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Starting Farming in South Central Minnesota... Guidelines, Financial Rewards, Requirements

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Starting Farming in South Central Minnesota . . . Guidelines, Financial Rewards, Requirements

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INTRODUCTION

Rising management requirements and declining numbers of career opportunities characterize present-day farming. In this setting, prospective farmers have difficulty deciding whether to farm and how best to develop a successful farming career. This study develops guidelines for helping prospective farmers in one area of Minnesota appraise career opportunities in farming and to choose from alternative plans the one they might want to follow in developing a successful farming career. Hopefully, too, the study will aid credit agencies and educators working with prospective or beginning farmers.

The General Problem

Since the end of World War II, U.S. farm operators have developed their farming careers under two divergent trends: narrowing profit margins for their farm businesses and rising living costs for their families. These trends meant a substantial increase in the capital and associated production and financial management talent required to generate the gross income or volume of business needed to meet business and household demands. With entry requirements for farming rising and numbers of opportunities declining, young men have experienced increased difficulty in deciding on a farming career. A review of literature indicated that little up-to-date information was available to assist the prospective farmer in career choice and development.

Method of Study and Basic Assumptions

The study was pointed specifically toward developing guidelines for prospective young farmers who are considering farming in the Clarion-Nicollet-Webster soils area of south central Minnesota. The study was limited to situations in which individuals planned to start farming largely on their own (nonpartnerships) with the choice of enterprises limited to corn, soybeans, and hogs.

Farm business growth patterns and financial results were developed or projected over a 10-year period for each of three levels of management — excellent, good, and average. These projections show what *could* take place in farm business development if farmers followed the guidelines under the yield, price, and resource conditions of this study.

Numerous judgments were necessary in making these projections. Among them were choices of production levels and changes in these levels over time, rates of resource acquisition and associated increases in enterprise size, and appraisal of the financial results in terms of the relative balance be-

tween repayment capacity, financial position, and security. To assist in making these judgments, six credit agency personnel and an area farm management extension agent from the study area served as consultants. Budgeting and linear programming were used to analyze the alternative situations and yearly cash flow and net worth statements were calculated for the 10-year period. Calculations also were made to determine the residual returns to capital and labor.

The credit agency consultants to the study strongly suggested that the prospective farmer have his household investment and transportation needs reasonably well met when entering farming so that these items would not compete too heavily for the limited dollars likely to be available during the early stages of farm business development. They also proposed that the prospective farmer have some additional equity in the form of cash or farm personal property to provide evidence of ability to save or handle money effectively. It was, therefore, assumed that individuals representing all three levels of management would begin with a net worth of \$2,000 cash, \$750 as the farm share of an auto, plus a basic set of household furnishings.

It was also supposed that they all would begin with a 240-acre farm, rented on a crop share basis and located near the father's farm, providing access to the use of the father's equipment during the early years. It was further assumed that within a short period of time, differences in management performance would become evident in efficiency levels attained and in the profitability of the farming unit. As a result, additional rented land of relatively high productivity was assumed to be readily available to the *excellent* manager while at the other extreme the *average* manager would experience considerable difficulty in securing additional land of even average quality. The good manager would experience some difficulty in securing rented land, and this land likely would be of somewhat lower quality than for the excellent manager.

Credit availability was partly predetermined and partly treated as a variable in the analysis. The projected financial results for each year were appraised by the six credit consultants as a basis for determining the availability of credit in the following year. In years when major investments were planned, the consultants were asked to make a judgment on whether the investment should be made. In certain instances they could make these judgments without benefit of budgeting or linear programming, based on their past experience. Other times they wanted to see the projected results before deciding whether to make the investment. As the study progressed, the higher projected management and repayment capacity and the more rapid financial progress by the excel-

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lent manager supported the assumption that credit would be much more readily available to the excellent manager than to the good or average manager.

All three levels of management were expected to operate under the same level of product prices. The firm growth pattern projections were made on the basis of the following annual average prices: \$1.10 per bushel for corn, \$2.55 per bushel for soybeans, and \$17 per hundredweight for hogs. With the exception of items such as land, taxes, and interest rates, input costs were considered to be the same for all management levels. No attempt was made to reflect the impact of year-to-year fluctuations in prices and yields on financial results. However, calculations were made to determine the impact on financial outcomes of a 10 percent reduction in product prices over the entire period. Since year-to-year variations in production and prices can be expected, additional work is needed to determine their likely impact.

Because a beginning farmer or his wife are likely to augment farm earnings by work off the farm during the early years in farming, the financial results from the various firm

growth patterns were calculated under the assumption of \$1,000 per year in off-farm earnings during the first 2 years. Similarly, the firm growth patterns were developed under the following assumptions with regard to trends in family consumption levels: average management — \$3,000 in year 1 to \$4,700 in year 10; good — \$3,200 to \$6,600; and excellent — \$3,500 to \$8,600.

In summary, firm growth patterns were established for each level of management under a basic set of assumptions: annual average product prices expected over the next 10 years; \$1,000 in off-farm earnings during the first 2 years and the consumption levels noted above. Calculations were then made to determine the impact on financial results of 1) a 10 percent reduction in product prices, 2) an increase in annual off-farm earnings to \$3,000 during the first 2 years, and 3) changes in family consumption costs from above as follows: average management — \$3,200 in year 1 to \$6,600 in year 10; good — \$3,000 to \$4,700; and excellent — \$3,200 to \$6,600.

EXCELLENT MANAGEMENT: DEVELOPMENT GUIDELINES, LIKELY FINANCIAL REWARDS, OCCUPATIONAL REQUIREMENTS

Excellent management is defined as that level of performance associated with the top 5 to 10 percent of present day commercial farmers in the study area.¹ This section projects the occupational requirements and financial outcomes likely to be associated with this level of management. Suggested development patterns that might be followed also will be noted. The first part presents the requirements, outcomes, and guidelines for years 1 through 4. Subsequent portions relate to years 5 through 10 for an expanded hog operation and for an expanded cropping program. Key implications and considerations will be noted throughout.

Some Farm Business Development Guidelines — Years 1 Through 4

The beginning farm operator normally provides little more than his labor and some yet-to-be determined level of management skill. For this reason, he will likely find that credit agencies, landlords, and other resource suppliers will largely prescribe his pattern of farm business development during the early years. With this in mind, a suggested pattern of firm development for years 1 through 4 was devised with the aid of the field consultants. The crop and livestock portion of the plan is presented in table 1.

Farming operations in the *1st year* would be limited to crop production. This was thought wise for several reasons. First, by concentrating solely on crops, management pressures are reduced to permit the beginning operator to exhibit his skills to best advantage. Second, without a crop inventory from which to draw, the beginning operator, desirous of starting a livestock program, would have to buy feed — a practice not readily acceptable to credit agencies at this stage. Third, crop production on a limited acreage basis provides ample opportunity for off-farm employment.

Table 1. Crop acreage and yields, hog numbers and efficiency levels assumed for first 4 years of farming, excellent management

Item	Year			
	1	2	3	4
Total acreage	240	320	320	400
Corn acres	150	200	200	275
Corn yield	90	95 ^a	105	105
Bean acres	75	100	100	100
Bean yield	27	30 ^a	33	33
Hogs				
Number of farrowings		28	34	34
Pigs raised per litter		7.5	7.5	8.0
Hogs raised		210	255	272
Corn/hog raised (bushels)		15.0	14.5	14.0
Protein/hog raised (pound) ^b		180	175	170

a. Shifted to narrow rows.
b. Includes creep feed.

The crop share arrangement selected for the initial 240-acre unit was one in which the product would be shared 60/40 and the only operating expense to be paid by the landlord was one-half the cost of the corn fertilizer. This is a relatively common arrangement on the more productive soils of the area. A crop share arrangement appeared to be preferable to cash rent because it reduced risk for both the tenant and credit agency and also reduced credit requirements. Normally one-half of the yearly cash rent must be paid in the spring, the remainder after harvest. Of the 240 acres, 225 were assumed to be tillable and capable of maintaining a rotation of corn and beans.

With the son's farming unit located close to the father's, the son was expected to have access to the father's tillage and harvesting equipment so he would need to buy only a limited amount of farm machinery the 1st year (table 2). For use of this equipment, the son was scheduled to help with his father's farming operations. To insure that the existing machine capacity was not exceeded, bean harvest was custom hired. The used machinery purchased by the son was classed

1. Field consultants for the excellent level of management situation were Robert Reger, Branch Manager, Production Credit Association (PCA), Waseca; Carl Myers, First Northwestern National Bank, Redwood Falls; Lyman Morrow, General Manager, PCA, Redwood Falls; and Lawrence Christenson, Area Extension Agent, Farm Management, Waseca.

as of good quality, depreciated on a fairly long term basis (6 to 8 years).

Table 2. List of machinery items purchased, year bought and price paid, excellent management^a

Item	Size	Year			
		1	2	3	4
Tractor #1	45DBHP	\$4,000	.....	.....	.....
Tractor #2	85DBHP	.....	.....	.....	\$9,500
Plow #1	4-14 inch	800	.....	.....	.....
Plow #2	5-14 inch	.....	.....	.....	1,200
Disc #1	14 feet	.....	\$ 600	.....	.....
Disc #2	18 feet	.....	.....	.....	1,800
Stalk chopper	15 feet	.....	.....	\$1,375	.....
Digger	18½ feet	.....	.....	1,000	.....
Harrow	20 feet	.....	.....	400	.....
Planter	6-row 30 inch	.....	2,000	.....	.....
Cultivator	6-row 30 inch	.....	1,000	.....	.....
Sprayer	27 feet	.....	.....	500	.....
Combine	6-row 30 inch	.....	10,000(½)	.....	.....
Truck	1½ ton	.....	.....	1,800	.....
Elevator	60 feet	.....	.....	.....	650
Manure spreader	.....	.....	600	.....	.....
Manure loader	.....	.....	600	.....	.....
Hog feeders	.....	.....	300	.....	.....
Total	.....	\$4,800	\$15,100	\$5,075	\$13,150

a. Prices listed represent 1967-68 prices, adjusted for an approximate 3 percent annual price increase.

To increase volume and income, an additional 80 acres would be rented in the 2nd year under the same crop share arrangements as the 1st year. Also, 14 bred gilts would be purchased in the late fall of the 1st year and farrowed twice (December and July) giving rise to the sale of 190 barrows and gilts in the second year. (Twenty gilts would be saved for replacement purposes.) It was anticipated that the addition of 80 acres in the second year would exceed the capacity of some of the existing equipment—especially the father's planter and combine. This suggested a switch to 6-row, 30-inch equipment, with the son buying a new planter and the son and the father buying a new combine and corn head on a 50/50 basis. Increased yields were assumed to result from the narrow-row planting equipment and associated practices (see table 1). Purchase of hog feeders and manure handling equipment was also scheduled for the 2nd year.

Farm operation in the 3rd year was planned to provide a "breathing spell" for management in the expansion process.² Acreage remained the same while farrowings increased only modestly, from 24 to 34. Crop yields and hog feeding efficiency were expected to show modest increases, due to more experienced management and to the use of more and better inputs. By the end of the 3rd year, the operator was presumed to have purchased a relatively complete line of field machinery, largely divorcing himself from his father's operation except for the combine. Most of the more recently purchased items would be bought new.

In the 4th year, 160 acres were scheduled for purchase on contract for deed, while the crop share rented land was reduced by 80 acres, thus increasing the acreage operated from 320 acres to a total of 400 acres. The contract for deed was assumed to have the following financing provisions: A down

payment of \$5,000 would be financed by the credit agency handling the operator's present short and intermediate term credit on a 5-year, 7 percent equal yearly principal payment plan. The remainder would be financed on a 30-year, 6 percent amortized loan basis, subject to refinancing after 10 years. Early purchase of the land appeared to be the route for the excellent manager to follow because of his anticipated strong desire to gain farm ownership and because land ownership would provide him with a base of operation on which to remodel or construct needed buildings. Since the addition of another 80 acres would tend to overtax the original used tractor, plow, and disc, these items were to be replaced or supplemented with new. The number of farrowings was to remain the same as in the 3rd year on the assumption that these numbers represented the capacity of present hog facilities and that credit availability and development time would preclude construction or remodeling of additional facilities in year 4.

Crop efficiency levels set for each year were thought to be consistent with land productivity, cropping practices used, and the high level of management skill assumed to be available. Additional assumptions included relatively well-drained land and the use of recommended seed varieties, weed and insect control practices, and relatively high levels of fertilization. Hog efficiency levels set were to reflect the expected quality of breeding stock, the feeding program, and level of managerial skill assumed.

Short and intermediate term credit were assumed available in quantities sufficient to acquire needed inputs. Family consumption levels and the buying program on machinery were tailored to stay within the generally accepted limits of most farm credit agencies.

The plan presumed no hired labor would be needed, but some exchange work would be required at harvest. Hog farrowings were spaced to avoid critical planting and harvesting times. The size of cropping equipment utilized was calculated to be sufficient to handle the acreage during a specified number of days, assuming fairly long working days, yet insuring timeliness of operation.

Likely Financial Rewards for the Projected Farm Business Development Plan—Years 1 Through 4

As farm growth patterns were developed, yearly cash flow, net worth, and depreciation summaries were constructed to reveal the resulting financial position of the firm and to provide financial planning information for the succeeding year. Table 3 shows the projected gross income, profits, repayment balances, and financial position that could be expected during the first 4 years of farming under average farm product prices, high family consumption and \$1,000 off-farm income during the first 2 years.

2. Such so-called "breathing spells" can serve at least two purposes: To permit management to gain a firmer grasp of current operations and/or to permit improvement of the financial position of the business. Note later this particular "breathing spell" did not materially improve the operator's financial position. Whether invoked by the operator or credit agency, care should be taken to insure that such breathing spells for management do not come at too high a financial cost.

Table 3. Expected gross income, repayment balances, profits and financial position, excellent management, years 1 through 4*

Item	Year			
	1	2	3	4
Crop acres	225	300	300	375
Hogs raised (number)	210	255	255	272
Productive labor required (hours)	575	1,205	1,295	1,310
	dollars			
A. Gross income	\$9,775	\$21,095	\$22,720	\$31,045
B. Cash operating expenses	5,720	11,710	13,085	17,650
C. Cash expenses/\$1 gross (C ÷ A)	0.59	0.56	0.58	0.57
D. Amount available for debt, living, taxes (A - B)	4,055	9,385	9,635	13,395
E. Less family living	3,500	3,800	4,500	4,800
F. Less real estate principal and income taxes	0	280	595	550
G. Amount available for non real estate debt (cash)	2,555**	5,305	4,540	8,045
H. Adjustment for inventory	+ 960	+ 605	+ 220	+ 2,900
I. Amount available for non real estate debt (accrual)	3,515	5,910	4,760	10,945
J. Non-real estate debt to be met	1,940	1,850	3,805	4,485
K. Amount available (accrual)/\$1 non real estate debt (I ÷ J)	1.81	3.19	1.25	2.44
L. Excess non real estate debt repay capacity				
accrual (I - J)	+1,575	+4,060	+ 955	+6,460
cash (G - J)	+ 615	+3,455	+ 735	+3,560
M. Profits (profit and loss)	2,285	6,085	6,240	11,225
N. Profit/\$1 gross	0.26	0.30	0.27	0.32
O. Total capital assets	7,760	20,745	22,610	99,275
P. Total liabilities	3,505	13,800	14,300	85,120
Q. Net worth - end of year	4,255	6,945	8,310	14,155
- change per year	+1,505	+2,690	+1,365	+5,845
	percent			
- increase as percent of gross	12.8	12.8	6.0	18.8
R. Liquid asset/liquid liability	1.7	1.1	1.1	1.1
S. Non real estate asset/non real estate liability	2.2	1.5	1.6	1.3
T. Net worth/total liabilities	1.2	.50	.58	.17

* Calculated under assumption of average product prices, high family consumption, and \$1,000 off-farm income during the first 2 years.

** Includes \$2,000 cash on hand at start of farming.

Gross income (item A) represents the yearly value of all farm sales of corn, soybeans, hogs, sows, and boars. In years 1 and 2, it also includes off-farm income. *Cash operating expenses* (item B) includes all farm operating expenses including interest paid. *Adjustment for inventory* (item H) includes changes in crop and livestock inventories, accounts receivable and cash balances. *Non-real estate debt to be met* (item J) was derived as follows: The total cost of purchased livestock was considered an outlay in the year of purchase while one-fifth of the value of debt on machinery and like items and one-seventh of the value of debt on buildings were included annually.

Profits (item M) are defined as gross income minus cash operating expenses and depreciation, plus or minus changes in inventory (item H).

Net worth (item Q) represents the difference between farm assets and liabilities at the end of each year. It does not include possible increases or decreases in land values due to inflation nor does it include changes in nonfarm, household or personal worth such as cash surrender values of life insurance. For any given year, the income taxes and social security payments due on that year's business have been included as an end-of-year liability.

Liquid assets (item R) are defined as readily marketable assets such as feed, livestock, cash, and any notes and accounts receivable. The so-called *liquid liabilities* portion of the ratio includes the income tax and social security payments due on that year's business and the portion of real estate principal payments and intermediate debt due during the next 12 months.

The *non-real estate assets* (item S) include liquid assets (item R) plus depreciable items such as machinery, auto, the cost of remodeling existing buildings, and building new buildings. In this farming area, the value of bare land closely approximates that of land with buildings. For this reason, a fairly fast writeoff of remodeled and new buildings was necessary and these items were included in the non-real estate portion of the net worth statement. By the same token, the value of existing buildings was retained as part of the value of real estate which was held at a constant value in the net worth statement. This, of course, assumes that the original value of the land would account for most of the purchase price of the farm and that land value increases would more than offset any depreciation of buildings. For income tax purposes, existing buildings were depreciated in the same manner as machinery, remodeled and new buildings, etc.

The *non-real estate liabilities* (item S) include all liabilities except that the remaining debt on real estate after the payment due in the next 12 months has been subtracted. The *net worth/liabilities* ratio (item T) is calculated by dividing the net worth at the end of the year by the total liabilities outstanding at the end of the year. The liquid asset/liabilities ratio and the non-real estate/liabilities ratio are also calculated on an end of the year basis.

To appraise the financial outcomes in table 3, a set of standards was needed for a comparison of various financial outcomes. Establishing a set of standards involves considerable judgment. For example, the higher the management and repayment capacities, the weaker can be the individual's financial position and amount of security offered, the purpose

of the loan remaining the same. Because of differences in management, the standards set in this study reflect differences in management levels.

For excellent management, a *cash expense/\$1 gross* ratio (item C) of .60:1 to .65:1 in the early years of farming was deemed desirable. A higher ratio would likely find the operator running behind in debt repayment. As the volume of business grew, a higher ratio (.65 to .70) could be condoned, as family consumption became a smaller proportion of the total dollars left after paying operating expenses. The minimum standard for *amount available/\$1 non-real estate debt to be met* (item K) was set as 1.25:1. This standard signifies that the projected farming program would be profitable enough so that every fifth year the amount of funds available for intermediate debt repayment could fall to zero, yet the operator could stay current on debt payments. Because of the narrow *profit margins* (item N) (20 percent or less of gross) under which beginning operators normally operate, the standard established for net worth progress follows: Each year net worth (item Q) should at least equal 5 percent of the gross income (or in effect about one-fourth of the net).

As for *financial ratios*, a 2:1 liquid asset/liquid liability ratio was thought to be a desirable standard for the excellent beginning operator, recognizing that the feasibility of such a standard would vary with type of farming and with the particular stage of firm development. This ratio indicates the extent to which the firm could meet immediate creditor demands, should something drastic happen to the farming operation during a given year. An equally important, if not more critical ratio considered was the non-real estate asset/non-real estate liability ratio, for which 1.3:1 was set as the standard. This ratio provides a longer run picture of the degree of solvency of the business with regard to non-real estate property, much of which is depreciable in nature. Any marked narrowing of this ratio over time would indicate that the earning power of the operation was not sufficient to meet living and real estate debt payment demands and yet remain current with regard to non-real estate debts or asset replacement. By following absolute dollar values, the operator and creditor can determine the extent to which net worth is being generated in non-real estate assets. Many operators have failed to observe this and have experienced a deterioration in their non-real estate position at the same time that their net worth was rising due to rapidly rising land values.

A ratio of 0.25:1 was established as a guideline for the net worth/total liabilities ratio. The *purpose* of the loan as well as the *amount of security* offered against a loan was scrutinized carefully by the authors and consultants in the development of the firm growth patterns.

All of the preceding standards, of course, cannot be considered as fixed, nor should they be viewed in isolation. Individually, they must be viewed more as caution signs. The extent to which they reflect a highly desirable or undesirable financial situation will depend on the extent to which all of the various standards are met or not met.

Table 3 shows that the suggested development plan permits the beginning operator of excellent ability to enjoy adequate levels of family consumption, and at the same time to meet yearly debt commitments and to make reasonable financial progress during the first 4 years. The availability/debt

ratio (item K) in three of the years far exceeded the standard of 1.25:1 and net worth increases approximated 13 percent of gross income, compared with the standard of 5 percent. Very favorable expense/gross and profit/gross ratios formed the basis for very good financial performance. A major factor causing the very favorable financial situation in year 4 was the fact that real estate taxes and initial principal and interest payments normally come due the year following purchase rather than the year of purchase.

The operator's liquid asset/liability ratios were quite weak compared with the 2:1 standard, but this is not serious in view of the sizable repayment balances available to meet debt commitments. The non-real estate asset/non-real estate liability ratios are generally quite favorable compared with the standard of 1.3:1 though the money borrowed for the downpayment on the farm weakened the individual's position considerably in the fourth year. This is typical and suggests the importance of careful timing of land purchases.

Some Farm Business Development Guidelines— Years 5 Through 10 with an Expanded Hog Operation

By the 5th year, the excellent beginning manager is likely to have several resource acquisition and allocation options open to him. Two basic resource situations were studied, namely (1) limited land and one-man operation and (2) expanded land and one-man operation. This section explores the firm's growth under the first of these alternatives.

With land limited to 375 tillable acres (160 acres owned, 240 rented, 25 nontillable), it was obvious that growth of the firm beyond year 4 would have to come via expansion in the hog enterprise which became the major focus of business development during years 5 through 7 in this alternative. To avoid undue management and financial stress, the six-times-per-year farrowing system was not given serious consideration.³ Linear programming runs showed that the three farrowings a year was more profitable than the two farrowings a year because the farmer would make fuller utilization of facilities and labor throughout the year. Major emphasis was placed on developing a three-farrowing a year hog program that would be technically sound yet consistent with the excellent manager's capacity and likely financial position.

Programming results showed that fall labor was in short supply, but that resources permitted the hog enterprise to be expanded at least to the limit of the capacity of the remodeled partially slotted finishing house (approximately 900-head capacity).⁴ With this information, it became apparent that the partial-slot finishing facility would make a more adequate longer term hog facility than the more intermediate though less costly alternative of cementing-in the existing dairy barn floor. The latter would provide space for only about 500 head of finishing hogs — not enough to attain an efficient use of the available resources. The building of additional finishing facilities would soon be required. A further consideration favoring the slotted floor arrangement was that the pit provides a plan for manure storage during the cropping season.

With this information, the next question was: How rapidly could the hog enterprise expand in light of technical considerations and resource and management limitations? The

3. Financial stress would have been encountered due to the fact that the six-time per year farrowing system required a duplicate set of farrowing facilities to minimize disease problems.

4. It was assumed that the farm which was purchased in year 4 would have an average size dairy barn and hog house on it. It was further assumed that the dairy barn could be remodeled into a finishing unit and the hog barn into a farrowing unit. If such facilities were not available to the beginning operator, then another approach would have to be taken in expanding hog facilities.

alternative selected required remodeling of the hog house for farrowing and of the dairy barn for finishing. This farrowing house would have a capacity of 24 litters with three farrowings a year, or 72 litters a year. Because of the time required for remodeling, the raising of 48 litters (24 litters each in the spring and summer, see table 4) was set as a reasonable limit in year 5. In year 6, the number of litters was increased to 72, which was the capacity of the existing farrowing facilities. Additional farrowing facilities were started in year 6 and completed early in year 7, increasing the capacity to 38 litters (or 114 litters per year). For technical reasons associated with the bunching up of pigs between the farrowing and finishing unit with three farrowings a year, the new addition was a fully slotted farrowing unit. It was again assumed that the time required for construction would limit litter numbers in year 7, to 24 in the winter and 38 each in the spring and summer, or a total of 100 litters, with approximately 800 pigs raised a year. By year 8, litter numbers about filled the finishing unit, with a total of 912 hogs raised.

One of the key decisions regarding the cropping program in this type of operation is the best way to handle combine-harvested corn. The options open to the operator vary by areas and will likely vary over time within a given area. The operator was assumed to have the following options open: He could sell wet corn at harvest; dry and store it at the elevator, and either dry at the elevator or store on the farm, or dry and store on the farm.

Because of the need to develop the hog program as rapidly as possible, and because of financial considerations, installation of a corn drying system was delayed until year 8. The credit consultants felt that earlier purchase would over-extend the operator's borrowing capacity at a critical time. However, if off-farm drying facilities are unavailable or inadequate, note that the programing analysis showed that fall labor savings, associated shifts from beans to corn, and reduced custom hiring would provide sufficient excess earnings to permit earlier purchase of the farm drying facility.

Table 4. The projected hog program for the limited land, one-man farm operation, years 5 through 10, excellent management

Item	Year					
	5	6	7	8	9	10
Number of litters						
Winter	0	24	24	38	38	38
Spring	24	24	38	38	38	38
Summer	24	24	38	38	38	38
Total	48	72	100	114	114	114
Pigs per litter ...	8.0	8.0	8.0	8.0	8.5	8.5
Total pigs raised ...	384	576	800	912	969	969
Corn/hog raised (bushels)	13.8	13.8	13.5	13.5	13.0	13.0
Protein/hog raised (pounds)	165	165	160	160	155	155
Investments						
Remodeled						
Hog barn \$2,505						
Dairy barn 4,175						
Slotted farrow unit			5,785			
Portable mixer	2,200					
Liquid manure equipment ...	1,300					
Total	\$10,180		5,785			

In years 5 and 6, the analysis showed that drying and storing corn in town or drying in town and storing on the farm were equally profitable, but drying and storing in town was preferable from a debt repayment standpoint. This was the alternative selected (see table 5). In year 7, bins were built for grain to be dried in town and stored on the farm as a preparatory step to installation of a corn drying system in year 8. With drying in town and storing in the elevator or on the farm, the most profitable tenure arrangement was the crop share lease, with corn making up two-thirds of the rotation. With fall labor quite scarce, the farming program called for increased amounts of hired combining in years 5 through 7 and 200 hours of additional fall hired labor.

Table 5. The projected cropping program for the limited land, one-man farm operation, excellent management, years 5 through 10

Item	Year					
	5	6	7	8	9	10
Total crop acres	375	375	375	375	375	375
Owned	150	150	150	150	150	150
Crop share	225	225	225	0	0	0
Cash rent	0	0	0	225	225	225
Corn: acres	250	250	250	360	339	339
yield	110	110	115	115	120	120
Beans: acres	125	125	125	15	36	36
yield	34	34	36	36	38	38
Combine hire: beans	50	90	125	0	0	0
Plowing hire	0	0	0	150	150	150
Corn sales (bushels)						
Dry, store town	12,393	10,137				
Dry, town; store farm			9,725			
Dry, store farm				29,251	28,490	28,490
Beans: store farm	3,178	3,153	3,292	513	1,193	1,193
Investments						
Bins	\$1,750	\$1,750	\$3,500	\$6,300		
Combine (1/2 share)			8,500			
Drier				12,000		
Other equipment					\$2,200	\$3,750
Total	\$1,750	\$1,750	\$12,000	\$18,300	\$2,200	\$3,750

The corn drier, bought in year 8, was an 8-foot batch drier with a 2,000 bushel capacity a day, or about 46,000 bushels a season. By year 8, this alternative proved more profitable than town drying and farm storing. However, this introduction caused major changes in the cropping operation if profits were to be maximized. First, it caused a shift from crop-share to cash rent and a rotational change to virtually continuous corn. Second, because the drier eliminated the problem of hauling the corn to town and the associated wait at the elevator at harvest time, hiring of combining with trucking provided by the custom operator became less advantageous. It became more profitable for the operator to do his own combining and to hire plowing to the extent necessary to fit labor demands within the assumed labor supply.

Likely Financial Rewards for the Projected Farm Business Development Plan, Years 5 Through 10, Expanded Hogs

Table 6 shows the financial outcomes projected for the expanded hog operation during years 5 through 10. These outcomes suggest that a firm growth pattern focused on hogs could provide the beginning farm operator of excellent management ability with a very adequate level of family consumption plus an average annual increase in net worth of about \$3,600 over the 10-year period. This rate of annual net worth increase is equal to 8.3 percent of the total gross income, considerably above the 5 percent standard set earlier.

It is important to keep in mind that no inflation in land values was included in net worth calculations. If an increase of \$10 per acre per year had been assumed, increased land values would account for another \$11,200 increase in net worth over the 10-year period or \$1,120 per year. Also, relatively rapid depreciation rates were used on machinery for this size farm and for equipment used. Further increase in net worth could accrue from machinery if at the end of year

10 market values were placed on existing equipment rather than the depreciated values utilized in the study.

Because of the substantial levels of family consumption programed for the excellent beginning operator, it is likely that additional net worth increases would accrue in the household-non-farm sector of his operation through the increasing cash surrender value of such items as life insurance.

The farm business exhibited a reasonable degree of financial stability over the 6-year period. The amount available/debt to be met ratios (item F) were generally quite favorable. On the average it would take 2-3 years to recover from a year in which no intermediate debt repayment could be made. Similarly, in most years, the financial ratios equaled or exceeded the standards previously set — 2:1 for liquid asset/liquid liabilities, 1.3:1 for non-real estate asset/non-real estate liabilities and the 0.25:1 ratio for net worth/total liabilities.

However, the operator's financial position during years 5 and 6 could be somewhat precarious, particularly from a cash position standpoint as is indicated by item G — cash basis. Three factors precipitated this weakness. First, the operator would be faced with normal principal, interest, and taxes on the land purchased in year 4, plus payments and interest on the money borrowed for the land's downpayment. Second, year 5 was the first of 3 years required for development of the expanding hog enterprise. With inventory building up in corn and breeding stock, cash income was quite limited, resulting in sizable yearly carryovers of debt. Third, projected family living demands called for the largest increases in these demands to occur during years 5 and 6 (\$800 in year 5 and \$1,100 in year 6). Note how high the cash expense/\$1 gross ratio (item B) is compared to the desired of .65:1 to .70:1.

The prospective farmer would also likely be interested in the potential returns on his investment and for his labor so these calculations were made. Returns on investment were calculated for the following three different categories of capi-

Table 6. Expected gross income, repayment balances, profits, and financial position for the limited land, hog expansion, excellent management situation, years 5 through 10*

Item	Year					
	5	6	7	8	9	10
Crop acres	375	375	375	375	375	375
Hogs raised (number)	384	576	800	912	969	969
Productive labor required (hours)	1,540	1,815	2,185	2,435	2,430	2,430
	dollars					
A. Gross income	\$35,990	\$41,415	\$50,310	\$70,480	\$73,735	\$73,735
B. Cash expenses/\$1 gross	0.78	0.75	0.68	0.68	0.67	0.67
C. Family living	5,600	6,700	7,500	7,800	8,300	8,600
D. Amount available for non-real estate debt (accrual)	8,370	8,130	10,210	13,060	13,750	13,300
E. Non real estate debt to be met	6,120	6,960	6,890	8,525	9,570	7,210
F. Amount available/\$1 non-real estate debt (D ÷ E)	1.37	1.17	1.48	1.53	1.44	1.84
G. Excess non-real estate debt repay capacity						
accrual	+ 2,250	+ 1,170	+ 3,320	+ 4,535	+ 4,180	+ 6,090
cash	- 5,050	- 4,010	+ 690	+ 4,535	+ 4,180	+ 6,090
H. Profit (profit and loss)	6,135	7,980	10,090	12,180	14,495	15,020
I. Profit/\$1 gross	0.17	0.19	0.20	0.17	0.20	0.20
J. Total capital assets	112,150	113,840	126,630	136,630	130,930	126,220
K. Total liabilities	95,990	95,255	105,075	110,170	98,175	87,830
L. Net worth — end of year	16,160	18,585	21,555	26,460	32,755	38,390
— change per year	+ 2,005	+ 2,425	+ 2,970	+ 4,905	+ 6,295	+ 5,635
	percent					
— increase as percent of gross	5.6	5.9	5.9	6.9	8.5	7.6
M. Liquid asset/liquid liability	1.5	2.4	2.2	1.9	2.2	2.7
N. Non-real estate asset/non-real estate liability	1.3	1.3	1.3	1.3	1.5	1.8
O. Net worth/total liabilities	0.17	0.20	0.21	0.24	0.33	0.44

* Calculated under assumption of average product prices, high family consumption, and \$1,000 off-farm income during the first two years.

tal: Return on the operator's equity (average net worth for the year); return on the average amount of fixed capital employed (real estate and intermediate capital including machinery, new buildings, livestock, and feed); and return on fixed (real estate and intermediate capital) and operating capital (on one-half yearly cash operating expense).

Calculation of returns to capital requires a charge for labor to arrive at a residual return to capital. For the *excellent* management situation, labor was priced within a range of \$3.05 to \$4.15 per hour over the period, or at levels equivalent to the hourly rate received by *skilled* workers in the *Mankato* labor market in 1967-68. A beginning worker was assumed to reach the present \$3.25 per hour wage for skilled workers by year 3. Annual hourly wages were adjusted down from this level by 3 percent a year for years 1 and 2 and up by 3 percent per year for years 4 through 10. The annual charge for farm labor was computed by multiplying the annual hourly wage by hours of labor, with hours of labor specified in the following two ways: The amount of productive labor actually used in the farming program each year, and the hours (2,080) the operator would put in if he were employed as a nonfarm worker based on a 40-hour week, 52 week year. The first situation was designed to show the expected returns to capital when the amount of productive labor actually used was priced at the going skilled wage rate. The second situation was set up to show expected capital returns when the available labor was valued at the *full* opportunity rate of return, that is, on the basis of a typical *full-time* nonfarm job at skilled wage rates.

When the amount of productive labor actually required was valued at hourly rates (\$3.05 to \$4.15) comparable to skilled wages paid in the Mankato area, residual returns on *equity* capital averaged 24.4 percent over the 10-year period, while returns to *fixed* capital averaged 10.6 percent, and returns to fixed and operating capital averaged 10.1 percent. The relatively high returns on equity capital reflect the very modest amount of equity capital contributed by the beginning operator compared with that supplied by creditors. Returns on equity capital during the first 5 years averaged considerably higher than over the second 5 years; returns on the other two classes of capital were quite similar in both periods.

When an amount of operator's labor equal to a full-time job in town (40 hours, 52 weeks) was valued at skilled wage rates, the average residual returns on capital dropped to 14.9, 8.6, and 8.4 percent, respectively, for the three types just noted. In the first 5 years, residual returns to capital were considerably below market rates, but in the second 5 years, returns approximated those received when valuing the productive labor used at the current skilled wage rates. This suggests that the beginning operator was approaching full employment during the second 5 years.

Residual returns per hour of labor were calculated by deducting from net farm income an interest charge for borrowed funds (6 percent on real estate and 7 percent on intermediate and operating credit) plus a 5 percent interest charge for use of the operator's equity at the beginning of each year. These residual returns were then divided by the number of productive hours actually used each year as well as by the alternative amount of 2,080 hours, representing a full-time nonfarm job.

When all capital (including equity capital) was rewarded at going interest rates, residual returns per hour of productive farm labor used in the plan averaged \$5.80 over the

10-year period under study, varying little between the first 5 and second 5 years. When the number of hours was set equal to an amount which could have been utilized in a full-time job in town (40 hours, 52 weeks) and capital was again rewarded at going rates, the average residual return per hour over the 10-year period dropped to \$4.40. The range was from \$3.05 per hour during the first 5 years to \$5.75 in the second 5 years. The relatively lower return of \$3.05 during the first 5 years in farming reflects the comparatively high degree of underemployment characteristic of a beginning operator while getting started in farming. It also indicated that returns per hour averaged considerably above skilled wage rates as the operator approached full employment.

Calculations were also made to determine the impact of changes in levels of family consumption, off-farm income, and farm product prices on the net worth progress that could be expected from the firm growth pattern under study. The results showed that if the beginning operator (or wife) increased annual off-farm earnings from \$1,000 to \$3,000 during the first 2 years, then the net worth by the end of the 10-year period would increase by \$4,890 (\$43,280 versus \$38,390), suggesting that savings in interest payments more than offset increased taxes. The main impact of these earnings was to strengthen the beginning operator's financial position during the early years, permitting greater flexibility in the way the unit could be developed. Likewise, decreasing family consumption from high levels (\$3,500 in year 1 to \$8,600 in year 10) to average levels (\$3,200 in year 1 to \$6,600 in year 10) led to an increase in net worth over the base situation of \$13,790 (\$52,180 versus \$38,390). Approximately \$11,000 of this increase reflected reduced living costs while the balance can be attributed to reduced interest payments. The operator's financial position was considerably stronger at the end of the period as a result of this 36 percent increase in net worth over the 10 years.

The importance of farm product price levels is shown by the fact that even if family consumption were reduced to average levels, a 10 percent reduction in farm product prices had serious effects on the business. The increase in net worth over the 10-year period amounted to only \$4,410 (from \$2,750 at the beginning to \$7,160 in year 10). Earnings were not sufficient to meet all repayment demands. If real estate payments received first claim, then by the end of the period the operator's non-real estate liabilities would be greater than his assets. This would be an untenable financial situation over time since the operator could not afford to replace such things as equipment and facilities.

Occupational Requirements and Other Considerations

The growth pattern just outlined would require the beginning *excellent* operator to carry on a relatively efficient crop operation on the 375 tillable acres, while expanding the hog operation to around 1,000 head per year by year 9. The efficiency levels assumed for hogs (pigs raised per litter and feed efficiency) were quite high, requiring extremely good management while going through an expansion.

The productive labor required to handle this expanded operation increased from about 1,300 hours in year 5 to 2,400 in year 10. All but about 250 hours of this labor would be supplied by the operator, with the hired portion needed primarily during the fall harvest period. The farming program would involve a considerable capital investment — \$66,000 in owned land plus an additional \$60,000 to \$70,000 in non-

real estate assets represented by machinery, new buildings, livestock, and crop inventories. To acquire access to this capital the operator would incur a sizable debt. In the study, debt on the real estate varied from \$55,000 to \$60,000, while non-real estate debt ranged from \$35,000 to \$50,000. This non-real estate debt does not include operating debt which would normally be incurred and paid back within the borrowing year. In this plan, a high level of ability to manage a large volume of business efficiently and a willingness to assume substantial financial risks are necessary for success.

Years 5 through 7 would be difficult financially, particularly from a cash flow standpoint. It would be necessary to hold additional corn and gilts on inventory to facilitate the hog expansion program. The growth pattern developed also tended to be somewhat inefficient from the standpoint of making maximum use of housing space. A speeding up of the hog expansion program would have increased the rate of growth of the firm, with little effect on the capital investment level because excess finishing capacity existed during much of this period. Technical and managerial capacity considerations led to the conclusion that the rate of growth described was close to that which could reasonably be expected while maintaining prescribed efficiency levels. An additional consideration was that with the owned land held on contract for deed, creditors would be reluctant to finance a considerable investment in new buildings during years 5 and 6.

More likely creditors would want to delay the hog expansion for a year or two rather than speed it up because creditors prefer to have the beginning operator get into a stronger financial position before expanding. But in this study the operator's debt and family living commitments were so high that expansion of some form had to occur for financial (net worth) progress to occur. If the suggested hog expansion program was delayed, then additional cropland should have been rented during the interim.

The development of the hog program during years 9 and 10 could be handled in several ways. Litter numbers could be stabilized at 38 units farrowing three times a year, with likely associated improvements in feed efficiency and litter size. As an alternative, litter numbers could be expanded to 50 units, three times a year, or 1,200 hogs. The labor supply would be adequate to handle this number. It was decided to stabilize litter numbers at 38 units and emphasize improved efficiency which permitted the operator to reduce his debts, achieving a stronger financial position. It would permit him to begin a further hog expansion, perhaps by year 11, and/or purchase additional land.

Because of the critical nature of the beginning operator's financial position during years 5 to 7, it was apparent that machinery purchases should be minimal. Likewise, financing of a crop drying unit should not be permitted to compete with the development of the hog facility unless absolutely necessary.

The farm business development pattern outlined is just one approach. Particular facilities on a given farm may dictate another approach and future changes in building design and hog production systems may make the suggested development program obsolete.

An overall appraisal of these financial outcomes leads to the conclusion that this farming program would provide the beginning operator with a good level of living, plus an opportunity for substantial financial progress. Residual returns on investment compared favorably with many nonfarm businesses and residual returns per hour were considerably above

skilled wage rates. By year 10 the beginning operator would have established a very profitable business capable of providing a good level of current consumption as well as substantial yearly net worth increases. Financial ratios and repayment balances were very favorable, indicating the operator would have a strong base for further growth.

Several notes of caution are in order. First, unimpairment of the operator's ability to manage the operation effectively and meet debt repayment demands means correct timing of expansion investments. Second, the projections were made on a conservative basis, with cost estimates set fairly high relative to product prices. However, if the prospective farmer envisions and realizes a price-cost situation more adverse than those projected, he should recognize that his margins will narrow and successful entry into farming may not materialize.

At the conclusion of the study, consultants were asked to evaluate the firm growth pattern and projected results. There was general agreement that the firm's yearly growth rate was about what they would expect of an excellent manager and that the yield and production levels assumed were appropriate. There was also general agreement that the plan was technically sound, though a question was raised about the estimated costs of remodeling the hog facilities which were thought to be too high. When appraising the financial soundness of the plan, the consultants concurred that the repayment plan was generally sound, given the average prices assumed. More security was desired, but not really expected, with this caliber of management. The purposes for which loans were to be made were classed as good. The operator's financial position was considered weak, but the financial progress was rated good. Note that with product prices 10 percent below the so-called average price levels assumed, consultants gave the plan a very poor financial rating.

Some Farm Business Development Guidelines, Years 5 Through 10 With an Expanded Crop Operation

In this alternative, land expansion was planned on an every-other-year basis, with the renting of 160 additional acres of land in years 6, 8, and 10. With 375 tillable acres in year 5, the operator increased his tillable acres to 825 in year 10. Family labor was again limited to 2,680 productive hours, with opportunity provided for custom hiring of combining up to one-third of the acreage harvested and for hiring plowing up to one-half of the acreage plowed. The amount of hired labor for spring work was again limited to 200 hours. For practical reasons discussed later, the restriction on fall hired labor varied between 200 and 600 hours.

With opportunity for land expansion the cropping program received major emphasis in this alternative. Because 80 acres were added (from 320 to 400 acres) in year 4 and because of the time required to remodel hog facilities and get the hog program into operation, operated acreage was held at 375 tillable acres in year 5 (see table 7). Corn for sale was dried and stored at the elevator and beans stored on the farm. The rented acreage (225 crop acres) was leased on a 60/40 crop share basis, and 65 acres of beans were custom combined.

In year 6 an additional 160 acres was rented (150 tillable). The programming results indicated it would be most profitable to shift to a cash rental basis on all the acres rented (225 original acres plus 150 new). The existing line of machinery was considered adequate to handle this acreage. However, with hired labor limited to 200 hours in the fall, 150

Table 7. The projected cropping program for the expanded land, one-man farm operation, excellent management, years 5 through 10

Item	Years					
	5	6	7	8	9	10
Total crop acres	375	525	525	675	675	825
Owned	150	150	150	150	150	150
Crop share	225					
Cash rent		375	375	525	525	675
Corn: acres	250	375	450	521	505	550
yield	110	110	115	115	120	120
Beans: acres	125	150	75	154	170	275
yield	34	34	36	36	38	38
Combine hire: beans	65	150				95
Plowing hire		260	75			300
Corn sales (bushels)						
Dry, store town	14,158					
Dry, store farm		34,204	46,888	55,338	56,194	61,632
Investments				dollars		
Beans: store farm	3,163	4,975	2,700	5,557	6,472	10,355
Bins	\$1,050	\$13,650	\$2,450	\$4,900		\$3,150
Drier		14,000				
Machinery		2,000	21,500	24,070		1,250
Total	\$1,050	\$29,650	\$23,950	\$28,970	0	\$4,400

acres of beans would have to be custom combined and 260 acres custom plowed. With the combine about ready for trade-in, plus the added management stress of handling additional land, it was thought best to hold down labor hiring and hire more custom work than normal. Given the volume of corn to be handled, a 12-foot batch drier was purchased for drying and storing corn on the farm. An additional 39,000 bushels of bin storage capacity was added, plus a second truck for grain hauling.

In year 7, acreage was held at the year 6 level, though yield levels were increased slightly. A new 6-row, 30-inch combine was purchased on a trade, the machine to be fully owned by the operator (in contrast to the share arrangement in the limited land situation). The stalk chopper was traded for a new one and 7,000 bushels of grain storage added. If fall labor were again limited to 200 hours during the harvest period, then considerable custom hiring (145 acres of beans, for example) would be required, as in year 6. With a new combine, this seemed unrealistic. This assumed the operator would hire a full-time man for 1½ months during the harvest season, equivalent to 40 10-hour days, or 400 hours. This amount of available labor required only 75 acres of custom plowing.

In year 8, it was assumed that sufficient management capacity would be available to permit the cash rental of an additional 160 acres, bringing the tillable acres operated to 675. To insure timeliness of planting and cultivating, the planter was expanded to a 12-row, 30-inch size, and a 12-row, 30-inch cultivator was purchased. This complement of machinery required hiring about 65 hours of spring labor. To insure that the operation had adequate machine capacity, another 5-bottom tractor was purchased, plus a plow. A new truck was also purchased for grain hauling. If fall-hired labor were limited to the 400 hours permitted in year 7, then 32 acres of beans would be custom combined and 445 acres custom plowed. This would again be an untenable situation, given the cost and capacity of new equipment available for farm use. The fall-hired labor limit was increased to 600 hours — one man working full-time, plus some men working part-time. This supply of labor eliminated the need for the custom hir-

ing of combining and plowing. An additional 14,000 bushels of needed bin storage was purchased.

In year 9, the acreage stayed the same as in year 8, with a modest increase in projected yields. No new investments were needed. An additional 160 acres were cash rented in year 10, bringing the total tillable acres operated to 825. The machinery complement was considered adequate for this acreage. Normal replacement of a digger and the addition of 9,000 bushels of storage were the only necessary investments that year. Although the machinery was available, programming showed that the 600 hours of hired labor in the fall would be inadequate to handle the acreage involved. Because of the likely amount of added management stress, it was decided to hold the labor supply at that level that year. This necessitated hiring 300 acres of plowing, 95 acres of custom bean combining, and a shift in the rotation toward a larger acreage of beans. By year 11 it probably would be desirable to hire a second full-time man during the fall (800 hours) which would make fuller use of existing equipment, including the combine, tractors, plows, and corn drier (still being operated 4,000 bushels short of its 70,000-bushel capacity).

Because of the heavy emphasis on crops in this alternative, the hog program was developed on a modest basis, with investments held down so the enterprise could readily be discontinued if necessary at a reasonable cost. As with the limited land situation, an existing hog barn was remodeled for farrowing purposes, providing space for 24 sows. Rather than remodeling the dairy barn to partial slots for finishing, the cementing-in of the gutters was the approach selected to minimize remodeling costs. This facility (the limiting factor in size of hog enterprise) would handle 21 units of hogs on a two or three times a year basis.

Because of time considerations, only 21 litters were scheduled to be handled in the spring and summer of year 5 — a total of 42 litters, at eight pigs per litter (see table 8). By year 6, the hog operations would be on a three farrowing a year basis, for a total of 63 litters. This number was also carried into year 7, while some improvement in feed efficiency was assumed that same year.

Table 8. The projected hog program for the expanded land, one-man farm operation, excellent management, years 5 through 10

Item	Years					
	5	6	7	8	9	10
Number of litters						
Winter	0	21	21	21	21	21
Spring	21	21	21	..	..	..
Summer	21	21	21	21	21	21
Total	42	63	63	42	42	42
Pigs raised/litter	8.0	8.0	8.0	8.0	8.0	8.0
Total pigs raised	336	504	504	336	336	336
Corn/hog raised (bushel)	13.8	13.8	13.5	13.5	13.0	13.0
Protein/hog raised (pounds)	165	165	160	160	155	155
Investments						
Remodel hog barn	\$2,505	..	..	..	..	..
Remodel dairy barn	1,355	..	..	..	..	..
Portable mixer	2,000	..	..	..	..	..
Manure spreader .....	..	..	..	\$720	..	..
Total	\$5,860	..	..	\$720	..	..

By year 8, the 675 acres of crops were considered so demanding that the hog program would have to be cut back to a twice a year (winter and summer) farrowing program. This pattern was continued for years 9 and 10, but with further improvement in feed efficiency for these years. No change in litter size (from eight pigs raised per litter) was assumed from years 5 through 10.

Likely Financial Rewards for the Projected Farm Business Development Plan, Years 5 Through 10—Expanded Crop Operation

Table 9 shows the expected financial outcomes for the expanded cropping program alternative during years 5 through

10. An overall appraisal of the outcomes indicates that the expanded cropping alternative could provide the beginning farm family with a level of family consumption identical to that for the expanded hog operation plus an increase in net worth from \$2,750 in year 1 to \$44,315 at the end of year 10, for an average yearly increase of about \$4,100 per year. The comparable figure for the limited land, expanded hog alternative was an increase in net worth of \$3,600 per year. From years 5 through 10 the yearly net worth increase was approximately \$5,000 per year for the expanded land alternative compared with about \$4,000 for the limited land situation. With the expanded land alternative, the net worth increase would amount to 7.3 percent of the total gross income produced during the 10-year period. The comparable net worth/gross income ratio for the limited land alternative was 8.3 percent, well above the standard of 5 percent.

As with the limited land situation, inflation in the value of the owned land would likely add at least another \$1,100 per year to the total net worth increase. Likewise, some additional net worth increase would again likely occur in the household-nonfarm sector due to a fairly high level of earnings allocated to family consumption. It is likely that the depreciation rates used on machinery for tax purposes are closer to actual depletion rates because of the larger acreage operated than in the limited land alternative. A more modest increase in net worth would likely accrue from this source, as compared with the limited land situation.

Table 9 permits a look at the financial stability of the unit during its development period. Year 5 was the only one in which the financial position could be termed precarious, particularly from a cash standpoint (note item G—cash basis). This was the year for capital investment in the hog enterprise, with a limit on pigs sold to build up inventories. The acreage operated was held at the year 4 level. With a resultant high cash operating expense /\$1 gross ratio (item B)

Table 9. Expected gross income, repayment balances, profits, and financial position for the expanded land alternative, excellent management, years 5 through 10*

Item	Years					
	5	6	7	8	9	10
Crop acres	375	525	525	675	675	825
Hogs raised	336	504	504	336	336	336
Productive labor required	1,560	1,925	2,175	2,015	2,020	2,120
	dollars					
A. Gross income	\$36,485	\$72,060	\$81,675	\$91,425	\$94,785	\$111,135
B. Cash operating expense/\$1 gross	0.76	0.69	0.66	0.70	0.70	0.70
C. Family living	5,600	6,700	7,500	7,800	8,300	8,600
D. Amount available for non real estate debt (accrual)	7,060	14,385	14,950	17,455	17,825	22,170
E. Non-real estate debt to be met	5,910	5,665	8,450	9,550	11,730	8,360
F. Amount available/\$1 non real estate debt (D ÷ E)	1.19	2.54	1.77	1.83	1.52	2.65
G. Excess non-real estate debt repay capacity						
Accrual	+ 1,150	+ 8,720	+ 6,500	+ 7,905	+ 6,095	+ 13,810
Cash	- 4,030	+ 8,720	+ 10,130	+ 7,905	+ 6,095	+ 13,810
H. Profit (profit and loss)	5,500	12,345	12,750	12,975	14,405	19,345
I. Profit/\$1 gross	0.15	0.17	0.16	0.14	0.15	0.17
J. Total capital assets	105,905	128,425	138,005	153,745	141,265	132,970
K. Total liabilities	90,540	107,160	112,285	122,770	104,525	88,655
L. Net worth—end of year	15,365	21,265	25,720	30,975	36,740	44,315
— change per year	+ 1,210	+ 5,900	+ 4,455	+ 5,255	+ 5,765	+ 7,575
	percent					
— increase as percent of gross	3.3	8.2	5.5	5.7	6.1	6.8
M. Liquid asset/liquid liability	1.5	1.1	0.8	0.6	0.7	0.8
N. Non-real estate asset/non-real estate liability	1.3	1.3	1.3	1.3	1.5	2.0
O. Net worth/total liabilities	0.17	0.20	0.23	0.25	0.35	0.50

* Calculated under assumption of average product prices, high family consumption, and \$1,000 off-farm income during the first 2 years.

and rising living costs, sufficient cash repayment capacity was not present. In years 6 through 10 repayment balances (items F and G) were extremely favorable.

The liquid assets/liquid liabilities ratios appeared to be quite weak at the end of years 7 through 10 when compared with the 2:1 standard. Since the yearly excess repayment capacity balance was normally quite substantial, the operator apparently would have little trouble repaying loans (liquid ratios are typically weak on crop-oriented farms if the crop is not held on inventory). The non-real estate assets/non-real estate liabilities ratios hovered near the standard (1.3:1) during years 5 through 8 and then strengthened considerably in years 9 and 10.

By year 10, the cropped acreage had reached a level that was consistent with the machinery outlay. Some additional hired labor would reduce custom hiring, permit use of existing machinery to fuller capacity, and increase profits.

Calculations were again made to determine the residual returns to labor and capital. When the operator's actual amount of productive labor used in the operation was valued at skilled wage rates, the residual return on equity capital was 34.4 percent over the 10-year period; fixed capital averaged 12.1 percent, and fixed and operating capital averaged 11.3 percent. There was little variation in returns on capital between the first 5 years and the second 5 years. Returns to capital under this expanded crop alternative were slightly higher than for the expanded hog alternative. When labor was valued at skilled wage rates on a full-time 40-hour per week, 52-week per year basis, the percentage returns dropped to 19.9, 9.2, and 8.9 for equity capital, fixed capital, and fixed and operating capital, respectively. Returns during the first 5 years were considerably below going market rates and were similar to those for the expanded hog alternative (the first 4 years were assumed to be the same firm development program). Returns in the second 5 years were considerably above going market rates and slightly higher than for the expanded hog situation.

When capital was charged at going market rates, returns averaged \$9 per hour of productive farm labor used, over the 10-year period. This compares with \$5.80 per hour in the expanded hog alternative. Hourly returns jumped to \$11.70 per hour in the second 5 years, due, in part, to the fact that 600 hours of hired labor was charged at \$2.10 to \$2.25 per hour. This permitted any excess returns from this labor to accrue to the operator's labor. When the hours normally associated with a full-time nonfarm job were used (40-hours per week, 52-week per year), then average hourly returns over the entire period dropped to \$5.65 compared to \$4.40 for the limited land situation. Hourly returns during the first 5 years were practically identical for both alternatives (\$3.05 versus \$3.10) but in the second 5 years, hourly returns jumped to \$8.15 for the expanded land situation compared with \$5.75 for the limited land.

If the beginning operator or his wife increased annual off-farm earnings from \$1,000 to \$3,000 during the first 2 years, then the net worth by the end of the 10-year period would have increased by \$4,400 (\$45,965 versus the \$41,565 reported above for the base situation). If family consumption were reduced from high to average levels (off-farm earnings remaining at \$1,000) a net worth increase of \$13,480 would occur (\$55,045 versus \$41,565 for the base situation). These increases compare with \$4,890 and \$13,790 respectively, for the limited land situation, the difference reflecting the relative changes in income tax and interest payments.

A 10 percent reduction in product prices again placed the firm in financial jeopardy even if family consumption were held to average levels. The final net worth with reduced product prices was only \$1,460 at the end of the 10-year period, compared with \$2,750 at the start of farming. The non-real estate asset/liability ratios were less than 1:1 during most years of the period and excess repayment capacity balances were likewise negative over most of the period.

Occupational Requirements and Other Considerations

To handle this expanded cropping operation, the beginning manager would have to have sufficient management capacity to handle an additional 160 acres of land every other year from years 5 through 10. He would also have to have the ability to achieve relatively high yield levels. In the study, the acquisition of the land and crop efficiency levels were scheduled so that yield levels would increase in the year following an acquisition of land and stay constant during the ensuing year when an additional 160 acres would be added.

Labor distribution is a major problem in operating a large crop farm. For example, during years 8 through 10, approximately one-half the total year's labor requirement for the expanded crop operation occurred in the October 1-November 15 period when corn and beans would have to be harvested, corn stalks chopped and disced, and land plowed. The beginning manager must have the ability to stand considerable stress during certain seasons of the year and to handle labor effectively.

The expanded land alternative requires approximately \$15,000 more non-real estate capital than the expanded hog alternative, primarily for the purchase of larger crop machinery and more grain storage facilities. While the debt load would reach a slightly higher peak, by the 10th year it would about equal the expanded hog operation. The expanded land alternative is also dependent on the acquisition, via cash rent, of up to 450 more tillable acres than are required under the expanded hog alternative. Annual cash rent outlays in year 10 were estimated \$22,880 — the price for access to 675 acres valued at approximately \$300,000.

In terms of other broad alternatives, this projected farm plan could be modified so that the hogs played a very minor role in all years. Hog farrowings could be held to 34, the same as in year 4, and eventually dropped, say, in year 8. In their place, it is reasonable to expect that land acquisition could be speeded up so that the level of acreage operated in year 10 in the present plan could be reached in year 8, thus making more adequate use of equipment.

At the other extreme, hog numbers could be brought to a higher level during years 8 and 9 than was done in the projected plan reported in tables 7-9. In year 8, as a result of increasing tillable acres to 675, a considerable outlay was made in machinery to ease labor pressures at planting time. In the same year, farrowings were reduced from three- to two-per year to ease management pressures and to reflect the likely shift away from hogs in favor of crops. From a labor load standpoint, this would not have been necessary for at least another 2 years. A higher level of hog activity could have speeded financial progress during that period, since hog facilities were available.

The expanded land alternative would provide the beginning operator with a good level of living plus an opportunity for financial progress slightly in excess of that projected for the hog expansion alternative. Residual returns on investment

and to labor are somewhat higher than for the expanded hog alternative and compare very favorably with nonfarm investment returns and with skilled wage rates.

From a career standpoint, this farming alternative appears to promise the operator a profitable source of employment. By year 10, the operator would have a one-fourth equity in his business and have a repayment capacity equal to about 2½ times his yearly debt commitments. This situation would provide a very sound basis for continued growth in the business.

But again it is well to note that care should be used in timing investments in expansion programs so that they coincide with the operator's management and repayment capacities. And, the narrow margins under which the beginning crop farmer operates in this plan emphasize the fact that crop prices at levels used here are needed for this kind of growth. Extended periods of depressed prices would spell the doom for this expanded land unit—even though size and efficiency factors appear quite favorable.

The consultants' evaluation indicated that the physical growth rate was about what they expected for this management level. Crop yield levels were adjudged to be appropriate and hog feed conversion rates and pigs raised per litter were checked as reasonable. The plan was appraised to be technically sound. The consultants generally rated the plan slightly better financially than the expanded hog alternative under the assumption of average prices. The plan was rated generally unfeasible with prices 10 percent below average. As a career opportunity, the consultants indicated that under average prices the plan would be quite attractive to the prospective manager with *excellent* abilities. A 10 percent reduction in prices would make it an unattractive venture.

Average Management: Development Guidelines, Likely Financial Outcomes and Occupational Requirements⁵

Average management is defined as that level of management performance generally associated with the middle 45 to 55 percent of the area's commercial farmers. The following discussion begins by outlining some farm business development guidelines for this level of management and ends by reporting and analyzing the financial outcomes likely to be associated with these growth guidelines.

5. Field consultants for the average level of management situation were Ronald Bushlack, County Supervisor, Farmers Home Administration (FHA), Mankato; Maynard Lawrence, Northwestern National Bank, Mankato; Leo Bodensteiner, County Supervisor, FHA, Redwood Falls; and Lawrence Christenson, Area Extension Agent, Farm Management, Waseca.

Some Farm Business Development Guidelines

Table 10 shows the projected farm business growth pattern. Within this projection, the *1st year's* farming operation was limited primarily to crop production. Like the excellent manager, the average operator, was presumed to start farming under a crop-share arrangement on 240 acres. It was further supposed that the *average* manager rented an area-average farm on a 50/50 basis, in contrast to the excellent manager who was assumed to rent an above-average farm on a 60/40 share basis. Because of his expected difficulty in securing land, the average manager was assumed to farm 240 acres through the 3rd year, securing an additional 80 acres in year 4. The 320 acres became the maximum acreage for this operation because of unavailability of land and an inadequate machinery complement to handle larger acreage. Also, since the average manager would likely be unable to assume the risk of cash rent and since he would not reach a financial position permitting him to buy even an 80-acre tract, the farm operation was held to the 320 acres rented on a 50/50 crop-share arrangement.

Crop yields were based on the following assumptions: drainage was less than adequate for high yields, the quality of seed used was only average (mostly 4-way cross corn), the fertility practices were geared to about the yields specified, and greater reliance was placed on mechanical versus chemical weed control, particularly in the early years. Specifically, during years 1 through 3, mechanical practices were used on corn, with chemical weed control used on half the beans. With the addition of the 80 acres in year 4, chemical control was used on one-half the corn and the fertilizer rates were increased slightly. It was assumed that a lack of timeliness due to the added acreage and the need to get familiar with the new land would delay a yield increase to year 5. With the purchase of a new planter in year 6, insecticides were used on one-half the corn acreage and chemical weed control practiced on all the bean acres. With the increase in yield in year 9, fertilizer rates were increased slightly and chemical weed control practices on all the corn acres.

Since the *average* operator was assumed to live within reasonable distance of his father's farm, he needed to buy only a modest amount of machinery during the first year because

Table 10. Projected total acreage, crop acres and yields and hog numbers and efficiency levels for average management during years 1 through 10

Item	Year									
	1	2	3	4	5	6	7	8	9	10
Total acreage	240	240	240	320	320	320	320	320	320	320
Corn acres	150	150	150	200	200	200	200	200	200	200
Corn yield	70	75	75	80	80	80	80	80	85	85
Bean acres	70	70	70	90	90	90	90	90	90	90
Bean yield	23	25	25	25	27	27	27	27	28	28
Hogs										
Number farrowed	0	28	28	30	30	30	30	30	30	30
Pigs raised/litter	0	7.0	7.0	7.0	7.2	7.2	7.2	7.2	7.2	7.2
Hogs raised	0	196	196	210	216	216	216	216	216	216
Bushel corn/hog raised	0	16.0	16.0	15.5	15.5	15.5	15.0	15.0	15.0	15.0
Protein/hog raised ^a	0	220	220	200	200	200	190	190	190	190

a. Includes creep feed.

he could exchange his labor for some of his father's equipment (see table 11). Machinery purchased by the son was classed as used equipment of average quality. Depreciation rates were set consistent with estimated normal wear-out time, with no consideration given to obsolescence.

It was assumed the *average* operator started with more of his own equipment than the *excellent* manager because the *average* manager was expected to be more readily attracted to machinery ownership, being less cognizant of the economic pitfalls of too large an investment in machinery too soon. It was also assumed that the quality of machinery purchased by the average manager would be lower because he would be expanding less rapidly and his purchasing power would prevent purchase of a higher quality line.

The hog program would be initiated in the fall of the first year with the purchase of 14 bred gilts. It was assumed that facilities and management would best accommodate twice a year farrowing. It was also supposed that the facilities on the rented farm limited the size of operation to 15 litters per time (see table 10). In the absence of this restriction, the *average* manager's lack of management capacity to handle a larger unit coupled with his weak financial position and lack of net worth progress would have kept him from securing funds for building additional hog facilities. The efficiency levels — pigs raised per litter and feed requirements per hog raised — were set at levels considered appropriate for the *average* manager.

Yearly cash flow, net worth, and depreciation summaries were developed on the basis of the projected guidelines under the assumption of average product prices, low family consumption, and \$1,000 off-farm income during years 1 and 2. With the anticipated difficulty of the average manager in gaining a foothold in farming, restricting consumption to relatively low levels was assumed to be a minimum requirement to entry. The findings support this assumption.

Likely Financial Rewards With the Projected Farm Business Development Plan

The financial outcomes reported in table 12 were evaluated by the following standards. First, the net worth and repayment balance standards set for the excellent manager also apply to the average manager, that is, the rate of net worth increase should be at least 5 percent of the yearly gross income, and the ratio between income available for debt repayment and non-real estate debt to be met (line F) should be at least 1.25:1. However, due to his smaller volume of business, the ratio of cash operating expenses to gross income was set at 0.60:1, compared to somewhat higher ratios for the excellent manager. Because of the average manager's lower managerial and associated repayment capacity, greater reliance was placed on financial position and security. The liquid asset/liquid liabilities ratio standard was, therefore, retained at 2:1 (the same as for excellent management), but the non-real estate asset/non-real estate liabilities ratio standard was increased from 1.3 for the excellent manager to 1.7:1.

An appraisal of the financial results reported in table 12 indicated that the suggested farm plan could provide the family with a low level of consumption and meet repayment demands in all but one year. In fact, average amount available for non-real estate debt was equal to 1.38 of intermediate debt commitments, indicating that the firm's repayment capacity could drop to zero approximately once every 3 years and still remain current in meeting scheduled debt payments. However, because repayment and depreciation rates so closely approximate each other when used equipment is in question, little net worth progress was registered. The projection shows an increase in net worth of from \$2,750 at the beginning to \$3,565 at the end of 10 years, a total increase of \$815, or about \$80 per year. On a percent of gross income basis, this

Table 11. List of machinery items purchased: size, depreciation rate, year bought, and price paid, average management

Item	Size	Years depreciated	Years											
			1	2	3	4	5	6	7	8	9	10		
			purchase price											
Tractor #1	3-4 bottom	7	\$3,500											
#2	3 bottom	8		\$2,000										
#3	3-4 bottom	8									\$4,000			
Plow #1	3 bottom	4	600											
#2	3 bottom	5						\$800						
#3	3 bottom	5												\$800
Planter #1	4-row 40 inch	5	700											
#2	4-row 40 inch	5							\$900					
Cultivator #1	4-row 40 inch	6	300											
#2	4-row 40 inch	6								\$400				
Rotary Hoe	4-row	7	200											
Disk #1	13 foot	6	500											
#2	13 foot	6									600			
Digger	11 foot	10		500										
Stalk Chop #1	2-row	5					\$500							
#2	2-row	5												\$600
Corn Picker #1	2-row	4				\$800								
#2	2-row	4								800				
Harrow #1	4 section	5	100											
#2	4 section	5							125					
Wagon		8		500										
Elevator	50 foot	8			500									
Manure Spreader #1		5		500										
#2		5								600				
Loader		8		500										
Feeders #1		5		300										
#2		5								350				
Total			\$5,900	\$4,300	\$1,300	\$500	\$800	\$1,025	\$2,750	\$4,000	\$600	\$800		

Table 12. Expected gross income, repayment balances, profits, and financial position, average management, years 1 through 10*

Item	Years									
	1	2	3	4	5	6	7	8	9	10
Crop acres	220	220	220	290	290	290	290	290	290	290
Hogs raised (number)		196	196	210	216	216	216	216	216	216
Productive labor required (hours)	560	980	1,015	1,190	1,190	1,190	1,190	1,190	1,190	1,190
	dollars									
A. Gross income	5,460	12,720	12,720	15,795	16,460	16,610	16,750	16,750	17,360	17,360
B. Cash operating expense/\$1 gross	0.59	0.59	0.63	0.60	0.58	0.59	0.58	0.59	0.59	0.59
C. Family living	3,000	3,100	3,400	3,500	3,900	4,000	4,400	4,500	4,600	4,700
D. Amount available for non-real estate debt (accrual)	2,820	2,545	1,000	2,745	2,920	2,460	2,110	2,085	2,190	2,085
E. Non-real estate debt to be met	2,160	1,880	1,825	1,755	1,595	1,290	1,380	1,790	1,525	1,475
F. Amount available/\$1 debt to be met (D ÷ E)	1.31	1.35	0.55	1.56	1.83	1.91	1.53	1.16	1.44	1.41
G. Excess non-real estate debt repay capacity										
Accrual basis	+660	+665	-825	+990	+1,325	+1,170	+730	+295	+665	+610
Cash basis	-520	+595	-825	+990	+1,105	+1,170	+730	+295	+665	+610
H. Profits (profit and loss)	160	2,860	2,520	4,125	4,870	4,530	4,610	4,580	4,775	5,160
I. Profit/\$1 gross	0.03	0.22	0.20	0.26	0.30	0.27	0.28	0.27	0.28	0.30
J. Total capital assets	8,670	11,290	10,580	8,960	8,845	7,700	8,220	10,010	8,920	8,850
K. Total liabilities	5,355	7,495	7,815	5,905	5,210	4,040	4,725	6,765	5,365	5,285
L. Net worth—end of year	3,315	3,795	2,765	3,055	3,635	3,660	3,495	3,245	3,555	3,565
— change per year	+565	+480	-1,030	+290	+580	+25	-165	-250	+310	+10
	percent									
— increase as percent of gross	10.3	3.8		1.8	3.5				1.8	
M. Liquid asset/liquid liability	1.6	1.8	1.8	2.1	2.3	2.6	2.6	2.0	2.3	2.3
N. Non-real estate asset/non-real estate liability	1.6	1.5	1.4	1.5	1.7	1.9	1.7	1.5	1.7	1.7
O. Net worth/total liabilities	0.62	0.51	0.35	0.52	0.70	0.90	0.74	0.48	0.66	0.67

* Calculated under assumption of average product prices, high family consumption, and \$1,000 off-farm income during the first 2 years.

represents only 0.5 percent, compared with the 5 percent standard. In short, the returns over operating and depreciation expense were sufficient to meet a low level of family consumption, with only one-half of one percent of the gross left over for equity improvement.

The financial ratios generally equaled or exceeded the standards set. With the exception of the first 3 years, the liquid asset/liabilities ratios equaled or exceeded the 2:1 standard. During the last 6 years the non-real estate asset/liabilities ratios were generally equal to or above the 1.7:1 standard. These measures of financial strength, coupled with the operator's projected ability to meet current repayment demands yet replace depreciable items as needed, suggest that the average manager could persist in farming so long as increases in efficiency are sufficient to offset increased living and operating costs. But any adverse happening, such as disease or poor crop would disrupt this delicate balance.

The residual returns to capital were computed by valuing labor at the going rate for *unskilled* labor in the Mankato labor market, in contrast to the going rate for *skilled* labor in the excellent management situation. These rates were adjusted upward 3 percent each succeeding year to reflect productivity increases and inflation. The resultant range in wage rates charged was from \$1.80 to \$2.25 per hour over the period.

When the productive labor *actually used* in the farming plan was valued at unskilled wage rates, the residual percentage returns to each of the types of capital studied (equity, fixed, and fixed plus operating) were very high (50.4, 23.6, 17.7) relative to those computed for the excellent management, expanded hog operation (24.4, 10.6, 10.1). When normal market returns were paid to capital, the residual returns per hour for the productive labor *actually used* approximated the skilled wage rates (\$3.05-\$4.15) charged in the excellent management situation.

These results raise a major question. Are these returns to labor and capital an accurate reflection of their relative scar-

city, or have productive labor and capital requirements been underestimated or profit margins overestimated for the *average* management situation? It is possible that profit margins have been overestimated. However, returns to capital are likely to be higher for the average manager than for the excellent manager because of the relative scarcity of capital and the fact that a much larger proportion of capital is of the higher return, operating type, as opposed to lower return real estate and buildings type. This, in turn, provides a high residual return to labor when the capital is rewarded at going market rates.

If the comparison is shifted from the amount of labor actually used to an amount of labor equivalent to a *full-time, off-farm job*, then residual returns to capital, with labor valued at unskilled wage rates, indicated that the average manager could expect to receive going rates on his capital only during the second 5 years of the 10-year period under study. Similarly, residual returns to labor would fall considerably below unskilled wage rates during the first 5 years, and would about equal unskilled wage rates during the second 5 years, which suggests underemployment of labor in the preceding situation.

If off-farm earnings were increased from \$1,000 to \$3,000 annually during the first 2 years, then the average manager's net worth would increase an additional \$5,300 over the period. Financial ratios likewise would be strengthened considerably, and some additional hog expansion might become financially feasible. A 10 percent reduction in farm product prices caused the firm to go bankrupt by year 4. If family consumption were increased from low (\$3,000 in year 1 to \$4,700 in year 10) to average (\$3,200 in year 1 to \$6,600 in year 10) levels, the firm would go bankrupt by year 6, even under average farm product prices.

Occupational Requirements and Other Considerations

The suggested farming plan for the *average* manager showed that average to above-average returns were accruing to the resources used. However, the quantities of resources

available were so limited that little remained for net worth improvement once the operator took out a modest amount for living, taxes, etc. It can be anticipated that credit agencies and landlords would be skeptical about providing additional resources because of uncertainty as to whether the average manager could handle a larger unit in an efficient, profitable manner. Because of uncertainties regarding management and repayment capacity, credit agencies would need to rely more heavily on security and financial position and progress which, in turn, generally would be modest at best. *Thus, a treadmill is established, and as a result the projected economic future of the average manager is rather dim.*

The *average* manager would have three options open to him for getting off this treadmill. He could secure off-farm employment on a more or less continuing basis and use these funds as a subsidy to the farm operation, eventually arriving at a strong enough financial position to permit a gradual expansion of the farm business. A second route would involve improvement in management ability assisted by outside management advice so that the existing unit could become more profitable, and thus grow into a position to attract more resources. A third alternative would be to leave farming for off-farm employment.

The farm business growth pattern and financial outcomes were evaluated by the four consultants. All agreed that the yearly growth in size of business was appropriate for the management level assumed, crop yield and hog production efficiency levels were consistent with the management level assumed, and the plan was technically sound. Under average prices the consultants felt that the repayment plan was sound, investments were for good purposes and little or no financial progress was being made. The financial position reflected a weak borrowing position. With prices 10 percent below the average prices assumed, the general consensus was that the individual should not consider farming.

Good Management: Development Guidelines, Likely Financial Rewards, and Occupational Requirements⁶

Good management is defined at midpoint between *average* and *excellent* management. Thus, the *good* manager would be less effective in resource use than the *excellent*

manager but more effective than the *average*. Resource availabilities would be less restricted than for the *average* manager but more restrictive than for the *excellent*.

Some Farm Business Development Guidelines

Table 13 shows the 10-year projected farm growth plan suggested for the *good* manager.

The 1st year's farming operation would be limited to crop production. The operator would start under a 60/40 crop share arrangement on 240 acres. Because the abilities of the *good* manager were assumed to be more limited than for the *excellent* manager, an additional 80 acres was not rented until the 3rd year (compared with the 2nd year for the *excellent* manager). Similarly, the *good* manager's more restrictive financial position would cause a delay in purchase of the 160-acre tract until the 5th year, compared with the 4th year for the *excellent* manager. In looking for a base unit, the *good* manager may want to place greater emphasis on the quality of house and farm buildings than would the *excellent* manager, because extensive renovation of old buildings or the construction of new ones could well cause a financial crisis for the *good* manager due to his more modest debt repayment capacity. Debts incurred from construction costs would have to be paid for on a 5-to-7 year loan basis as compared to the 30-year loan on existing real estate.

The real estate purchased in the 5th year would be bought on a contract-for-deed basis. The down payment (\$5,000) would be financed on a 5-year 7 percent equal yearly payment plan, the remainder on a 30-year 6 percent standard amortization plan, subject to refinancing after 10 years.

For two reasons, 400 acres was assumed to represent an upper limit for the *good* manager. First, he would likely find it difficult to handle a larger acreage effectively — with a substantial hog operation. Second, the machinery line suggested for this unit was good, but *used* 4-row equipment. Any acreage increase beyond 400 would call for a substantial investment in larger and, in some instances, better equipment.

The tenure on the 240 rented acres was assumed to remain a 60/40 crop-share arrangement throughout the 10-year period. By year 9, the operator's financial position was considered strong enough to stand the added risk of cash rent.

6. Field consultants for the *good* level of management situation were Ronald Bushlack, County Supervisor, FHA, Mankato; Lyman Morrow, General Manager, PCA, Redwood Falls; Robert Reger, Office Manager, PCA, Waseca; Lawrence Christenson, Area Extension Agent, Farm Management, Waseca.

Table 13. Projected total acreage, crop acreage and yields and hog numbers and efficiency levels for the good manager during years 1 through 10 of farming

Item	Year									
	1	2	3	4	5	6	7	8	9	10
Total acreage	240	240	320	320	400	400	400	400	400	400
Corn acres	150	150	200	200	250	250	250	250	250	250
Corn yield (bushel/acre)	80	85	85	90	90	100	100	100	105	105
Bean acres	75	75	100	100	125	125	125	125	125	125
Bean yield (bushels/acre)	25	27	27	29	29	31	31	31	33	33
Hogs										
Number of farrowings		28	30	30	32	42	63	63	63	63
Pigs raised/litter		7.2	7.2	7.5	7.5	7.5	7.6	7.6	7.8	7.8
Hogs raised		202	216	225	240	315	479	479	491	491
Corn/hog raised		15.5	15.5	15.0	15.0	15.0	14.5	14.5	14.0	14.0
Protein/hog raised*		200	200	185	185	185	180	180	175	175

* Includes creep feed.

Table 14. List of crop machinery and facility items purchased: size, depreciation rate, year bought and price paid, good management

Item	Size	Years depreciation	Year bought											
			1	2	3	4	5	6	7	8	9	10		
Tractor #1	3-4 bottom	8	\$4,000											
#2	3-4 bottom	8			\$4,000									
#3	4-5 bottom	8									\$5,000			
Plow #1	3 bottom	8	800											
#2	4 bottom	8										1,000		
Disk #1	13 feet	6		\$600										
#2	13 feet	6										700		
Stalk C. #1	2 row	6		600										
#2	2 row	6										700		
Digger	11 feet	8					\$800							
Harrow #1	4s. 5 feet	6		150										
#2	4s. 5 feet	6										200		
Planter #1	4 row 40 inch	8		900										
#2	4 row 40 inch	8									\$1,000			
Cultivator #1	4 row 40 inch	8	600											
#2	4 row 40 inch	8											\$750	
Picker	2 row	6			800									
Combine	2 row	6											7,000	
Wagon #1		8		500										
#2		8												
Elevator	50 feet				500									
Drier		10											3,600	
Bin	27 feet	15											2,400	
Total			\$5,400	\$2,750	\$5,800	\$800				\$1,000	\$7,600	\$13,750		

However, a test budget indicated that at projected yield levels and \$31/acre cash rent, the crop-share arrangement would remain most profitable.

Crop yields were set to represent a midpoint between those assumed for *average* and *excellent* management. The quality of seed used and the fertility and weed control practices were adjusted to these yield levels. It was further assumed that lack of adequate drainage and some lack of timeliness contributed to more modest yields.

The *good* operator was presumed to live reasonably close to his father's farm. He needed to buy only a modest amount of machinery during the 1st year or two, because he could exchange labor for the use of his father's equipment (see table 14). Because of the greater restrictions placed on the *good* manager than on the *excellent* manager in regard to the availability of intermediate credit, considerable time was spent exploring alternative courses for machinery purchases. The method of harvesting and storing the corn crop was of particular concern. It will be noted later that a similar problem arose for the timing of the hog expansion program.

For the first 2 years it was assumed that the father's corn harvesting equipment would be adequate to harvest the son's 150 acres of corn, the bean harvesting being custom hired. The following question arose in year 3: Should the son buy a larger tractor and plow and the father a 4-row combine, with the understanding that the son plow the father's corn ground in exchange for corn combining? Should the son buy a picker, plan to harvest and crib 150 acres of the crop and hire the remainder combined? Budgeting showed that if the father was properly reimbursed for the added costs of combining compared to plowing, (option #1) it would be more profitable for the son or beginning operator to buy a picker and hire all the beans and all but 150 acres of corn combined (option #2). This approach would reduce the fall labor load and also limit the amount of investment the operator would have to incur during the early years. As one consultant stated: "Remember the *good* manager's prime objective will be to

gain ownership of a base farm unit, so he will sacrifice machinery ownership if this will permit him to arrive at farm ownership sooner."

Following option #2 delayed the next major decision to year 9 when the picker had to be replaced and cash rent was contemplated. At that point it was financially and operationally feasible to assume that the *good* manager would buy a good, used, reconditioned 2-row combine and combine all of his corn and hire the beans combined. To relieve the harvest-time labor pressure and to provide a storage unit at reasonable cost for the hogs, an 8,000 bushel (27 feet) bin-batch dryer unit was purchased.

In the projected plan, the *hog program* was initiated in the fall of the 1st year with the purchase of 14 bred gilts. Facilities and management were assumed to best accommodate twice a year farrowing during the early years on the rented farm. It was also supposed that the facilities on such a farm would limit the size of operation to a final number of 16 litters twice a year (see year 5 in table 13).

With the purchase of the base unit in year 5, remodeling of buildings was considered so that more hogs could be raised and on a three farrowings per year basis. Here again, the *good* manager's tighter financial position raised the question of timing. Should the remodeling and expansion occur in year 6 or year 7? With the use of budgeting, it was found that by expanding in year 6, the operator's net worth at the end of year 8 would be \$1,500 higher than if the expansion occurred in year 7, with little apparent effect on his financial position. The expansion was, therefore, initiated in year 6 (see table 15). One factor prompting the consultants' concern regarding the timing of this investment was the relatively poor net worth improvement record observed during the first 4 years. It is important to note that progress during that period would likely be slow because the operator would be far from fully employed. More off-farm earnings and/or reduced family consumption would help to improve the operator's financial position during the early period.

Table 15. List of hog equipment and facility items purchased, depreciation rate, purchase price, year bought, good management

Item	Years depreciation	Year purchased		
		2	6	7
		purchase price.....		
Hog feeders	5	\$300	.....	.....
Spreader #1	5	500	.....	.....
#2	5	.....	.....	\$600
Loader	8	500	.....	.....
Farrow equipment	10	.....	\$1,450	.....
Finishing equipment	10	.....	865	.....
Hog barn remodel (farrow)	10	.....	1,050	.....
Dairy barn remodel (finish)	10	.....	490	.....
Total		\$1,300	\$3,855	\$600

The remodeling program instituted in year 6 called for renovation of the hog barn for farrowing and the cementing-in of the dairy barn (or similar livestock building) for finishing. The dairy barn would handle approximately 21 litters of pigs at a time, and this fixed the upper limit to hog numbers. The cementing-in approach was selected because of the good manager's relatively modest financial position which would preclude consideration of a more costly partial slot arrangement. Further, the 500 hog capacity that the proposed facility could house appeared to be adequate for the amount of management capacity likely to be available during the first 10 years. Because of time required to remodel the facilities, farrowings were limited to spring and summer in year 6 (21 x 2 = 42 litters). By year 7 the total number of litters increased to 63 (21 x 3). This number was maintained through year 10, since any further expansion in hogs required both new farrowing and finishing facilities, which would likely over-extend the good manager's management skill and financial position.

The efficiency levels — pigs raised per litter and feed required per hog raised — represent the midpoint between the levels projected for the average and excellent managers. Some

modest adjustments were made where it was apparent that expansion programs would tend to hold back efficiency advances.

Likely Financial Rewards for the Projected Farm Business Development Plan

Again, certain standards were used for evaluating the financial outcomes. For this management situation the financial standards were as follows: The net worth and repayment balance standards set for excellent and average management were also considered to apply for good management, that is, net worth progress should be at a rate of at least 5 percent of the yearly gross income, and the amount available debt to be met ratio (item F) should be at least 1.25:1. Due to the smaller volume of business, than for the excellent manager, the standard for cash operating expense per \$1 gross (item B) was set at .60:1 during the early years. As the business expanded, this ratio could be increased to .65 to .70:1 preferably toward the .65:1 level. Because management and repayment capacity for the good management situation fell midway between the average and excellent levels studied, the emphasis placed on financial position and security likewise fell between the two. The liquid asset/liquid liabilities ratio standard was retained at 2:1, the same as for the other two management levels studied. The more critical non real estate asset/non real estate liability ratio standard was set at 1.5:1, midway between the 1.3 for excellent management and 1.7 for average management.

Table 16 shows the expected impact of average product prices, average levels of family consumption and \$1,000 off-farm income (during the first 2 years) on the financial position of the good manager. An appraisal of these financial results suggests that the farm plan could provide the farm family with average levels of family consumption yet maintain quite substantial debt repayment balances in most years. In fact, the 10-year totals show that the amount of funds avail-

Table 16. Expected gross income, repayment balances, profits, and financial position, good management, years 1 through 10*

Item	Years									
	1	2	3	4	5	6	7	8	9	10
Crop acres	225	225	300	300	375	375	375	375	375	375
Hogs raised (numbers)	202	216	225	240	315	479	479	491	491	491
Productive labor required (hours)	560	980	1,070	1,070	1,175	1,375	1,680	1,680	1,805	1,805
	dollars									
A. Gross income	\$7,705	\$15,090	\$18,960	\$20,015	\$27,545	\$29,300	\$36,980	\$36,980	\$41,530	\$41,530
B. Cash operating expense/\$1 gross	0.61	0.58	0.61	0.61	0.57	0.76	0.69	0.69	0.68	0.68
C. Family living	3,200	3,400	3,900	4,200	4,800	5,300	6,000	6,200	6,400	6,600
D. Amount available for non-real estate debt (accrual)	3,370	3,425	2,985	3,250	8,265	5,755	4,680	4,370	6,040	5,755
E. Non-real estate debt to be met	2,060	1,625	1,765	1,865	1,345	2,590	2,025	1,680	2,390	3,915
F. Amount available/\$1 debt to be met (D ÷ E)	1.64	2.11	1.69	1.74	6.14	2.22	2.31	2.60	2.53	1.47
G. Excess non-real estate debt repay capacity										
Accrual basis	+1,310	+1,800	+1,220	+1,385	+6,920	+3,165	+2,655	+2,690	+3,650	+1,840
Cash basis	+130	+1,555	+1,220	+1,315	+4,860	-2,535	+2,655	+2,690	+3,650	+1,840
H. Profits (profit and loss)	1,895	5,950	6,210	6,705	10,430	7,300	7,770	7,495	7,830	7,910
I. Profit/gross ratio	0.25	0.39	0.33	0.34	0.38	0.25	0.21	0.20	0.19	0.19
J. Total capital assets	8,505	11,360	14,965	13,540	73,305	81,130	79,680	83,750	93,020	88,760
K. Total liabilities	4,375	5,710	6,635	6,800	60,780	65,845	62,510	64,960	72,500	66,615
L. Net worth — end of year	4,130	5,650	6,330	6,740	12,525	15,285	17,170	18,790	20,520	22,145
— change per year	+1,380	1,520	+680	+410	+5,785	+2,760	+1,885	+1,620	+1,730	+1,625
	percent									
— increase as percent of gross	17.9	10.1	3.6	2.0	21.0	9.4	5.0	4.4	4.2	3.9
M. Liquid asset/liquid liability	1.8	2.1	1.6	1.6	2.1	2.5	3.4	2.9	2.1	2.5
N. Non-real estate asset/non-real estate liability	1.9	2.0	1.7	2.0	2.1	1.7	2.0	1.8	1.5	1.8
O. Net worth/total liabilities	0.94	0.99	0.73	0.99	0.21	0.23	0.27	0.29	0.28	0.33

* Calculated under assumption of average product prices, high family consumption, and \$1,000 off-farm income during the first 2 years.

able for non-real estate debt payments was more than double the annual debt commitments over the period, indicating that the earning capacity of the unit would permit debts to be paid off more than twice as fast as required. However, in year 6 *cash balances* were entirely inadequate to meet commitments. This increased debt carryovers and weakened the non real estate asset/liability ratio. This situation was caused by a build-up in inventories of crops and gilts in preparation for an expansion of the hog program which limited cash sales (see items B and C, table 16).

The resultant annual increase in net worth was about \$1,940 per year compared with a \$3,600 yearly increase for the *excellent* management-limited land situation, \$4,100 per year for the *excellent* management-expanded land alternative, and \$80 per year for the *average* manager. This projected net worth gain for the good manager equals 7 percent of his gross income over the period, compared with the standard of 5 percent. Inflation in land values would likely add another \$500 per year to net worth. The liquid asset/liability ratios generally equaled or exceeded the 2:1 standard during the last 6 years, although they were somewhat below the standard during the early development period. This was not particularly serious since repayment balances nearly equaled the amount of debts to be met during each year. In all years, non-real estate asset/liability ratios were equal to or greater than the standard of 1.5:1.

With more than adequate repayment balances and generally strong non-real estate financial ratios, it could be argued that the development plan for this firm was too conservative. However, the farm real estate debt was so large a component of total debt that the net worth/liability ratios during the last 6 years were quite weak (.25:1 minimum standard; 1:1 ideal). The seemingly favorable repayment balances do not bring about as rapid an improvement in the overall financial situation as happened with the *excellent* management situation (see earlier tables). Further, the other financial ratios can be extremely sensitive to major investments. This is evident in years 6 and 9 when the non-real estate asset and debt structure was kept at quite a modest level as was the case with the *average* management situation. When these considerations are coupled with the judgment that the *good* manager probably could not handle a larger business and yet maintain desired efficiency levels, the evidence argues against a faster rate of expansion.

Residual returns to capital were calculated with labor valued at a rate representing an average between the unskilled labor rates used for the *average* situation and the skilled rates used for the *excellent* situation, ranging from \$2.40 to \$3.20 per hour over the 10-year period.

When the productive *labor used* in the operation was valued at these rates, the residual returns on equity capital averaged 28.7 percent, fixed capital averaged 11.6 percent, and fixed plus operating averaged 11.0 percent over the 10-year period. The residual return to capital was considerably above these levels during the first 5 years and somewhat below these levels during the second 5 years. This again tends to indicate the scarcity of capital during the early period, and that a larger portion of the capital was of the high return (operating capital) type.

When the amount of labor was figured on a *full-time, off-farm job* basis, average residual returns over the 10-year period dropped to 10.9 percent on equity capital, 7.4 percent on fixed capital, and 7.4 percent on fixed and operating. Rates in the first 5 years were considerably lower than this, but

they were somewhat above these averages in the second 5 years, reflecting variations in the level of employment of the operator over the period.

When only the productive hours of farm *labor used* were considered, residual returns per hour of labor during the first 5 years almost equaled (\$5.50 versus \$5.55) those for the *excellent* management, expanded hog situation, but dropped \$1.05 below the *excellent* management level in the second 5 years (\$4.85 versus \$5.90). When the amount of labor considered was increased to the *full-time* (40 hours, 52 weeks per year) basis, residual returns per hour dropped off significantly, falling to \$2.85 during the first 5 years and to \$3.75 during the second 5 years. Rates calculated for *excellent* management, expanded hog situation, during these same periods were \$3.05 and \$5.75 respectively.

When off-farm earnings were increased from \$1,000 to \$3,000 annually during the first 2 years, net worth increased by another \$4,310 over the 10-year period (\$23,530 versus \$19,400). The various non-real estate and liquidity ratios strengthened considerably during the early period, providing a sounder financial base for land purchase and building remodeling. A reduction in family living from average to low levels would increase net worth by \$12,965 over the 10-year period and would strengthen markedly the financial position of the operator during the last 5 years.

A 10-percent reduction in product prices again called for a complete reevaluation of the firm growth pattern. Though consumption was reduced to low levels, net worth increased by only \$6,445 over the 10-year period, and the non-real estate asset/liability ratio was less than 1:1 by year 9 — indicating that the operator would experience financial difficulty in replacing depreciable machinery items.

Occupational Requirements and Other Considerations

In terms of vocational requirements, the *good* manager would have to have the ability to manage a moderately large crop-hog operation and to achieve above average levels of production efficiency. He would also need the ability to manage his finances carefully — particularly the timing of expansion-type investments. If he did this he could expect to be rewarded in reasonable fashion — a good living and moderate rates of net worth improvement.

These results also suggest that from a career standpoint, the *good* manager could expect to have a reasonably good level of current family living yet have sufficient managerial and repayment capacity and a strong enough financial position to command additional resources over time. Care would have to be exercised, however, in making intermediate and longer term investments to insure that repayment capacity is sufficient to meet repayment demands, and that the unused management capacity is sufficient to handle the expanded operation yet permit the achievement of levels of operational efficiency required to attain projected levels of profits.

The *good* manager has fewer options than the *excellent* manager, and the number of alternative development plans that can be enumerated are likewise more limited. The suggested firm growth pattern for the *good* manager was one of several alternatives explored. In each instance the projected plan appeared to be superior. Other alternatives might be preferable under different circumstances. For example, the son might buy a larger tractor and plow in year 3, and do the father's plowing in exchange for having his corn combined. A smaller acreage and a heavier commitment to hogs, with a partial slot facility, might also, in some situations, be

a realistic option; or alternatively the hog enterprise could be restricted to more modest facilities and greater emphasis placed on crops. However, it must be reiterated that the *good* manager, his lenders and advisers must exercise their judgments to make the growth patterns of the *good* manager's operation consistent with his management capacity and financial position. The latter two alternatives would tend to require greater outlays in buildings and/or machinery than the one suggested, thus extending his financial position. This extension, coupled with the more limited management resource, may well suggest that these patterns of development would be too risky for the *good* manager. More off-farm earnings or reduced consumption levels could be used to improve this operator's financial position, increasing the likelihood that the alternatives cited would prove to be feasible.

In evaluating the firm growth pattern and financial results, the consultants agreed that the yearly growth pattern in size

of business was appropriate for the management level assumed, crop yield and hog production efficiency levels were generally consistent with the management level assumed, and the plan was technically sound. Under average prices, the consultants felt that the repayment plan was sound, the amount of security on the loan was adequate, investments were for good purposes, the individual's financial position was considered to be moderately weak but fair net worth progress had been made. With prices 10 percent below average, the general consensus in appraising the results was that this would place the business in a difficult financial situation. Adjustments would be required, and the possibility of quitting farming should be considered seriously. Under average product prices, the consultants generally agreed that individuals with *good* managerial ability would find this farming opportunity quite attractive. With 10 percent below average prices, the opportunity was given a poor rating.

SUMMARY AND IMPLICATIONS

The major purposes of this study were to develop guidelines to help prospective farmers in South Central Minnesota appraise their career opportunities in farming and outline some alternative routes they might choose to follow in developing a successful farming career. Consideration was limited to single proprietorship firms organized with corn, soybeans, and hogs as enterprise alternatives.

The study focused on the farm business growth patterns and consequent financial outcomes likely to be associated with average, good, and excellent levels of management. Because of numerous judgments required for developing the growth patterns, the consulting services of several credit agency personnel and of an area farm management agent from the study area were obtained. Budgeting and linear programming were used in analyzing alternative situations over a 10-year period. Yearly cash flow and net worth statements and residual returns to capital and labor were calculated.

In the first of two alternative growth patterns developed for the *excellent* manager, land was limited to 375 tillable acres with hogs expanded to 970 head in years 9 and 10. In the second alternative, land was increased to 825 tillable acres by year 10, with hogs playing a secondary role. With corn, beans, and hog prices of \$1.10, \$2.55, and \$17, respectively, annual off-farm earnings of \$1,000 during the first 2 years and family consumption set at high levels (increasing from \$3,500 in year 1 to \$8,600 in year 10 of the 10-year period), average annual net worth increases of \$3,600 and \$4,100 were projected for the two alternatives, respectively. Residual returns to capital and labor were calculated to be considerably above market values for capital and skilled wages. A 10 percent reduction in product prices halted net worth progress and placed the firm in financial jeopardy.

The more limited abilities assumed for the *average* manager meant that he would experience extreme difficulty in securing land and adequate amounts of intermediate expansion-type credit. As a result, the size of operation was limited to a maximum of 290 tillable acres and 215 hogs. With the same product prices and off-farm earnings as assumed for the *excellent* manager and family consumption (ranging from \$3,000 at the beginning to \$4,700 at the end of the 10-year period) set at low levels, a net worth increase of only \$80 per year was projected. A 10 percent reduction in product

prices or an increase in family consumption caused bankruptcy of the firm.

Land, though of somewhat lower quality than for the *excellent* manager, was assumed to be quite readily available to the *good* manager. Intermediate credit would need to be handled judiciously to stay within the more limited capacity to repay. The maximum tillable acreage handled over the 10 years was limited to 375 acres, with hog numbers reaching a maximum of 490 head. With average product prices and off-farm earnings, and with family consumption set at average levels (ranging from \$3,200 in year 1 to \$6,600 in year 10), an annual net worth increase of \$1,940 was projected. Residual returns to capital and labor were quite favorable. A 10 percent reduction in product prices would place the firm in considerable financial difficulty.

The reader is reminded to interpret the financial outcomes as "projected" outcomes, unaffected by windfall gains and losses. To check on the possible attainability of these outcomes, they were compared with the findings from a survey of beginning farmers conducted earlier in that farming area. It was observed that the annual net worth increases projected in this study for the *excellent* manager fell about \$2,000 below the annual rate of accumulation experienced by the top 10 percent of young farmers surveyed, who had been in farming during the 1952-54 through 1962 period, and about \$800 below the top 20 percent. The projected net worth increases for the *good* manager approximated those observed for the middle 10 and 20 percent of farm operators surveyed, while the increases for the *average* manager fell somewhat below (\$500 to \$700) the bottom 10 and 20 percent of farmers surveyed who had been farming 10 years. (The assumption was made in this comparison that below average operators who started farming 10 years ago would have left the industry by the end of 10 years.)

This study led to additional observations or inferences. First, the prospective farmer may want to make projections of his own, similar to those made in this study. There is little gained in getting started in farming and then some years later discovering that the chances of "getting ahead" are rather slim. Hopefully, this study will provide information which will prove useful in making such projections before beginning farming.

Possessing or quickly developing production and financial management skills is basic to the kind of farm business development that assures satisfactory living levels. If one has or can acquire these skills quickly, satisfactory growth in business and living is a reasonable expectation — even with a relatively small beginning net worth.

Because he will normally be providing little more than his labor and some yet-to-be determined level of management skill, the beginning operator will likely find that credit agencies, landlords, and other resource suppliers will largely prescribe the pattern of farm business development alternatives during the early years. Recognizing his weak bargaining position, the beginning operator may want to protect his own interests by seeking out, where possible, outstanding credit agencies and landlords who will provide the kind of guidance and advice that will permit establishment in farming on a sound basis. To help become established, the beginning operator may want to devote special attention to amount and timing of machinery purchases to keep his overhead within limits of the volume of business operated. He may also want to do what he can to hold family living costs at relatively low levels during this period to strengthen his financial position through more rapid debt repayment.

Having successfully traversed this early period and as he begins to take firmer command of the destiny of the business, the beginning operator may want to spend considerable time and effort in modifying earlier projections — in budgeting out major investments. A major purpose of such budgets will be to determine with greater accuracy his credit needs, repayment capacity, and whether the farming programs under consideration will improve long term opportunities. These budgets will also likely help in securing the credit needed for longer term progress as credit agencies view these budget developments over a 10-year period. Looking ahead primarily to the coming year often slows progress or forces short term investments that do not fit into a sound longer term plan.

For individuals with *excellent* managerial abilities, the study suggests opportunities in farming look bright. Resources are likely to be available in considerable quantity, and the rewards for the careful management of these large bundles of resources appear to be considerable. Managing this capital effectively will require skill and the *excellent* manager will want to improve on this skill and may want to secure the

services of a good credit man, one who is more interested in his abilities as a manager and his ability to repay a loan than in his financial ratios.

For individuals with *average* managerial abilities, projected results indicate opportunities in farming look meager. Resources are not likely to be readily available; low levels of living for the family and little accumulated wealth at retirement are the likely prospect. If a person with *average* managerial abilities persists in wanting to farm, he may want to explore ways of improving his own management or supplementing it with outside assistance, or augmenting farm earnings with earnings from an off-farm job. He may want to develop some other salable skill or skills, as his employment in farming could be cut short by any one of a number of adverse happenings.

For individuals with *good* managerial ability, the results of the analysis indicate that opportunities in farming may be reasonably good, though resource availability and resultant levels of family living and net worth accumulation are likely to be considerably less than for the *excellent* manager. The *good* manager may want to strive continually to improve both his production and financial management skills and to exercise extreme care in managing intermediate credit to insure that major investments are profitable and consistent with his managerial and financial repayment capacities.

For the *extension worker and other educators*, the study suggests that they may wish to consider spending time and effort in informing young farmers about the requirements and range of opportunities in farming as well as helping them appraise alternative farming opportunities. Because management is so critical to the success of the beginning operator, development of management associations for beginning operators might be considered.

For *credit agencies* this study suggests continued efforts to reflect management capacity in lending practices and to encourage borrowers to project plans over several years. The results of the study may suggest to *policy makers* that not all young farm boys have the ability to operate modern-day farm businesses, and that education and training programs not only emphasize development of managerial skills but provide greater latitude and flexibility in preparation for future employment. In the study area, capital resources appear to be readily available if the necessary managerial ability is apparent.

