record. It needs to be pointed out that the record for 1965 will help him tremendously when applying for a loan. It shows his land capability and his ability to make the crop enterprise a profitable one in a favorable year. And a good record program (whatever the name of the system) can provide this kind of information.

This particular analysis or history of the manager's past performance and

his net worth statement show a very solid business, with a net worth of about \$71,000 and a 67 percent equity in the business. And the ability to "communicate" to the lender why the manager's net worth decreased the past year by \$5,000, should not be difficult with these records.

A study of another three-year record on page 38 of a farm business enrolled in the Mail-In Record Program makes an extremely interesting and perhaps contrasting story for the acquisition of investment and operating credit. In terms of size of business it is almost identical to the farm business just reviewed, but almost twice as large in number of crop and open pasture acres. The manager has been using increasing amounts of borrowed capital, but his percent equity has remained rather constant due to the increasing size of the business. His returns to labor and management have improved each year. And one of the reasons for his relatively low net worth in the business might well be because he has had fewer years to build up a larger equity.

A considerable part of the large increase in value of livestock production which occurred in 1967 was due to three reasons. First, about 20 purchased springer heifers were valued at a considerably higher figure at the end of the year than the purchase cost. Secondly, replacement heifers from his own herd were valued much higher in the ending inventory. And thirdly, there appeared to be a substantial increase in the price received per pound of milk sold.

It should be noted that the value of production per man was satisfactory only in 1967 (due to the cattle transactions and the decline in man years of labor used of over 40 percent). The yields of corn were much higher in 1967 over 1966 (still too low to pay the bills) and the acreage was reduced by about 60 percent. Too, fertilizer costs per crop acre almost tripled in 1967 over 1966 and

	<u>1965</u>	<u>1966</u>	<u>1967</u>
<u>Total Capital Management</u>	\$86,168	\$98,741	\$106,003
Land & Improvements	\$54,600	\$62,000	\$ 70,000
Livestock	\$19,665	\$20,180	\$ 18,184
Machinery	\$ 3,985	\$ 5,965	\$ 7,762
Seed, Feed, etc.	\$ 7,917	\$10,595	\$ 10,058
<u>Total Land</u>	364	364	404
Crop & Open Pasture	244	267	286
Cropland	190	212	231
Acres & Yield (corn)	68-88	96-52	77-36
Acres & Yield (soybeans)	35-20	22-18	52-6
<u>Total Value Livestock Production</u>	\$22,864	\$24,146	\$ 21,034
Feed Fed to Livestock	\$13,761	\$17,368	\$ 14,474
Livestock return after Feed	\$ 9,103	\$ 6,778	\$ 6,560
Livestock return per \$100 Feed Fed	\$ 166	\$ 139	\$ 145
Number of Beef Cows	40	46	48
Number of Litters of Pigs	56	63	34
Pigs per Litter	9.80	9.48	9.79
<u>Total Value Harvested Crops</u>	\$11,400	\$ 9,876	\$ 5,312
Crop return to Land & Labor	\$ 8,419	\$ 4,249	\$ (1,295)
Labor Costs per \$100 Production	\$ 13	\$ 27	\$ 38
Value of Production per Man	\$17,525	\$12,220	\$ 10,745
Machine Costs per \$100 Production	\$ 12	\$ 20	\$ 28
Return to Labor & Management	\$ 9,404	\$ 1,626	\$ (2,667)
Return to Management	\$ 7,004	\$(1,974)	\$ (6,267)
Percent Return	13.13	3.0	(.91)
Interest Allowed on Capital	\$ 4,308	\$ 4,937	\$ 5,300
Interest Paid	\$ 1,189	\$ 1,147	\$ 1,751
Total Capital Borrowed at 5%	\$23,780	\$22,940	\$ 35,020
Net Worth *	\$62,388	\$75,801	\$ 70,983
Percent Equity	72	77	67
Man Years of Labor Used	1.31	1.45	1.32

* Have the class assess the possibilities of this proposed building and operating loan if the manager had a net worth of \$40,000 to \$50,000. And does it appear that the swine enterprise is the best enterprise for this manager to expand?

	<u>1965</u>	<u>1966</u>	<u>1967</u>
<u>Total Capital Management</u>	79,266	98,654	109,057
Land & Improvements	53,000	70,000	70,000
Livestock	14,006	15,650	24,283
Seed, feed, etc.	3,354	4,090	4,398
Machinery	8,906	8,911	10,375
<u>Total Land</u>	760	795	795
Crop & Open Pasture	434	461	554
Cropland	254	234	237
Acres & Yield (corn)	114-55	84-13	32-41
Acres & Yield (soybeans)	0	0	0
<u>Total Value Livestock Production</u>	12,220	18,559	31,478
Feed Fed to Livestock	8,645	9,532	15,116
Livestock Return after Feed	3,575	9,028	16,362
Livestock Return per \$100 Feed Fed	141	195	208
Number of Dairy Cows	38	52	50
Pounds of Milk per Cow	8,690	5,342	7,822
Number of Litters of Pigs	0	0	0
Pigs Per Litter	0	0	0
<u>Total Value Harvested Crops</u>	11,418	7,374	7,373
Crop Costs Per Cropland Acre	46	34	42
Crop return to Land & Labor	(335)	(622)	(1,809)
Labor costs per \$100 Production	31	30	19
Value of Production per Man	7,165	9,032	20,721
Machine Costs per \$100 Produced	46	36	30
Return to Labor and Management	(3,991)	4,499	5,415
Return to Management	(6,991)	1,499	1,815
Percent Return	(3.82)	6.79	6.93
Interest Allowed on Capital	3,963	4,183	4,695
Interest Paid	2,593	2,941	3,157
Total Capital Borrowed	51,860	59,820	63,140
Net Worth	27,400	23,840	30,760
Percent Equity	35	30	33
Man Years of Labor Used	2.34	2.19	1.28

these costs are reflected in the greatly increased crop costs per cropland acre. As a result, crop returns to land and labor have shown an increasingly larger negative return the past three years. What are some additional weak and strong points of this business? What changes will be needed to make this a sounder business? How much would a lender be willing to lend this business today:

- (1) To expand the size of the dairy herd?
- (2) To bring about an increase in the production of milk per cow?
- (3) To increase crop yields?

Another farm financial tool to gauge progress and growth from records

of the business is a comparative analysis between two similar businesses.

On page 40 the two-year records (1966 - 1967) of two relatively small swine farms with contrasting returns are shown. The first farm had a (.2) average return for the two years while the second business had a 26.5 percent return. The second farm had a live-stock return above feed costs of 2.5 times that of the first farm (the capital invested in livestock was approximately the same). Returns to management on the first farm averaged (\$3386) for the two years, while the manager of the second business had an average annual management return of \$8,547. The net worth of the manager of farm number one is considerably higher than that of the manager of the second farm, but his equity in the business is considerably less.

Note:

From the standpoint of credit possibilities, what are the merits of these two farm businesses?

If folks in the money lending business were faced with credit requests from the manager of these farms,

- (1) What enterprises would they be willing (as a lender) to finance, so that the manager could expand?
- (2) How much would they be willing to lend by enterprise and total?
- (3) Whether they were able to determine that farm number two was strictly a feeder pig business?
- (4) How much easier and quicker the manager of farm number two might receive the loan if these two managers applied for a comparable sized loan with the same lender?

Other Credit Considerations

Credit, in its simplest terms, means that one party contracts for the temporary possession and use of another party's resources and pays a fee

(interest) for their use. The word credit is derived from the Latin word "Credo" which means "I believe."

	<u>1966-67</u> <u>Farm #1</u>	<u>1966-67</u> <u>Farm #2</u>
<u>Total Capital Managed</u>	\$66,541	\$46,375
Land	\$35,000	\$25,000
Livestock	\$15,324	\$14,274
Machinery	\$ 5,917	\$ 4,894
Seed, feed, etc.	\$10,272	\$ 2,207
<u>Total Land</u>	170	80
Crop and open pasture	159	68
Cropland	146	36
<u>Total Value of Livestock Production</u>	\$25,689	\$36,828
Feed fed to livestock	\$17,063	\$15,676
Livestock return above feed	\$ 8,626	\$21,152
Livestock return/\$100 feed fed	\$ 152	\$ 236
Number of beef cows	12	
No. litters of pigs	88	197
Pigs per litter	9.4	10.8
<u>Total Value of Harvested Crops</u>	\$ 7,802	\$ 725
Crop return to land and labor	\$ 951	(\$ 258)
Labor costs (oper. & unpaid family)	\$ 3,600	\$ 3,800
Labor charge per \$100 production	\$ 25	\$ 17
Value production per man	\$13,389	\$20,909
<u>Machine Costs Per \$100 Production</u>	\$ 31	\$ 16
<u>Return to Labor and Management</u>	\$ 214	\$12,347
<u>Return to Management</u>	(\$3,386)	\$ 8,547
<u>Percent Return</u>	(.2)	26.5
<u>Interest Allowed on Capital</u>	\$ 3,326	\$ 2,313
<u>Interest Paid</u>	\$ 1,509	\$ 776
<u>Total Capital Borrowed at 5%</u>	\$30,180	\$15,520
<u>Net Worth</u>	\$36,334	\$30,855
<u>Percent Equity</u>	54.6	66.5
<u>Man Years Labor Used</u>	1.3	1.1

Hence credit is actually based on confidence and faith as much as anything else --- confidence in the future solvency of the person, and faith in his abilities and in his repaying the loan as per agreement.

So, it's the borrower's responsibility to convince the lender that he has the necessary qualities that will make him a good risk: honesty and willingness to cooperate, in addition to having the managerial requirements (skill, knowledge, ability, interest) that have been discussed.

And so it is imperative that the lender and the borrower be completely honest and frank with each other. The lender will want to know how the borrower followed repayment terms and plans on prior loans; whether total anticipated loan needs in the near future have been programed or budgeted; whether there are many sizeable outstanding

accounts existing, and the "riskiness" of the enterprise or change in enterprises being considered. The borrower will want to know, in addition to the rate of interest he will be paying and the time and amount of his payments, how he will be treated if unforeseen circumstances arise which may prevent him from following the repayment schedule.

These issues should be thoroughly discussed at the same time the loan is being deliberated --- not after the crisis has occurred. And if some unbudgeted happening does occur which may prevent the borrower from making the payment as per agreement, he owes the lender the courtesy of informing him ahead of the payment date. The borrower will also want to discuss with the lender the possibilities of insuring repayment of a loan in the case of death or disability.

SUMMARY

The ability to communicate precisely with one another is a difficult art. And this difficulty is magnified many times when there are as many aspects involved as there are in the whole area of credit. So it is extremely important for the lender to make an attempt to clarify his position and to use as many of the farm financial tools as possible when discussing the use of credit with the borrower. He needs to be able to tell his story as precisely as possible. He can communicate where he has been and is today only by the use of records and analysis, and where he plans to be tomorrow only by forward planning and budgeting. Aided by these financial tools he will be able to tell his story and sell his case.

References

Farm Financial Management - The Economic Consequences of Investment Decisions,
by Albert R. Hagan, University of Missouri, Columbia, Missouri.

Farm Management Newsletter, November, 1966, by George McCullom, Farm Management
Agent, Trenton, Missouri.

Missouri Farm Business Summary, 1956 - 1966 - Columbia, Missouri.

Financing the Farm Business, University of Missouri, 1963, Columbia, Missouri.

Financing Modern Midwest Agriculture, Extension Bulletin 415, Purdue University,
Lafayette, Indiana.

Stretching Your Resources Through Borrowing Money for Your Farm and Home Business,
Extension Service, Kansas State University, Manhattan, Kansas.

The Future of Agriculture, Paper, 16th National Agricultural Credit Conference,
by J. Carroll Bottom, Department of Agricultural Economics, Purdue
University, Lafayette, Indiana.

Agricultural Finance, by Aaron Nelson and William Murray, Iowa State University,
Ames, Iowa.

Farm Business Planning Guide for Organization, Extension Service, University of
Missouri, Columbia, Missouri.

Teachers Guide to Farm and Family Financial Management, by Ralph Hepp and
Mike Kelsey, Department of Agricultural Economics, Michigan State University,
East Lansing, Michigan.

